The following supplement accompanies the article

Drift algae, an invasive snail and elevated temperature reduce ecological performance of a warm-temperate seagrass, through additive effects

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Supplement. Additional figures and statistical results

Table S1. ANOVA testing for differences in abundance of drift algae at 3 sites at 5 time periods and density of invasive *Batillaria australis* snails at 3 sites at 3 time periods. Both time and site were considered random factors. It was not possible to transform variances to homogeneity

	Total algal biomass				***B. australis* density**			
	df	**MS**	***F***	**p**	**df**	**MS**	***F***	**p**
Time	4	27.5	1.03	0.448	2	39889	8.12	0.062
Site	2	12.5	0.47	0.643	2	105701	2.18	0.260
Time × Site	8	26.7	18.40	<0.001	3	48505	1.98	0.144
Error	135	1.46			24	24512		

Total algal biomass: ln(x + 1)-transformed; Cochran's $C = 0.1959$, $p < 0.05$
***B. australis* density:** Cochran's $C = 0.9764$, $p < 0.01$

Table S2. ANOVA testing effects of temperature (Te), drift algae (Al) and invasive snails (Sn) on different indicators of ecological performance of *Halophila ovalis*. Significant values are in **bold**

	Te (df = 1)	Al (df = 1)	Sn (df = 1)	Te × Al (df = 1)	Te × Sn (df = 1)	Al × Sn (df = 1)	Te × Al × Sn (df = 1)	Error (df = 16)
Mortality rate[a]								
MS	0.2941	0.8052	0.0085	0.1525	0.0344	0.0205	0.0114	0.0334
F	8.79	24.08	0.26	4.56	1.03	0.61	0.34	
p	**0.009**	**<0.001**	0.620	**0.049**	0.325	0.445	0.567	
Leaf loss rate[b]								
MS	2.2306	3.4853	0.0178	0.3580	0.0121	0.1126	0.4502	0.2070
F	10.8	16.8	0.09	1.73	0.06	0.54	2.17	
p	**0.005**	**0.001**	0.774	0.207	0.812	0.472	0.160	
Newly produced nodes[c]								
MS	0.0192	3.4288	0.0043	0.0728	0.0359	0.0043	0.4898	0.3993
F	0.05	8.59	0.01	0.18	0.09	0.01	1.23	
p	0.829	**0.010**	0.919	0.675	0.768	0.919	0.284	
Net change in leaf length[d]								
MS	0.0082	0.1602	3.812	1.1286	0.3066	0.3259	2.5802	1.0905
F	0.01	0.15	3.50	1.03	0.28	0.30	2.37	
p	0.932	0.707	0.080	0.324	0.603	0.592	0.144	
Plastochrone interval[e]								
MS	1.2578	0.2204	0.3775	0.4700	0.0890	1.0702	0.5884	0.2098
F	6.00	1.05	1.80	2.24	0.42	5.10	2.80	
p	**0.026**	0.321	0.199	0.154	0.524	**0.038**	0.113	
2nd Internode distance[f]								
MS	1.1964	0.3843	0.0722	1.5932	0.4886	1.4831	0.6155	0.3478
F	3.44	1.11	0.21	4.58	1.41	4.26	1.77	
p	0.082	0.309	0.655	**0.048**	0.253	0.056	0.202	
Leaf biomass[g]								
MS	0.7012	0.6174	1.0555	0.0236	0.1009	0.1722	0.5164	0.1383
F	5.07	4.46	7.63	0.17	0.73	1.24	3.73	
p	**0.039**	0.051	**0.014**	0.685	0.406	0.281	0.071	
Rhizome biomass[h]								
MS	0.8703	0.0942	19.8904	3.8105	21.1138	7.5763	4.7017	6.9448
F	0.13	0.01	2.86	0.55	3.04	1.09	0.68	
p	0.728	0.909	0.110	0.470	0.100	0.312	0.423	
Root biomass[i]								
MS	15.6025	75.4410	234.1310	6.3389	9.0581	23.0972	34.2271	33.0574
F	0.47	2.28	7.08	0.19	0.27	0.70	1.04	
p	0.502	0.150	**0.017**	0.667	0.608	0.416	0.324	

Transformations and assumption tests: [a]Arcsine(x)-transformed, Cochran's $C = 0.2896$, $p > 0.05$; [b]Cochran's $C = 0.2311$, $p > 0.05$; [c]Cochran's $C = 0.2755$, $p > 0.05$; [d]Cochran's $C = 0.3519$, $p > 0.05$; [e]$\ln(x + 2)$-transformed, Cochran's $C = 0.4298$, $p > 0.05$; [f]$\ln(x + 1)$-transformed, Cochran's $C = 0.4369$, $p > 0.05$; [g]$\ln(x)$-transformed, Cochran's $C = 0.3987$, $p > 0.05$; [h]Cochran's $C = 0.3446$, $p > 0.05$; [i]Cochran's $C = 0.2659$, $p > 0.05$

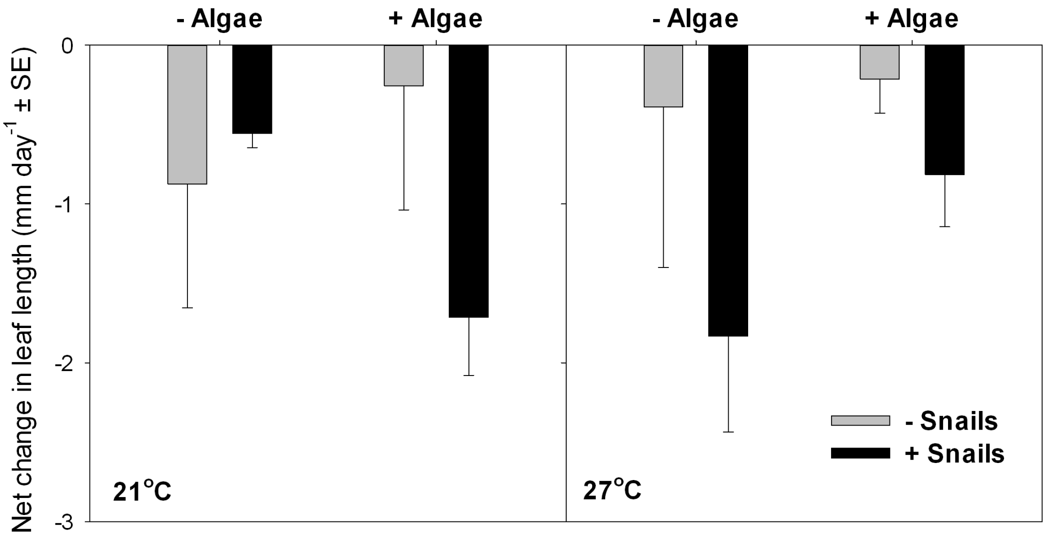

Fig. S1. Net change in leaf length rate for *Halophila ovalis* shoots in the experimental treatments

Table S3. ANOVA testing differences in the depth to the sulphide horizon between measurements (Me), temperature (Te), drift algae (Al) and invasive snails (Sn). All interactions involving 'measurements' were highly non-significant ($p > 0.025$) and were pooled (*) within the residual to increase power for tests of other main effects, as suggested by Winer et al. (1991). Significant values are in **bold**

	Depth to the sulphide horizon			
Source of variation	**df**	**MS**	***F***	**p**
Me	2	251.15	2.04	0.139
Te	1	99.17	0.81	0.373
Al	1	1815.03	14.75	**<0.001**
Sn	1	796.67	6.47	**0.014**
Te × Al	1	255.00	2.07	0.155
Te × Sn	1	19.53	0.16	0.692
Al × Sn	1	7.67	0.06	0.804
Te × Al × Sn	1	132.03	1.07	0.304
*Me × Te	2	62.23		
*Me × Al	2	42.22		
*Me × Sn	2	166.15		
*Me × Te × Al	2	13.44		
*Me × Te × Sn	2	47.84		
*Me × Al × Sn	2	50.27		
*Me × Te × Al × Sn	2	132.03		
*Residual	48	142.09		
Pooled residual	62	123.06		

Untransformed data (Cochran's $C = 1564$, $p > 0.05$)

Table S4. ANOVA testing for effects of temperature (Te), drift algae (Al) and invasive snails (Sn) on sediment content of organic matter and chlorophyll *a*

		Organic matter			**Chlorophyll *a***		
	df	**MS**	***F***	**p**	**MS**	***F***	**p**
Te	1	0.1225	0.17	0.684	0.0021	0.35	0.561
Al	1	0.0163	0.02	0.882	0.0212	3.56	0.077
Sn	1	0.0041	0.01	0.940	0.0160	2.70	0.120
Te × Al	1	0.1403	0.20	0.663	0.0005	0.08	0.786
Te × Sn	1	2.7524	3.87	0.067	0.0002	0.04	0.842
Al × Sn	1	0.0070	0.01	0.922	0.0105	1.76	0.203
Te × Al Sn	1	1.0228	1.44	0.248	0.0014	0.23	0.636
Residual	16	0.7115			0.0059		

Organic matter: Arcsine-transformed, Cochran's $C = 0.265$, $p > 0.05$
Chlorophyll *a*: Sqrt($x + 1$)-transformed, Cochran's $C = 0.265$, $p > 0.05$

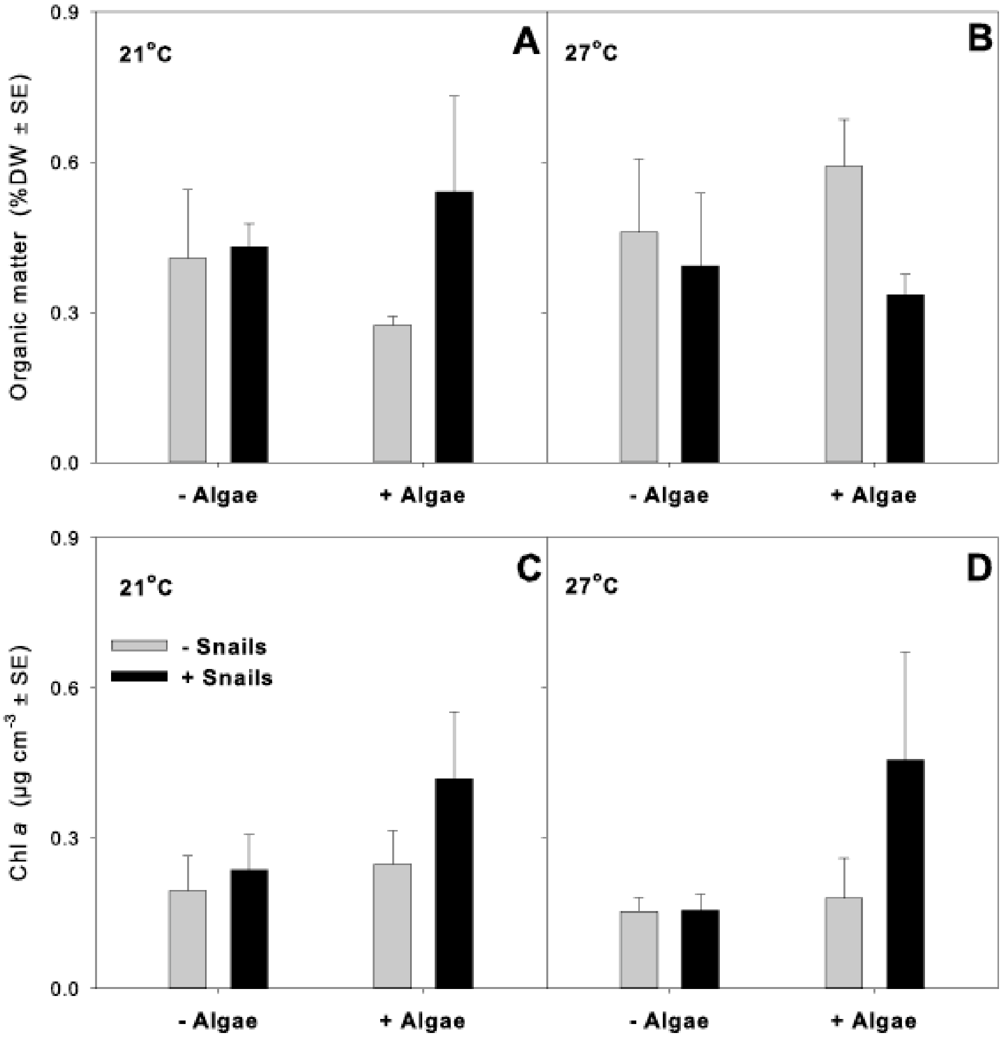

Fig. S2. The content of organic matter (A, B) and chlorophyll *a* (C, D) in the experimental treatments. DW = dry weight

Table S5. ANOVA testing for differences in oxygen concentration between different times (Ti) of the day, depths (De) in the water column, temperature (Te), drift algae (Al) and invasive snails (Sn). It was not possible to transform data to homoscedastic variances. Significant values (**bold**) should be interpreted with caution. Cochran's *C* = 0.1810, p < 0.05

	Oxygen content			
	df	**MS**	***F***	**p**
Ti	1	8.3879	28.5	**<0.001**
De	2	7.4489	25.3	**<0.001**
Te	1	34.9207	118.6	**<0.001**
Al	1	26.3975	89.7	**<0.001**
Sn	1	0.0059	0.02	0.888
Ti × De	2	1.2990	4.41	**0.015**
Ti × Te	1	0.6417	2.18	0.143
Ti × Al	1	6.7510	22.9	**<0.001**
Ti × Sn	1	0.2885	0.98	0.325
De × Te	2	0.5575	1.89	0.156
De × Al	2	4.8062	16.3	**<0.001**
De × Sn	2	0.1632	0.55	0.576
Te × Al	1	0.5383	1.83	0.180
Te × Sn	1	0.0634	0.22	0.644
Al × Sn	1	0.0000	0.00	0.999
Ti × De × Te	2	0.0493	0.17	0.846
Ti × De × Al	2	0.3466	1.18	0.313
Ti × De × Sn	2	0.0661	0.22	0.799
Ti × Te × Al	1	1.3554	4.60	**0.034**
Ti × Te × Sn	1	0.2545	0.86	0.355
Ti × Al × Sn	1	0.2476	0.84	0.362
De × Te × Al	2	0.2659	0.90	0.409
De × Te × Sn	2	0.0696	0.24	0.790
De × Al × Sn	2	0.1727	0.59	0.558
Te × Al × Sn	1	0.1586	0.54	0.465
Ti × De × Te × Al	2	0.0011	0.00	0.996
Ti × De × Te × Sn	2	0.0097	0.03	0.968
Ti × De × Al × Sn	2	0.0338	0.11	0.892
Ti × Te × Al × Sn	1	0.0777	0.26	0.609
De × Te × Al × Sn	2	0.0118	0.04	0.961
Ti × De × Te × Al × Sn	2	0.0097	0.03	0.968
Residual	96	0.2944		

Transformation to homoscedastic variances was not possible. Significant values should be interpreted with caution. Cochran's *C* = 0.1810, p < 0.05

LITERATURE CITED

Winer BJ, Brown DR, Michels KM (1991) Statistical principles in experimental design, 3rd edn. McGraw-Hill, New York