APPENDIX A. Full comparative description of the low- and high-nutrient meadows of *Zostera noltii* in June-August 2011, prior to the start of the experiment. Seagrass and *Ulva* spp. cover were measured within five quadrats of 0.5 m x 0.5 m placed every 5 m along two 25 m transects. Shoot density was measured within three 0.2 m x 0.2 m quadrats. Canopy height was measured in each quadrat ignoring the 20 % tallest leaves. The other seagrass traits were measured within cores of 10.5 cm diameter as described for the experimental samples. Water column pH (ranging from 8.0 to 8.2), salinity (ranging from 38 to 40 psu) and temperature (ranging from 23 to 26 ºC) were also measured during low spring and neap tides; they were not significantly different between meadows. Values are means ± se. Unpaired *t* test statistics and *p*-levels are shown. [a]Sqrt-transformed data to meet normality. [b]Mann-Whitney rank tests were conducted for variables that did not meet normality even after transformation and U statistics are shown.

	Low-nutrient meadow	**High-nutrient meadow**	***n***	***t/U***	***p*-level**
Leaf phenolics (mg g DW^{-1})	48 ± 1.2	29 ± 3.2	4	5.6	0.001
Leaf nitrogen (mg g DW^{-1})	21 ± 0.8	25 ± 0.6	4	-3.8	0.01
Leaf C:N	19 ± 0.7	16 ± 0.4	4	4.2	0.01
Rhizome nitrogen (mg g DW^{-1})	5.7 ± 0.2	6.2 ± 0.9	4	-0.5	0.63
Rhizome C:N	78 ± 3.0	73 ± 14	4	0.3	0.76
Rhizome sucrose (mg Glu g DW^{-1})	195 ± 5.5	177 ± 9.8	4	1.6	0.17
Rhizome starch (mg Glu g DW^{-1})	473 ± 14	355 ± 27	4	3.9	0.01
Rhizome TNC (mg Glu g DW^{-1})	668 ± 18	532 ± 28	4	4.1	0.01
Shoot area (cm^2 $shoot^{-1}$)[a]	7.8 ± 0.6	4.5 ± 0.7	20	3.8	<0.001
Shoot leaves (# of leaves $shoot^{-1}$)[b]	3.1 ± 0.1	2.8 ± 0.2	20	141	0.05
Above:belowground biomass	1.4 ± 0.3	1.9 ± 0.6	4	-0.7	0.51
Rhizome length (cm)	0.7 ± 0.1	1.0 ± 0.1	20	-1.9	0.07
Z. noltii density (shoots m^{-2})	5517 ± 755	2664 ± 411	3	3.3	0.03
Density of flowering shoots (# m^{-2}) [b]	0.0 ± 0.0	11 ± 11	4	6,.0	0.69
Z. noltii canopy height (cm)	25 ± 3.1	16 ± 2.0	3	2.4	0.07
Z. noltii cover (% of sediment surface) [b]	96 ± 2.2	18 ± 9.8	9-10	0.0	<0.001
Epiphyte load (mg cm^{-2})	0.4 ± 0.1	0.8 ± 0.2	4	-1.7	0.14
Ulva spp. cover (% of sediment surface)[b]	absent	38 ± 12	9-10	10	0.001
Fish herbivory (% leaves with bite marks $shoot^{-1}$)[b]	14 ± 5.0	13 ± 4.7	20	199	0.99
Seawater nitrate (µM)[b]	< 0.01	1.1 ± 0.2	4	0.0	0.03
Seawater ammonium (µM)	0.7 ± 0.2	3.0 ± 0.4	11	-4.8	<0.001
Seawater phosphate (µM)	0.5 ± 0.1	1.2 ± 0.1	11	-5.4	<0.001

APPENDIX B. Seawater chemistry within the experimental mesocosms. Nutrient samples were weekly collected (*n* = 24 nutrient-unfertilized; *n* = 29 nutrient-enriched). Temperature (*n* = 44) and pH were measured twice a week at approximately the same hour of the day using a Multimeter 340 (WTW, Weilheim, Germany) corrected for temperature and calibrated using NBS buffers (*n* = 47). Salinity was measured weekly using a refractometer (*n* = 22). Total alkalinity (TA, *n* = 16) was analyzed on samples collected the first and last week of the experiment and preserved in Winkler bottles poisoned with $HgCl_2$ saturated solution. TA was estimated by Gran titration with a Metrohm 794 Titroprocessor (accuracy 1%, checked using Certified Reference Material CRM batch #110; Scripps Institution of Oceanography, La Jolla, CA, USA). Data are means ± se. Total dissolved inorganic carbon (DIC) and its speciation into carbon dioxide (CO_2), bicarbonate (HCO_3^-) and carbonate (CO_2^{3-}) were calculated from mean values of TA, pH, temperature and salinity using the CO2SYS program (Pelletier et al. 1997) with the constants of Mehrbach refit by Dickson & Millero (1987). Different superscript letters indicate significant differences tested with unpaired *t* tests. [a]Mann-Whitney rank tests were conducted for variables that did not meet normality even after transformation.

	Nutrient-unfertilized	**Nutrient-enriched**
Ammonium (μM)[a]	0.3 ± 0.1 [a]	74 ± 1.4 [b]
Nitrate (μM)[a]	2.3 ± 0.2 [a]	44 ± 1.7 [b]
Phosphate (μM)	0.3 ± 0.02 [a]	3.9 ± 0.1 [b]
N:P molar ratio	3.4 ± 0.3 [a]	14 ± 0.2 [b]
	CO_2-unfertilized	**CO_2-enriched**
pH*	8.02 ± 0.01 [a]	7.86 ± 0.004 [b]
Temperature (ºC)[a]	24 ± 0.3	24 ± 0.3
Salinity (psu)	37 ± 0.1	37 ± 0.1
TA* (μmol Kg seawater^{-1})	2668 ± 20	2659 ± 14
DIC (μmol Kg seawater^{-1})	2422	2496
CO_2 (μmol Kg seawater^{-1})	20	30
HCO_3^- (μmol Kg seawater^{-1})	2212	2328
CO_2^{3-} (μmol Kg seawater^{-1})	189	138

References

Pelletier, G., Lewis E., and Wallace, D.:CO2 sys.xls (version 1.0). A calculator for the CO_2 system in seawater for Microsoft Excel/VBA. Washington State Department of Ecology, Olympia, WA, 1997.

Dickson, A. G. and Millero, F. J.: A comparison of the equilibrium constants for the dissociation of carbonic acid in seawater media. Deep-Sea Research, 34, 1733-1743, 1987.

APPENDIX C. Full results of the response to CO_2 and nutrient additions of *Zostera noltii* plant-, community-, and ecosystem-level traits measured through time.

Table C. Results of three-way RM ANOVA tests to assess the effects of CO_2 and nutrient additions (among-subject factors) on *Zostera noltii* plant-, community-, and ecosystem-level traits through time (within-subject factor).

	LOW-NUTRIENT MEADOW					HIGH-NUTRIENT MEADOW				
Variable	**SS**	**df**	**MS**	***F***	***p*-level**	**SS**	**df**	**MS**	***F***	***p*-level**
Shoot recruitment (%)										
Time	6402	4.0	1600	35	**<0.0001**	32991	4.0	8248	219	**<0.0001**
Time x CO_2	139	4.0	35	0.8	0.57	1160	4.0	290	7.7	**0.001**
Time x Nutrients	350	4.0	87	1.9	0.16	198	4.0	49	1.3	0.31
Time x CO_2 x Nut	553	4.0	138	3.0	**0.05**	852	4.0	213	5.7	**0.005**
Error (Time)	742	16	46			603	16	38		
CO_2	33	1.0	33	0.1	0.77	2498	1.0	2498	6.5	0.06
Nutrients	3425	1.0	3425	10	**0.03**	867	1.0	867	2.2	0.21
CO_2 x Nut	1741	1.0	1741	5.2	0.08	4.7	1.0	4.7	0.01	0.92
Error	1327	4.0	332			1549	4.0	387		
Leaf area index (m^2 m^{-2}) [a, c]										
Time	38	4.0	9.5	24	**<0.0001**	9	5.0	2	57	**<0.0001**
Time x CO_2	3.6	4.0	0.9	2.3	0.11	0.1	5.0	0.03	0.9	0.50
Time x Nutrients	11	4.0	2.7	6.6	**0.002**	0.2	5.0	0.03	1.0	0.46
Time x CO_2 x Nut	3.7	4.0	0.9	2.3	0.11	0.1	5.0	0.03	0.8	0.54
Error (Time)	6.5	16	0.4			0.7	20	0.03		
CO_2	2.7	1.0	2.7	2.0	0.23	0.003	1.0	0.003	0.01	0.93
Nutrients	50	1.0	50	37	**<0.005**	0.2	1.0	0.2	0.5	0.50
CO_2 x Nut	0.5	1.0	0.5	0.4	0.58	0.1	1.0	0.1	0.2	0.70
Error	5.4	4.0	1.3			1.2	4.0	0.3		
Density of flowering shoots (# m^{-2}) [b, c, d, e]										
Time	194	1.4	135	0.6	0.54	323	1.4	232	1.2	0.34
Time x CO_2	194	1.4	135	0.6	0.54	202	1.4	145	0.8	0.46
Time x Nutrients	194	1.4	135	0.6	0.54	202	1.4	145	0.8	0.46
Time x CO_2 x Nut	776	1.4	539	2.3	0.19	323	1.4	232	1.2	0.34
Error (Time)	1359	5.8	236			1051	5.6	188		
CO_2	109	1.0	109	0.5	0.51	40	1.0	40	0.4	0.56
Nutrients	109	1.0	109	0.5	0.51	40	1.0	40	0.4	0.56
CO_2 x Nut	12	1.0	12	0.1	0.82	162	1.0	162	1.6	0.27
Error	825	4.0	206			404	4.0	101		
Ulva cover (%) [c, e]										
Time	-	-	-	-	-	17352	1.6	10863	255	**<0.0001**
Time x CO_2	-	-	-	-	-	7	1.6	4.1	0.1	0.87
Time x Nutrients	-	-	-	-	-	137	1.6	86	2.0	0.21
Time x CO_2 x Nut	-	-	-	-	-	6	1.6	4.0	0.1	0.87
Error (Time)	-	-	-	-	-	272	6.4	43		
CO_2	-	-	-	-	-	3	1.0	2.5	0.1	0.76
Nutrients	-	-	-	-	-	10	1.0	10.1	0.4	0.54
CO_2 x Nut	-	-	-	-	-	1	1.0	0.8	0.03	0.86
Error	-	-	-	-	-	90	4.0	23		
Meso-herbivory incidence(% leaves with bite marks $shoot^{-1}$) [b, c, d, e]										
Time	247	1.5	162	2.9	0.14	40946	1.8	22538	40.3	**0.0001**
Time x CO_2	124	1.5	81	1.4	0.30	356	1.8	196	0.4	0.70
Time x Nutrients	122	1.5	80	1.4	0.30	982	1.8	540	1.0	0.42
Time x CO_2 x Nut	203	1.5	134	2.3	0.18	2215	1.8	1219	2.2	0.18
Error (Time)	346	6.1	57			4059	7.3	559		
CO_2	29	1.0	29	0.7	0.46	122	1.0	122	0.1	0.75
Nutrients	41	1.0	41	0.9	0.39	232	1.0	232	0.2	0.66

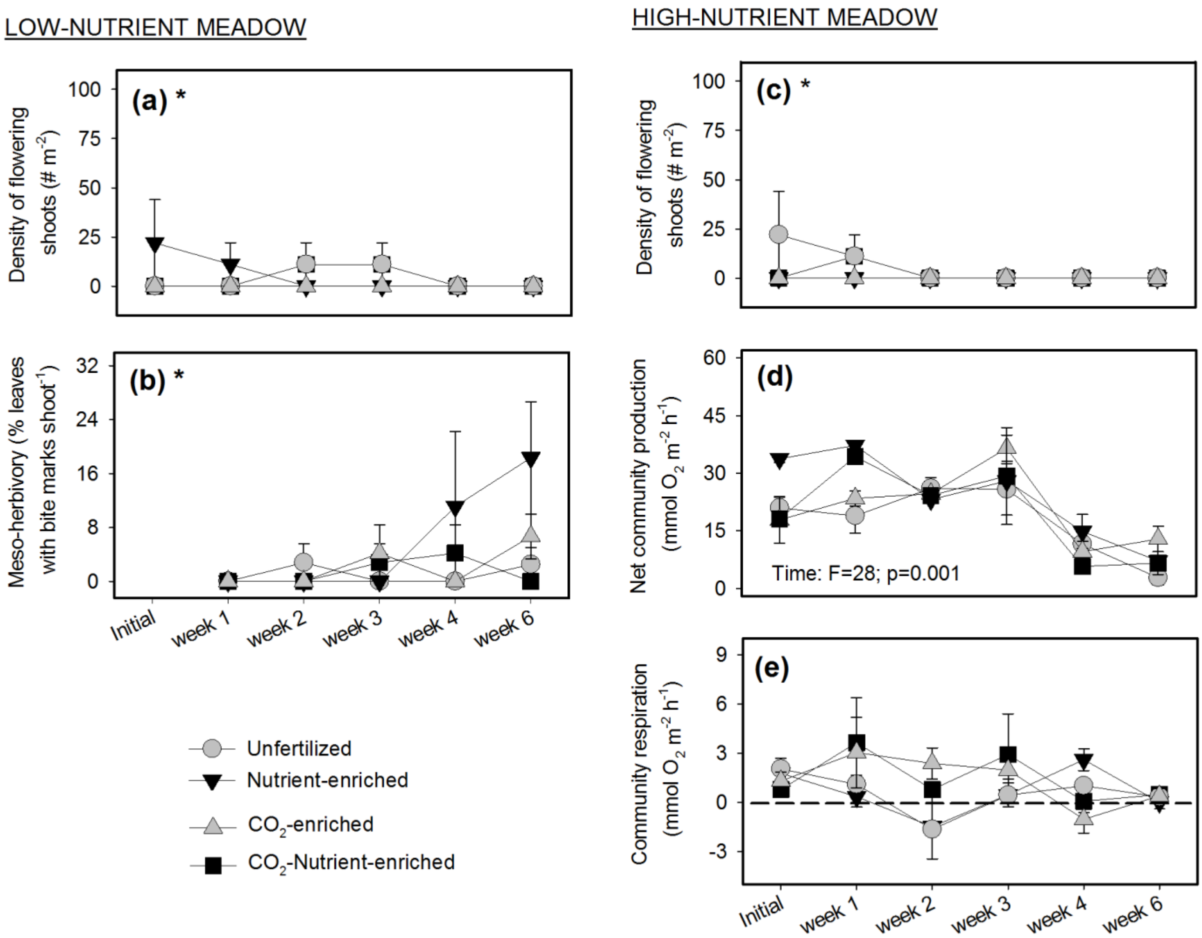
	LOW-NUTRIENT MEADOW					HIGH-NUTRIENT MEADOW				
Variable	**SS**	**df**	**MS**	***F***	***p*-level**	**SS**	**df**	**MS**	***F***	***p*-level**
CO_2 x Nut	79	1.0	79	1.8	0.25	3417	1.0	3417	3.4	0.14
Error	175	4.0	44			4050	4.0	1013		
# of leaves (# shoot^{-1}) [c, e]										
Time	3.3	4.0	0.8	22	**<0.0001**	9	5.0	1.8	26	**<0.0001**
Time x CO_2	0.8	4.0	0.2	5.3	**0.01**	0.3	5.0	0.1	0.9	0.49
Time x Nutrients	1.6	4.0	0.4	11	**<0.001**	0.7	5.0	0.1	1.9	0.15
Time x CO_2 x Nut	0.4	4.0	0.1	2.9	<u>0.054</u>	1.0	5.0	0.2	3.0	**0.04**
Error (Time)	0.6	16	0.04			1.0	15	0.1		
CO_2	0.2	1.0	0.2	2.4	0.19	0.2	1.0	0.2	31	**0.01**
Nutrients	1.9	1.0	1.9	29	**0.01**	0.1	1.0	0.1	17	**0.03**
CO_2 x Nut	0.03	1.0	0.03	0.4	0.57	0.2	1.0	0.2	28	**0.01**
Error	0.3	4	0.1			0.02	3.0	0.01		
Detritus production (g FW day^{-1})										
Time	26	3.0	8.8	32	**<0.0001**	30	3.0	10	73	**<0.0001**
Time x CO_2	2.1	3.0	0.7	2.5	0.11	2.5	3.0	0.8	6.1	**0.01**
Time x Nutrients	3.1	3.0	1.0	3.7	**0.04**	0.4	3.0	0.1	1.0	0.41
Time x CO_2 x Nut	1.2	3.0	0.4	1.4	0.29	0.6	3.0	0.2	1.4	0.30
Error (Time)	3.4	12	0.3			1.7	12	0.1		
CO_2	6.8	1.0	6.8	16	**0.02**	0.3	1.0	0.3	1.1	0.34
Nutrients	2.1	1.0	2.1	4.8	0.09	3.3	1.0	3.3	12	**0.03**
CO_2 x Nut	0.01	1.0	0.01	0.02	0.90	0.6	1.0	0.6	2.0	0.23
Error	1.7	4.0	0.4			1.1	4.0	0.3		
Net community production (mmol O_2 m^{-2} h^{-1}) [b, c]										
Time	1904	1.6	1191	15	**0.005**	3578	1.7	2064	28	**0.001**
Time x CO_2	548	1.6	343	4.4	0.07	352	1.7	203	2.8	0.13
Time x Nutrients	58	1.6	36	0.5	0.61	449	1.7	259	3.5	0.09
Time x CO_2 x Nut	930	1.6	581	7.4	**0.02**	70	1.7	40	0.6	0.58
Error (Time)	502	6.4	78			508	6.9	73		
CO_2	85	1.0	85	2.6	0.18	4	1.0	4	0.1	0.79
Nutrients	50	1.0	50	1.5	0.29	82	1.0	82	1.6	0.27
CO_2 x Nut	3.0	1.0	3.0	0.1	0.78	166	1.0	166	3.3	0.14
Error	131	4.0	33			201	4.0	50		
Community respiration (mmol O_2 m^{-2} h^{-1}) [c]										
Time	87	4.0	22	4.3	**0.01**	25	1.7	14	2.1	0.19
Time x CO_2	51	4.0	13	2.5	0.08	46	1.7	27	4.0	0.08
Time x Nutrients	66	4.0	17	3.3	**0.04**	5.4	1.7	3.1	0.5	0.62
Time x CO_2 x Nut	37	4.0	9.3	1.9	0.17	3.1	1.7	1.8	0.3	0.74
Error (Time)	81	16	5.0			46	6.9	6.7		
CO_2	0.6	1.0	0.6	0.1	0.81	8	1.0	7.9	2.8	0.17
Nutrients	20	1.0	20	2.4	0.20	0.1	1.0	0.1	0.03	0.86
CO_2 x Nut	5.2	1.0	5.2	0.6	0.48	0.003	1.0	0.003	0.001	0.97
Error	34	4.0	8.6			11	4.0	2.8		

[a] Data from the high-nutrient meadow were sqrt-transformed to meet normality.

[b, c] Corrected significance levels from Greenhouse-Geisser adjustment were used when sphericity was not met in data from the low-nutrient (b) or high-nutrient (c) meadows.

[d,e] Violation of normality was allowed on data from the low-nutrient (d) or high-nutrient (e) meadows. For those variables, the significance level was more restrictive (p < 0.03) to minimize the possibility of Type I error.

Fig. C. *Zostera noltii* plant- and community-level traits from the low-nutrient and high-nutrient meadow showing no significant response to CO_2 and nutrient additions through time based on RM ANOVA tests. Symbols are means (±se, *n*=2). Detailed RM ANOVA results are shown on Table C.



* Variables that did not meet normality even after transformation.

Figure comments: No effects of CO_2 or nutrient enrichments were observed through time on shoot flowering and meso-herbivory in the low-nutrient meadow, and shoot flowering, and community production or respiration in the high-nutrient meadow.

APPENDIX D. Full results of the response to CO_2 and nutrient additions of *Zostera noltii* plant-, community-, and ecosystem-level traits measured at the end of the experiment.

Table D. Results of two-way ANOVA tests to assess the effects of CO_2 and nutrient additions (fixed crossed factors) on *Z. noltii* plant-, community-, and ecosystem-level traits measured at the end of the experiment. Significant *p*-levels are highlighted in black. Significant *t* tests used to interpret significant interactions and to confirm ANOVA results are shown (*n* = 4 for significant effects and *n* = 2 for significant interactions; *met equal variances). Biomass above:belowground allocation was not measured in the high-nutrient meadow due to the reduced number of shoots at the end of the experiment.

	LOW-NUTRIENT MEADOW						HIGH-NUTRIENT MEADOW					
Variable	**SS**	**df**	**MS**	***F***	***p*-level**	***t* test**	**SS**	**df**	**MS**	***F***	***p*-level**	***t* test**
Leaf nitrogen (mg g DW^{-1})												
CO_2	0.6	1	0.6	0.1	0.80		37	1	37	2.4	0.19	
Nutrients	687	1	687	89	**<0.001**	t= -11; p=0.001	260	1	260	17	**0.01**	*t= -3.6; p=0.01
CO_2 x Nut	0.002	1	0.002	0.0002	0.99		24	1	24	1.6	0.28	
E rror	31	4	7.7				62	4	15			
Rhizome nitrogen (mg g DW^{-1})												
CO_2	0.6	1	0.6	0.3	0.60		22	1	22	5.7	0.08	
Nutrients	47	1	47	27	**<0.01**	*t= -5.7; p=0.001	1.3	1	1.3	0.3	0.60	
CO_2 x Nut	1.0	1	1.0	0.6	0.48		1.4	1	1.4	0.4	0.58	
Error	7.0	4	1.8				15	4	3.8			
Leaf C:N												
CO_2	0.004	1	0.004	0.01	0.91		56	1	56	7.6	0.05	
Nutrients	77	1	77	276	**<0.001**	*t=18; p<0.001	128	1	128	17	**0.01**	*t=2.7; p=0.04
CO_2 x Nut	0.3	1	0.3	1.0	0.36		19	1	19	2.6	0.18	
Error	1.1	4	0.3				29	4	7.3			
Rhizome C:N												
CO_2	0.5	1	0.5	0.1	0.83		315	1	315	15	**0.02**	t=4.5; p=0.01
Nutrients	296	1	296	30	**0.01**	*t=6.6; p=0.001	5.6	1	5.6	0.3	0.64	
CO_2 x Nut.	0.9	1	0.9	0.1	0.78		1.5	1	1.5	0.1	0.80	
Error	39	4	10				87	4	22			
Rhizome sucrose (mg Glu g DW^{-1})												
CO_2	66	1	66	1.1	0.36		175	1	175	0.3	0.61	
Nutrients	13	1	13	0.2	0.67		350	1	350	0.6	0.48	
CO_2 x Nut	18	1	18	0.3	0.61		2	1	1.8	0.003	0.96	
Error	247	4	62				1661	3	554			
Rhizome starch (mg Glu g DW^{-1})												
CO_2	1298	1	1298	5.2	0.08		9101	1	9101	1.5	0.31	
Nutrients	928	1	928	3.7	0.13		1374	1	1374	0.2	0.67	
CO_2 x Nut	2092	1	2092	8.4	**0.04**		15893	1	15893	2.5	0.21	
Error	998	4	249				18783	3	6261			
Rhizome non-structural carbohydrates (mg Glu g DW^{-1})												
CO_2	1951	1	1951	4.0	0.12		11805	1	11805	1.2	0.36	
Nutrients	1160	1	1160	2.4	0.20		3110	1	3110	0.3	0.62	
CO_2 x Nut	2503	1	2503	5.1	0.09		15554	1	15554	1.5	0.30	
Error	1958	4	489				30626	3	10209			
Leaf phenolics (mg g DW^{-1})												
CO_2	5	1	5	0.9	0.39		952	1	952	20	**0.01**	
Nutrients	75	1	75	13	**0.02**	*t=3.7; p=0.01	450	1	450	9.3	**0.04**	
CO_2 x Nut	6	1	6	1.1	0.36		632	1	632	13	**0.02**	
Error	23	4	5.6				194	4	49			

	LOW-NUTRIENT MEADOW						HIGH-NUTRIENT MEADOW					
Variable	**SS**	**df**	**MS**	***F***	***p*-level**	***t* test**	**SS**	**df**	**MS**	***F***	***p*-level**	***t* test**
Above:Belowground biomass												
CO_2	2.2	1	2.2	1.7	0.26		-	-	-	-	-	
Nutrients	2.5	1	2.5	1.9	0.24		-	-	-	-	-	
CO_2 x Nut	0.9	1	0.9	0.7	0.45		-	-	-	-	-	
Error	5.1	4	1.3				-	-	-			
Rhizome length (cm)												
CO_2	0.1	1	0.1	0.6	0.49		0.4	1	0.4	6.6	0.06	
Nutrients	0.1	1	0.1	1.3	0.32		0.7	1	0.7	13	**0.02**	CO_2 vs CO_2-Nut:
CO_2 x Nut	0.2	1	0.2	1.7	0.27		0.6	1	0.6	11	**0.03**	t= -5.1; p=0.04
Error	0.4	4	0.1				0.2	4	0.1			
Total root length (cm)												
CO_2	0.1	1	0.1	0.04	0.86		0.01	1	0.01	0.02	0.91	
Nutrients	0.3	1	0.3	0.2	0.70		0.8	1	0.8	0.9	0.41	
CO_2 x Nut	0.3	1	0.3	0.3	0.66		3.4	1	3.4	4.1	0.14	
Error	2.7	2	1.4				2.5	3	0.8			
Epiphyte biomass (mg cm^{-2})												
CO_2	3.7	1	3.7	6.8	0.06	t= -9.5; p=0.05	16	1	16	24	**<0.01**	t= -8.7; p=0.02
Nutrients	0.7	1	0.7	1.2	0.33		1.0	1	1.0	1.6	0.28	
CO_2 x Nut	14	1	14	25	**0.01**		5.1	1	5.1	7.8	**0.049**	t= -5.6; p=0.03
Error	2.2	4	0.6				2.6	4	0.7			
Sediment organic matter (% DW)												
CO_2	0.18	1	0.18	2.2	0.21	t= 5.7; p=0.03	0.2	1	0.2	0.5	0.53	
Nutrients	0.12	1	0.12	1.5	0.29	t= 5.2; p=0.04	2.1	1	2.1	4.0	0.12	
CO_2 x Nut	4.1	1	4.1	52	**0.002**		1.2	1	1.2	2.4	0.20	
Error	0.3	4	0.1				2.1	4	0.5			

Fig. D. *Zostera noltii* plant-level traits from the low-nutrient (grey bars) and high-nutrient meadow (black bars) showing no significant response to CO_2 and nutrient additions at the end of the experiment based on two-way ANOVA tests. Bars are means ($\pm$se, *n*=2). Detailed ANOVA results are shown on Table D. TNC refers to total non-structural carbohydrates.

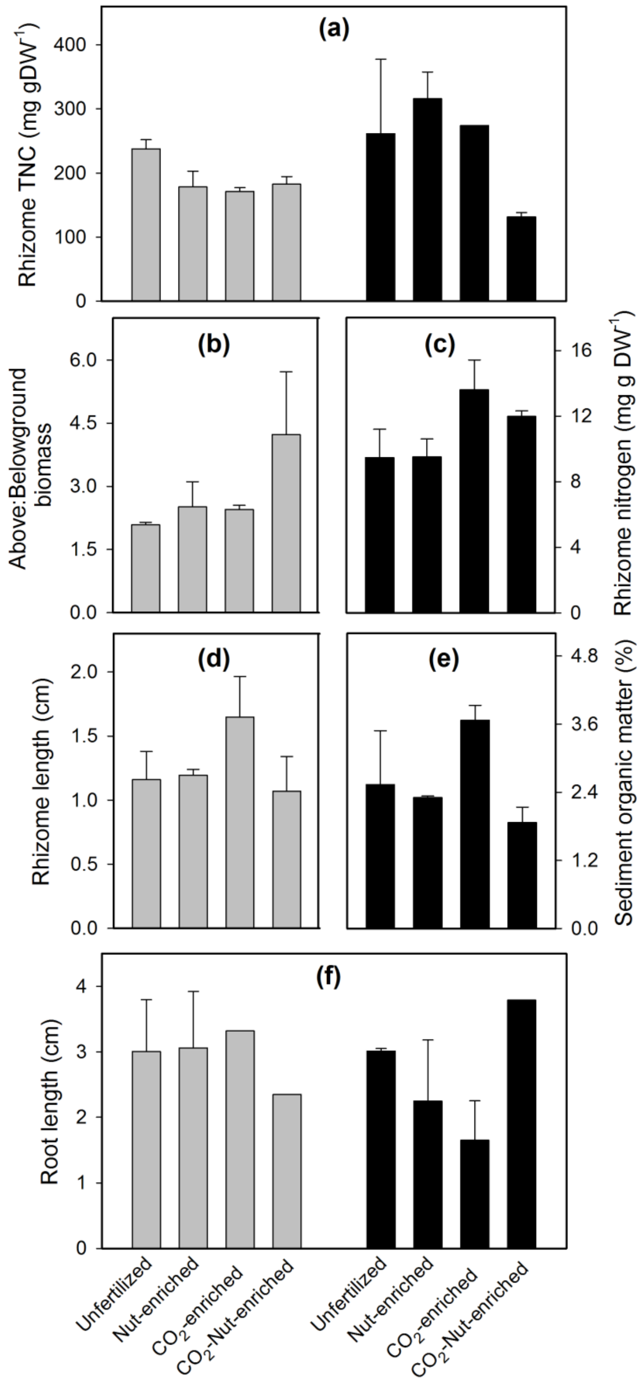


Figure comments: No significant effect of CO_2 or nutrients was detected at the end of the experiment on rhizome total non-structural carbohydrates (TNC) and root length in both meadows, on above:belowground biomass and rhizome length in the low-nutrient meadow, and on rhizome nitrogen and sediment organic matter in the high-nutrient meadow.

APPENDIX E. Results of principal component analyses.

Table E1. Variable loadings in the PCA of responsive variables from the low- and high-nutrient meadows at the end of the experiment (scaling 2, correlation biplot). Descriptors showing the highest correlation with each component ($r \geq 0.70$) were selected to interpret the components.

	pc-1	pc-2
Rhizome starch	0.37	-0.29
Leaf phenolics	0.66	-0.56
Leaf C:N	0.75	-0.52
Rhizome C:N	0.40	-0.60
Epiphyte biomass	-0.19	0.74
Sediment organic matter	-0.85	-0.44
Rhizome length	-0.24	0.40
Shoot mortality	0.89	0.22
Leaf area index	-0.74	-0.52
Meso-herbivory	0.92	0.27
Net community production	-0.93	-0.26
Detritus	-0.20	0.51
Epiphyte composition	-0.10	0.70
Shoot # of leaves	-0.71	-0.10

Table E2. Variable loadings in the PCAs of *Zostera noltii* plant- community and ecosystem- level responses to treatments through time (scaling 2, correlation biplot). Descriptors showing the highest correlation with each component ($r \geq 0.70$) were selected to interpret the components.

	Low-nutrient meadow		High-nutrient meadow	
	pc-1	pc-2	pc-1	pc-2
Detritus	0.01	0.30	0.85	-0.05
Mortality	0.92	0.00	0.93	0.24
Leaf area index	-0.91	0.07	-0.95	-0.18
Shoot # of leaves	-0.82	0.14	-0.86	0.05
Herbivory	0.71	0.01	0.90	0.13
Net community production	-0.37	-0.72	-0.68	-0.05
Community respiration	0.45	-0.67	0.34	-0.79
Flowering shoots	-0.30	-0.70	-0.45	0.61
Ulva cover	-	-	-0.98	-0.07

Fig. E. Ordination of treatments in the PCA of responsive *Zostera noltii* plant-, community-, and ecosystem-level traits at the end of the experiment. PCA was conducted using the mesocosms from low- and high-nutrient meadows as replicates in order to balance the number of cases and variables. The variable loadings (grey lines) reflect the correlation to the components and the angles between lines are proportional to their covariances. Symbols represent treatments according to the legend and symbol shading differentiates mesocosms from the low-nutrient (grey) and high-nutrient meadow (black). LAI refers to leaf area index, NCP to net community production, CR to community respiration, OM to organic matter and TNC to total non-structural carbohydrates. Epiphyte assemblage refers to the score on the axis II of the NMDS.

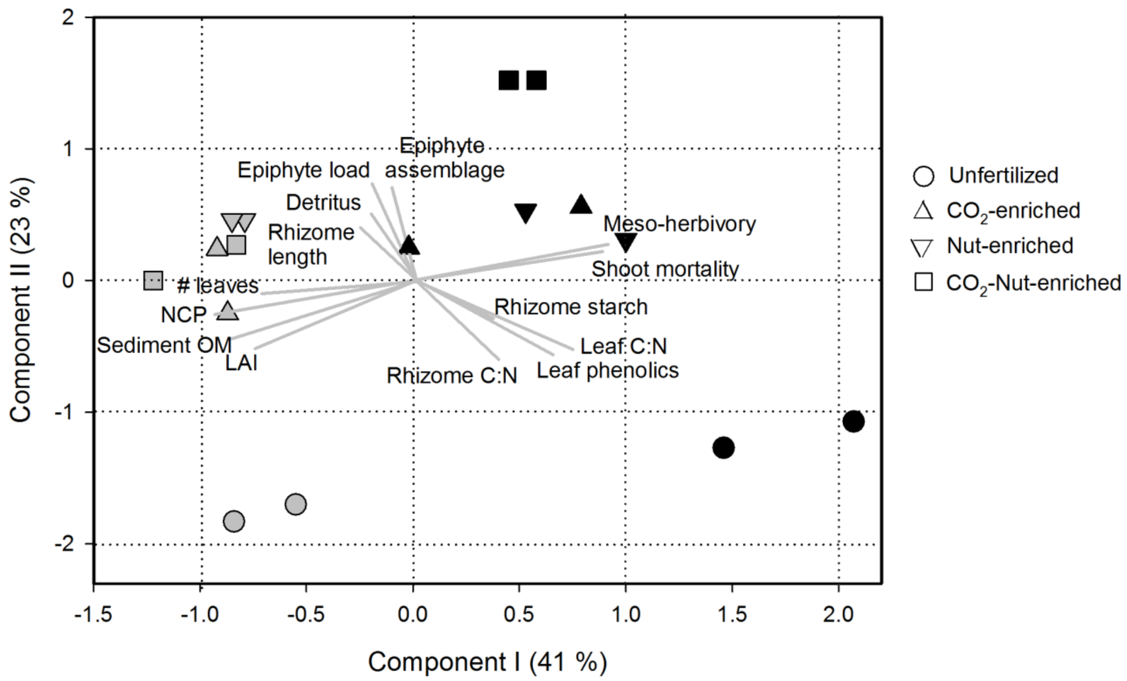


Figure comments: This PCA integrates the overall response of the *Z. noltii* community from the low- and high-nutrient meadows at the end of the experiment. The first two components of the PCA explained 40.6 % (component I) and 22.5 % (component II) of the variance. There was a clear difference between the responses of the *Z. noltii* community of the low- *versus* the high-nutrient meadow, with the latter showing the highest variation (black symbols). The responses of the community from the high-nutrient meadow shifted from high leaf C:N and phenolic concentrations in unfertilized conditions to high epiphyte loads and composition changes under CO_2-, nutrient- and CO_2-and-nutrient- enrichments. There were no clear differences on the *Z. noltii* community responses to CO_2- or nutrient- enrichments. A high shoot mortality and meso-herbivory characterized the high-nutrient meadow in unfertilized and enriched conditions. Both variables were highly correlated between them and inversely correlated to leaf area index, number of leaves, net community production, and sediment organic matter.

In contrast with the high-nutrient meadow, the low-nutrient meadow (grey symbols) was characterized by high values of leaf area index, sediment organic matter, net community production and number of leaves. The CO_2- and nutrient--enrichment responses of the low-nutrient meadow shifted from lower values under unfertilized conditions to higher values of both epiphyte load and changes on epiphyte composition. The vertical ordination of treatments of the low-nutrient meadow along component II reflected an increasing importance of the responses of *Z. noltii* epiphyte load and assemblage to treatments, which was stronger to nutrient- than to CO_2- and CO_2-and-nutrient-enrichments. There were no clear differences on the *Z. noltii* community responses to CO_2- and CO_2-and-nutrient- enrichments, indicating that the simultaneous addition of CO_2 attenuates the effect of the nutrient enrichment.