

Understanding the role of macroalgal complexity and allelochemicals production in invasive and non-invasive macroalgae in the north-western Adriatic Sea: effect on the associated communities

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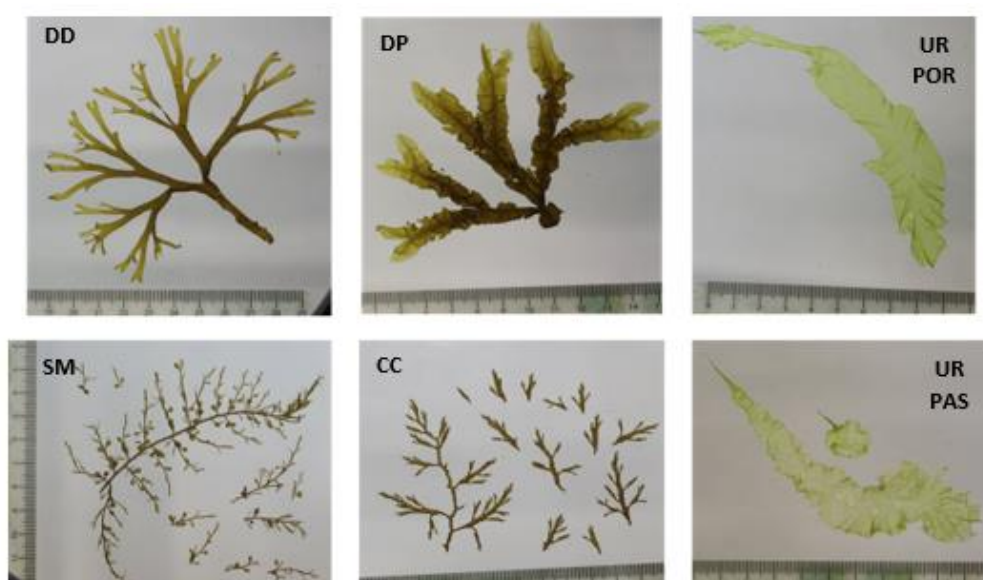


Figure S1- Macroalgae sampled in Passetto (PAS) and Porto (POR): *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

Table S1. Results of PCA carried out on the variables measured for macroalgal morphology.

	PC1	PC2	PC3	PC4
% variation	83.3	11.9	3.3	1.5
D	0.478	-0.676	0.206	-0.522
Weight/Area	-0.513	-0.283	0.783	0.206
Perimeter/Area	-0.529	0.239	-0.047	-0.813
Volume/Area	-0.478	-0.637	-0.584	0.157

Table S2. Results of PERMANOVA and pairwise comparison test carried out on morphological measure taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

Source of Variation	df	MS	Pseudo-F	P(perm)
Site-Macroalgae	7	16.60	50.86	0.0001
Error	24	0.33		
Total:	31			
Comparisons	P(MC)			
PAS-CC vs PAS-DD				0.0001
PAS-CC vs PAS-UL				0.0001
PAS-CC vs PAS-DP				0.0002
PAS-DD vs PAS-UL				0.0002
PAS-DD vs PAS-DP				0.0026
PAS-UL vs PAS-DP				0.0013
POR-SM vs POR-DD				0.0001
POR-SM vs POR-UL				0.0003
POR-SM vs POR-DP				0.0001
POR-DD vs POR-UL				0.0006
POR-DD vs POR-DP				0.0005
POR-UL vs POR-DP				0.1091
PAS-DD vs POR-DD				0.0212
PAS-UL vs POR-UL				0.1813
PAS-DP vs POR-DP				0.1203

Table S3. Results of one-way PERMANOVA and pairwise comparisons carried out on the total concentration of PUAs taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

Source of Variation	df	MS	Pseudo-F	P(perm)
Site-Macroalgae	7	721740.00	14.39	0.0003
Error	24	50160.00		
Total:	31			
Comparisons	P(MC)			
PAS-CC vs PAS-DD			0.010	
PAS-CC vs PAS-UL			0.065	
PAS-CC vs PAS-DP			0.003	
PAS-DD vs PAS-UL			0.013	
PAS-DD vs PAS-DP			0.005	
PAS-UL vs PAS-DP			0.003	
POR-SM vs POR-DD			0.700	
POR-SM vs POR-UL			0.014	
POR-SM vs POR-DP			0.985	
POR-DD vs POR-UL			0.012	
POR-DD vs POR-DP			0.824	
POR-UL vs POR-DP			0.014	
PAS-DD vs POR-DD			0.155	
PAS-UL vs POR-UL			0.013	
PAS-DP vs POR-DP			0.004	

Table S4. Microphytobenthos assemblages (cells/cm²) associated to the macroalgae collected in Passetto (PAS) and Porto (POR): *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva* cf. *lacunculata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

	PAS-CC	PAS-DD	PAS-UL	PAS-DP	POR-SM	POR-DD	POR-UL	POR-DP
	cell/cm ²	cell/cm ²	cell/cm ²	cell/cm ²	cell/cm ²	cell/cm ²	cell/cm ²	cell/cm ²
<i>Amphora</i> spp.	345 ± 137	243 ± 60	41 ± 9	1368 ± 794	-	99 ± 69	55 ± 55	-
<i>Ardissonea</i> spp.	2 ± 1	-	1 ± 1	-	-	-	-	-
<i>Chaetoceros</i> spp.	-	-	-	-	-	-	3 ± 3	-
<i>Cocconeis</i> spp.	3697 ± 596	170 ± 96	1446 ± 390	7743 ± 2002	2712 ± 1092	1146 ± 218	68 ± 44	690 ± 132
<i>Cylindrotheca</i> spp.	409 ± 325	778 ± 287	98 ± 28	1434 ± 1022	2524 ± 1379	41 ± 29	-	100 ± 62
<i>Entomoneis</i> spp.	478 ± 110	442 ± 123	82 ± 27	670 ± 330	16 ± 16	-	3 ± 3	-
<i>Fragilariopsis</i> spp.	-	-	-	-	390 ± 204	-	-	-
<i>Grammatophora</i> spp.	-	-	-	-	12 ± 12	6 ± 2	-	-
<i>Leptocylindrus</i> spp.	16099 ± 2502	814 ± 414	-	140 ± 91	1666 ± 637	1376 ± 819	3 ± 3	143 ± 52
<i>Licmophora</i> spp.	2229 ± 928	577 ± 240	351 ± 173	783 ± 378	2888 ± 1388	1144 ± 515	5 ± 3	191 ± 103
<i>Meringosphaera</i> spp.	121 ± 59	66 ± 26	51 ± 26	4 ± 4	130 ± 87	29 ± 14	2 ± 2	-
<i>Meuniera membranacea</i>	163 ± 84	168 ± 55	5 ± 5	356 ± 153	-	-	-	-
<i>Navicula</i> spp.	5221 ± 1538	17360 ± 4267	4521 ± 1997	16644 ± 3759	5750 ± 2114	11568 ± 1720	268 ± 184	5911 ± 342
<i>Nitzschia</i> spp.	1227 ± 232	713 ± 155	140 ± 30	2551 ± 849	21321 ± 9841	112 ± 57	33 ± 5	2341 ± 1020
<i>Pleurosigma</i> spp.	3 ± 2	1 ± 1	-	2 ± 1	-	-	-	1 ± 0
<i>Pseudo-nitzschia</i> spp.	-	-	-	-	1761 ± 704	-	-	-
<i>Striatella unipunctata</i>	1 ± 1	-	2 ± 1	-	-	-	-	-
<i>Thalassionema</i> spp.	49 ± 49	-	497 ± 425	-	-	-	-	-
<i>Toxarium</i> spp.	-	-	-	-	-	-	-	-
undetermined centric diatoms	213 ± 213	305 ± 116	24 ± 14	446 ± 265	-	59 ± 35	3 ± 3	-
undetermined pennate diatoms	1642 ± 1298	13420 ± 3414	988 ± 302	4510 ± 2720	5729 ± 1842	16885 ± 3810	8 ± 8	5110 ± 1014
<i>Alexandrium</i> spp.	2 ± 1	-	3 ± 1	12 ± 6	-	-	-	-
<i>Amphidinium</i> sp.	660 ± 262	1928 ± 280	321 ± 88	1819 ± 664	-	-	-	-
cf. <i>Gyrodinium</i>	-	-	-	0 ± 0	-	-	8 ± 8	-
cf. <i>Heterocapsa</i>	74 ± 40	83 ± 83	38 ± 23	151 ± 105	-	332 ± 144	2 ± 2	-
<i>Dinoflagellata</i> sp.1	-	-	-	33 ± 33	-	17 ± 17	8 ± 8	-
<i>Dinoflagellata</i> sp.2	-	-	-	1 ± 1	-	-	155 ± 148	-
<i>Prorocentrum lima</i>	2 ± 1	-	1 ± 0	15 ± 10	-	-	19 ± 19	-
<i>Prorocentrum micans</i>	2 ± 1	1 ± 1	-	-	2 ± 1	1 ± 0	-	1 ± 1
microalgal cells < 20µm	1830 ± 664	9343 ± 2599	2996 ± 2661	411 ± 248	179 ± 86	-	1835 ± 1494	-
tot	34470	46412	11606	39093	45080	32814	2480	14488

Table S5. Results of one-way PERMANOVA and pairwise comparisons carried out on the number of taxa (S) and on total density (N) of microphytobenthos taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

		N° of Taxa			Total abundance		
Source of Variation	df	MS	Pseudo-F	P(perm)	MS	Pseudo-F	P(perm)
Site-Macroalgae	7	41.89	10.50	0.0001	1.1E+09	4.613	0.003
Error	24	3.99			2.4E+08		
Total:	31						
Comparisons		P(MC)			P(MC)		
PAS-CC vs PAS-DD		0.414			0.248		
PAS-CC vs PAS-UL		0.270			0.009		
PAS-CC vs PAS-DP		0.367			0.714		
PAS-DD vs PAS-UL		0.105			0.010		
PAS-DD vs PAS-DP		0.805			0.612		
PAS-UL vs PAS-DP		0.119			0.057		
POR-SM vs POR-DD		0.321			0.468		
POR-SM vs POR-UL		0.082			0.028		
POR-SM vs POR-DP		0.002			0.085		
POR-DD vs POR-UL		0.144			0.002		
POR-DD vs POR-DP		0.000			0.017		
POR-UL vs POR-DP		0.593			0.001		
PAS-DD vs POR-DD		0.029			0.229		
PAS-UL vs POR-UL		0.003			0.093		
PAS-DP vs POR-DP		0.128			0.617		

Table S6. Results of PERMANOVA and pairwise comparison test carried out on microphytobenthos community, taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva* cf. *lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

		Multivariate structure		
Source of Variation	df	MS	Pseudo-F	P(perm)
Site-Macroalgae	7	3584.10	8.59	0.0001
Error	24	417.00		
Total:	31			
Comparisons		P(MC)		
PAS-CC vs PAS-DD		0.011		
PAS-CC vs PAS-UL		0.007		
PAS-CC vs PAS-DP		0.227		
PAS-DD vs PAS-UL		0.002		
PAS-DD vs PAS-DP		0.075		
PAS-UL vs PAS-DP		0.052		
POR-SM vs POR-DD		0.003		
POR-SM vs POR-UL		0.002		
POR-SM vs POR-DP		0.008		
POR-DD vs POR-UL		0.002		
POR-DD vs POR-DP		0.002		
POR-UL vs POR-DP		0.001		
PAS-DD vs POR-DD		0.001		
PAS-UL vs POR-UL		0.005		
PAS-DP vs POR-DP		0.011		

Table S7. Results of SIMPER analysis based on four root transformed data, used to identify organisms that mostly contribute to microphytobenthos dissimilarity among site-macroalgae (Cut-off 60%). Av.Ab, mean abundance; Diss, mean dissimilarity; Diss/SD, dissimilarity/standard deviation; Contrib%, contribution relative to single taxon; Cum%, cumulative contribution.

Groups PAS-CC & PAS-DD		Average dissimilarity = 30.19					
	Group PAS-CC	Group PAS-DD					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
<i>Leptocylindrus</i> spp.	11.19	4.96	3.92	3.91	12.99	12.99	
undetermined pennate diatoms	4.52	10.57	3.80	1.74	12.60	25.58	
<i>Cocconeis</i> spp.	7.73	2.79	3.09	2.72	10.24	35.82	
microalgal cells < 20µm	5.25	9.65	2.73	1.34	9.03	44.85	
undetermined centric diatoms	1.35	3.99	2.10	2.38	6.95	51.81	
<i>Navicula</i> spp.	8.30	11.26	1.87	1.88	6.18	57.99	
<i>Licmophora</i> spp.	6.54	3.88	1.80	1.04	5.96	63.95	
Groups PAS-CC & PAS-UL		Average dissimilarity = 35.37					
	Group PAS-CC	Group PAS-UL					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
<i>Leptocylindrus</i> spp.	11.19	0.00	8.14	9.84	23.03	23.03	
microalgal cells < 20µm	5.25	5.65	2.60	2.17	7.36	30.38	
<i>Thalassionema</i> spp.	0.94	3.24	2.03	1.38	5.75	36.13	
undetermined pennate diatoms	4.52	5.33	2.03	1.37	5.74	41.87	
<i>Meuniera membranacea</i>	2.80	0.52	1.87	1.52	5.27	47.14	
<i>Licmophora</i> spp.	6.54	4.10	1.84	1.74	5.20	52.35	
<i>Nitzschia</i> spp.	5.86	3.37	1.82	3.50	5.15	57.50	
<i>Amphidinium</i> sp.	4.05	4.13	1.45	1.40	4.10	61.59	
Groups PAS-DD & PAS-UL		Average dissimilarity = 36.40					
	Group PAS-DD	Group PAS-UL					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
undetermined pennate diatoms	10.57	5.33	3.83	2.88	10.52	10.52	
<i>Leptocylindrus</i> spp.	4.96	0.00	3.57	4.70	9.80	20.32	
microalgal cells < 20µm	9.65	5.65	3.32	1.91	9.11	29.43	
<i>Navicula</i> spp.	11.26	7.77	2.57	1.82	7.07	36.50	
<i>Cocconeis</i> spp.	2.79	6.00	2.30	1.67	6.32	42.82	
<i>Thalassionema</i> spp.	0.00	3.24	2.26	1.49	6.21	49.03	
<i>Meuniera membranacea</i>	3.49	0.52	2.21	2.45	6.08	55.10	
undetermined centric diatoms	3.99	1.31	1.99	1.64	5.46	60.56	
Groups PAS-CC & PAS-DP		Average dissimilarity = 35.20					
	Group PAS-CC	Group PAS-DP					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
<i>Leptocylindrus</i> spp.	11.19	2.60	5.82	3.29	16.54	16.54	
undetermined pennate diatoms	4.52	4.85	3.22	1.44	9.14	25.68	
microalgal cells < 20µm	5.25	2.66	2.72	1.21	7.72	33.40	
<i>Amphidinium</i> sp.	4.05	5.24	2.20	1.17	6.26	39.66	
<i>Cylindrotheca</i> spp.	3.19	4.05	2.13	1.56	6.06	45.72	
<i>Licmophora</i> spp.	6.54	4.15	2.09	0.89	5.93	51.65	
<i>Navicula</i> spp.	8.30	11.13	1.85	2.17	5.26	56.90	
undetermined centric diatoms	1.35	2.73	1.70	0.96	4.82	61.73	
Groups PAS-DD & PAS-DP		Average dissimilarity = 35.12					

		Group PAS-DD	Group PAS-DP				
Species		Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
microalgal cells < 20µm		9.65	2.66	4.83	1.85	13.74	13.74
undetermined pennate diatoms		10.57	4.85	4.43	1.10	12.63	26.37
<i>Cocconeis</i> spp.		2.79	9.17	4.16	3.19	11.84	38.21
<i>Cylindrotheca</i> spp.		5.09	4.05	2.11	1.78	6.01	44.22
undetermined centric diatoms		3.99	2.73	1.96	1.47	5.59	49.81
<i>Licmophora</i> spp.		3.88	4.15	1.76	0.96	5.00	54.81
<i>Amphidinium</i> sp.		6.58	5.24	1.71	0.69	4.88	59.69
<i>Leptocylindrus</i> spp.		4.96	2.60	1.68	1.34	4.78	64.48
Groups PAS-UL & PAS-DP		Average dissimilarity = 40.37					
		Group PAS-UL	Group PAS-DP				
Species		Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
undetermined pennate diatoms		5.33	4.85	3.92	2.46	9.72	9.72
microalgal cells < 20µm		5.65	2.66	3.09	1.27	7.66	17.37
<i>Navicula</i> spp.		7.77	11.13	2.62	2.13	6.50	23.87
<i>Amphidinium</i> sp.		4.13	5.24	2.61	2.07	6.46	30.33
<i>Thalassionema</i> spp.		3.24	0.00	2.47	1.40	6.11	36.45
<i>Cocconeis</i> spp.		6.00	9.17	2.39	2.12	5.93	42.37
<i>Nitzschia</i> spp.		3.37	6.46	2.35	2.09	5.82	48.19
<i>Meuniera membranacea</i>		0.52	3.45	2.29	1.56	5.66	53.86
<i>Cylindrotheca</i> spp.		3.04	4.05	2.20	2.30	5.44	59.30
<i>Leptocylindrus</i> spp.		0.00	2.60	2.01	1.55	4.97	64.26
Groups POR-SM & POR-DD		Average dissimilarity = 41.06					
		Group POR-SM	Group POR-DD				
Species		Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
<i>Nitzschia</i> spp.		10.94	3.02	6.18	2.59	15.05	15.05
<i>Pseudo-nitzschia</i> spp.		6.03	0.00	4.79	6.08	11.66	26.71
cf. <i>Heterocapsa</i>		0.00	4.03	3.32	3.54	8.10	34.81
<i>Leptocylindrus</i> spp.		6.04	3.61	3.10	1.37	7.56	42.37
<i>Cylindrotheca</i> spp.		5.69	1.87	3.06	1.47	7.46	49.83
microalgal cells < 20µm		3.45	0.00	2.79	5.61	6.78	56.61
<i>Fragilariopsis</i> spp.		3.47	0.00	2.61	1.59	6.35	62.96
Groups POR-SM & POR-UL		Average dissimilarity = 68.84					
		Group POR-SM	Group POR-UL				
Species		Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
<i>Nitzschia</i> spp.		10.94	2.38	8.76	3.27	12.72	12.72
undetermined pennate diatoms		8.36	0.60	8.20	6.66	11.91	24.63
<i>Pseudo-nitzschia</i> spp.		6.03	0.00	6.31	7.53	9.17	33.80
<i>Leptocylindrus</i> spp.		6.04	0.46	6.03	3.59	8.76	42.56
<i>Cylindrotheca</i> spp.		5.69	0.00	5.71	2.50	8.30	50.86
<i>Licmophora</i> spp.		6.41	0.89	5.68	2.44	8.25	59.11
<i>Navicula</i> spp.		8.24	3.54	4.79	2.74	6.96	66.07
Groups POR-DD & POR-UL		Average dissimilarity = 69.46					
		Group POR-DD	Group POR-UL				
Species		Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
undetermined pennate diatoms		11.26	0.60	13.69	8.71	19.70	19.70

<i>Navicula</i> spp.	10.30	3.54	8.76	4.42	12.61	32.31
microalgal cells < 20µm	0.00	5.41	7.02	2.40	10.10	42.42
<i>Licmophora</i> spp.	5.03	0.89	5.23	1.94	7.53	49.94
cf. <i>Heterocapsa</i>	4.03	0.42	4.72	2.84	6.79	56.73
<i>Leptocylindrus</i> spp.	3.61	0.46	4.44	1.07	6.39	63.12
Groups POR-SM & POR-DP		Average dissimilarity = 33.59				
		Group POR-SM	Group POR-DP			
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
<i>Pseudo-nitzschia</i> spp.	6.03	0.00	5.40	6.75	16.08	16.08
<i>Nitzschia</i> spp.	10.94	6.42	4.35	1.74	12.94	29.02
microalgal cells < 20µm	3.45	0.00	3.15	5.67	9.38	38.40
<i>Licmophora</i> spp.	6.41	3.31	2.99	1.64	8.90	47.30
<i>Fragilariopsis</i> spp.	3.47	0.00	2.91	1.59	8.68	55.98
<i>Cylindrotheca</i> spp.	5.69	2.84	2.79	1.42	8.31	64.28
Groups POR-DD & POR-DP		Average dissimilarity = 31.50				
		Group POR-DD	Group POR-DP			
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
cf. <i>Heterocapsa</i>	4.03	0.00	4.35	4.23	13.80	13.80
<i>Leptocylindrus</i> spp.	3.61	3.29	3.87	4.71	12.28	26.08
<i>Nitzschia</i> spp.	3.02	6.42	3.69	1.84	11.72	37.80
undetermined pennate diatoms	11.26	8.37	3.04	2.60	9.67	47.47
<i>Amphora</i> spp.	2.35	0.00	2.61	1.49	8.29	55.76
<i>Licmophora</i> spp.	5.03	3.31	2.56	1.72	8.14	63.89
Groups POR-UL & POR-DP		Average dissimilarity = 66.52				
		Group POR-UL	Group POR-DP			
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
undetermined pennate diatoms	0.60	8.37	12.25	5.69	18.41	18.41
microalgal cells < 20µm	5.41	0.00	8.57	2.40	12.88	31.30
<i>Navicula</i> spp.	3.54	8.76	8.25	4.23	12.40	43.70
<i>Nitzschia</i> spp.	2.38	6.42	6.34	2.36	9.53	53.22
<i>Leptocylindrus</i> spp.	0.46	3.29	4.46	2.69	6.70	59.92
<i>Cylindrotheca</i> spp.	0.00	2.84	4.44	4.12	6.68	66.60
Groups PAS-UL & POR-UL		Average dissimilarity = 58.36				
		Group PAS-UL	Group POR-UL			
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
undetermined pennate diatoms	5.33	0.60	5.73	3.15	9.82	9.82
<i>Navicula</i> spp.	7.77	3.54	5.20	2.09	8.90	18.72
<i>Amphidinium</i> sp.	4.13	0.00	5.05	8.02	8.66	27.38
<i>Cocconeis</i> spp.	6.00	2.58	4.16	2.99	7.12	34.50
<i>Licmophora</i> spp.	4.10	0.89	3.85	3.06	6.61	41.10
<i>Thalassionema</i> spp.	3.24	0.00	3.76	1.57	6.44	47.54
<i>Cylindrotheca</i> spp.	3.04	0.00	3.72	5.55	6.37	53.91
<i>Entomoneis</i> spp.	2.91	0.46	2.97	2.65	5.09	59.00
microalgal cells < 20µm	5.65	5.41	2.92	1.08	5.00	64.00
Groups PAS-DP & POR-DP		Average dissimilarity = 46.16				
		Group PAS-DP	Group POR-DP			
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
undetermined pennate diatoms	4.85	8.37	5.32	1.12	11.52	11.52

<i>Amphora</i> spp.	5.25	0.00	4.47	4.77	9.68	21.20
<i>Amphidinium</i> sp.	5.24	0.00	4.12	1.67	8.93	30.13
<i>Entomoneis</i> spp.	4.50	0.00	3.85	7.18	8.35	38.48
<i>Cocconeis</i> spp.	9.17	5.07	3.63	3.90	7.86	46.34
<i>Meuniera membranacea</i>	3.45	0.00	2.76	1.55	5.97	52.31
<i>Cylindrotheca</i> spp.	4.05	2.84	2.50	1.97	5.42	57.74
<i>Licmophora</i> spp.	4.15	3.31	2.42	1.47	5.25	62.99
Groups PAS-DD & POR-DD	Average dissimilarity = 40.42					

	Group PAS-DD	Group POR-DD				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
microalgal cells < 20µm	9.65	0.00	7.19	9.85	17.79	17.79
<i>Amphidinium</i> sp.	6.58	0.00	4.92	10.80	12.17	29.96
<i>Entomoneis</i> spp.	4.46	0.00	3.35	5.03	8.29	38.25
<i>Leptocylindrus</i> spp.	4.96	3.61	2.74	1.96	6.77	45.02
<i>Meuniera membranacea</i>	3.49	0.00	2.62	5.61	6.47	51.49
cf. <i>Heterocapsa</i>	1.07	4.03	2.43	1.85	6.02	57.51
<i>Cylindrotheca</i> spp.	5.09	1.87	2.42	2.11	5.98	63.49

Table S8. Meiofauna assemblages (cells/cm²) associated to the macroalgae collected in Passetto (PAS) and Porto (POR): *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

	PAS-CC	PAS-DD	PAS-UL	PAS-DP	POR-SM	POR-DD	POR-UL	POR-DP
Nematoda	0.04 ± 0.04	0.23 ± 0.23	0.06 ± 0.02	0.47 ± 0.07	0.17 ± 0.17			
Kinorhyncha				0.08 ± 0.08				
Ostracoda				0.12 ± 0.08			0.03 ± 0.03	0.14 ± 0.08
Harpacticoida	0.60 ± 0.16	2.11 ± 0.21	0.25 ± 0.02	3.58 ± 0.82	1.46 ± 0.38	0.40 ± 0.23	0.20 ± 0.10	1.58 ± 0.33
Copepod <i>nauplii</i>	1.84 ± 0.42	2.79 ± 0.38	0.97 ± 0.21	1.33 ± 0.66	13.17 ± 8.10	1.65 ± 0.42	1.77 ± 0.51	8.10 ± 2.59
Cirripeda				0.08 ± 0.05				
Chironomidae	0.04 ± 0.04	0.31 ± 0.19	0.02 ± 0.02	0.28 ± 0.22				
Isopoda				0.29 ± 0.15	0.06 ± 0.06			
Amphipoda	0.06 ± 0.06	0.50 ± 0.38	0.02 ± 0.02	0.40 ± 0.15	0.13 ± 0.07	0.02 ± 0.02		
Halacaridae	0.00 ± 0.00	0.23 ± 0.23		0.07 ± 0.07				
Polychaeta	0.05 ± 0.05	0.08 ± 0.08	0.05 ± 0.03	0.53 ± 0.12				
Gastropoda	0.16 ± 0.10	0.61 ± 0.47	0.08 ± 0.05	2.90 ± 2.33	0.17 ± 0.17			
Bivalvia	0.17 ± 0.11	0.20 ± 0.20						0.11 ± 0.08

Table S9. Results of one-way PERMANOVA and pairwise comparisons carried out on the number of taxa (S) and on total density (N) of meiobenthos taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva cf. lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

		N° of Taxa			Total abundance		
Source of Variation	df	MS	Pseudo-F	P(perm)	MS	Pseudo-F	P(perm)
Site-Macroalgae	7	16.67	13.23	0.0001	101.49	2.15	0.049
Error	24	1.26			47.21		
Total:	31						
Comparisons		P(MC)			P(MC)		
PAS-CC vs PAS-DD		0.466			0.003		
PAS-CC vs PAS-UL		0.715			0.032		
PAS-CC vs PAS-DP		0.004			0.089		
PAS-DD vs PAS-UL		0.793			0.000		
PAS-DD vs PAS-DP		0.014			0.418		
PAS-UL vs PAS-DP		0.009			0.031		
POR-SM vs POR-DD		0.194			0.177		
POR-SM vs POR-UL		0.146			0.176		
POR-SM vs POR-DP		0.744			0.580		
POR-DD vs POR-UL		0.623			0.927		
POR-DD vs POR-DP		0.168			0.032		
POR-UL vs POR-DP		0.137			0.025		
PAS-DD vs POR-DD		0.017			0.001		
PAS-UL vs POR-UL		0.023			0.347		
PAS-DP vs POR-DP		0.002			0.964		

Table S10. Results of PERMANOVA and pairwise comparison test carried out on meiobenthic community, taken in Passetto (PAS) and Porto (POR) for each macroalga: *Cystoseira compressa* (CC), *Dictyota dichotoma* (DD), *Ulva* cf. *lacinulata* (UL), *Dictyopteris polypodioides* (DP) and *Sargassum muticum* (SM).

Source of Variation	df	MS	F	P(perm)
Site-Macroalgae	7	2954.90	4.58	0.0001
Error	24	645.32		
Total:	31			
Comparisons	P(MC)			
PAS-CC vs PAS-DD	0.236			
PAS-CC vs PAS-UL	0.250			
PAS-CC vs PAS-DP	0.008			
PAS-DD vs PAS-UL	0.007			
PAS-DD vs PAS-DP	0.078			
PAS-UL vs PAS-DP	0.004			
POR-SM vs POR-DD	0.064			
POR-SM vs POR-UL	0.046			
POR-SM vs POR-DP	0.553			
POR-DD vs POR-UL	0.729			
POR-DD vs POR-DP	0.011			
POR-UL vs POR-DP	0.010			
PAS-DD vs POR-DD	0.014			
PAS-UL vs POR-UL	0.028			
PAS-DP vs POR-DP	0.003			

Table S11. Results of SIMPER analysis based on four root transformed data, used to identify organisms that mostly contribute to meiobenthos dissimilarity among site-macroalgae (Cut-off 60%). Av.Ab, mean abundance; Diss, mean dissimilarity; Diss/SD, dissimilarity/standard deviation; Contrib%, contribution relative to single taxon; Cum%, cumulative contribution.

Groups PAS-CC & PAS-DD		Average dissimilarity = 42.39					
	Group PAS-CC	Group PAS-DD					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Harpacticoida	0.75	1.45	8.50	2.54	20.05	20.05	
Amphipoda	0.12	0.47	6.05	0.98	14.28	34.33	
Gastropoda	0.28	0.52	5.94	1.15	14.02	48.34	
Copepod <i>nauplii</i>	1.32	1.66	4.90	1.13	11.55	59.90	
Chironomidae	0.10	0.39	4.36	1.14	10.30	70.19	
Groups PAS-CC & PAS-UL		Average dissimilarity = 37.61					
	Group PAS-CC	Group PAS-UL					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Copepod <i>nauplii</i>	1.32	0.97	8.34	1.79	22.16	22.16	
Bivalvia	0.29	0.00	5.50	0.94	14.62	36.78	
Gastropoda	0.28	0.19	5.27	1.16	14.01	50.79	
Harpacticoida	0.75	0.50	5.23	1.61	13.90	64.69	
Nematoda	0.10	0.22	4.01	1.58	10.67	75.36	
Groups PAS-CC & PAS-DP		Average dissimilarity = 58.69					
	Group PAS-CC	Group PAS-DP					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Harpacticoida	0.75	1.85	10.20	3.71	17.38	17.38	
Gastropoda	0.28	1.20	8.91	1.15	15.18	32.56	
Polychaeta	0.12	0.71	6.28	1.77	10.70	43.27	
Copepod <i>nauplii</i>	1.32	1.04	6.10	1.30	10.40	53.66	
Nematoda	0.10	0.68	6.01	1.93	10.24	63.90	
Isopoda	0.00	0.49	4.60	3.79	7.83	71.74	
Groups PAS-DD & PAS-UL		Average dissimilarity = 53.72					
	Group PAS-DD	Group PAS-UL					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Harpacticoida	1.45	0.50	12.96	4.72	24.12	24.12	
Copepod <i>nauplii</i>	1.66	0.97	9.60	2.07	17.87	42.00	
Amphipoda	0.47	0.07	6.93	0.98	12.91	54.90	
Gastropoda	0.52	0.19	6.50	1.14	12.11	67.01	
Chironomidae	0.39	0.08	4.77	1.09	8.89	75.90	
Groups PAS-DD & PAS-DP		Average dissimilarity = 46.77					
	Group PAS-DD	Group PAS-DP					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Gastropoda	0.52	1.20	7.97	1.19	17.03	17.03	
Copepod <i>nauplii</i>	1.66	1.04	6.39	1.22	13.65	30.69	
Nematoda	0.24	0.68	4.89	1.88	10.45	41.14	
Polychaeta	0.14	0.71	4.87	1.76	10.41	51.54	
Amphipoda	0.47	0.54	4.08	1.14	8.73	60.28	
Isopoda	0.00	0.49	3.78	3.45	8.07	68.35	
Chironomidae	0.39	0.36	3.37	1.09	7.21	75.56	
Groups PAS-UL & PAS-DP		Average dissimilarity = 60.80					
	Group PAS-UL	Group PAS-DP					
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%	
Harpacticoida	0.5	1.9	14.0	10.2	23.0	23.0	
Gastropoda	0.2	1.2	9.5	1.1	15.6	38.7	
Polychaeta	0.2	0.7	6.6	1.8	10.8	49.5	
Nematoda	0.2	0.7	5.5	1.7	9.1	58.6	

Copepod <i>nauplii</i>	1.0	1.0	5.1	1.7	8.4	67.0
Isopoda	0.0	0.5	5.1	3.9	8.3	75.3
Groups POR-SM & POR-DD	Average dissimilarity = 45.59					
	Group POR-SM	Group POR-DD				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	3.11	1.25	25.13	1.73	55.11	55.11
Harpacticoida	1.18	0.57	9.66	2.09	21.19	76.31
Groups POR-SM & POR-UL	Average dissimilarity = 48.98					
	Group POR-SM	Group POR-UL				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	3.11	1.29	24.81	1.7	50.66	50.66
Harpacticoida	1.18	0.37	12.21	2.28	24.92	75.58
Groups POR-SM & POR-DP	Average dissimilarity = 33.32					
	Group POR-SM	Group POR-DP				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	3.11	2.73	17.01	1.66	51.05	51.05
Harpacticoida	1.18	1.23	3.62	1.31	10.85	61.91
Nematoda	0.20	0.00	2.98	0.55	8.94	70.84
Groups POR-DD & POR-UL	Average dissimilarity = 23.59					
	Group POR-DD	Group POR-UL				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	1.25	1.29	10.89	1.36	46.16	46.16
Harpacticoida	0.57	0.37	9.02	1.61	38.24	84.41
Groups POR-DD & POR-DP	Average dissimilarity = 42.35					
	Group POR-DD	Group POR-DP				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	1.25	2.73	22.59	1.88	53.34	53.34
Harpacticoida	0.57	1.23	11.59	1.84	27.38	80.72
Groups POR-UL & POR-DP	Average dissimilarity = 43.78					
	Group POR-UL	Group POR-DP				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	1.29	2.73	21.99	1.85	50.23	50.23
Harpacticoida	0.37	1.23	14.5	2.19	33.12	83.35
Groups PAS-DD & POR-DD	Average dissimilarity = 49.11					
	Group PAS-DD	Group POR-DD				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Harpacticoida	1.45	0.57	12.92	2.25	26.31	26.31
Amphipoda	0.47	0.08	7.29	0.96	14.85	41.16
Copepod <i>nauplii</i>	1.66	1.25	6.85	1.23	13.95	55.1
Gastropoda	0.52	0	6.42	0.87	13.08	68.18
Chironomidae	0.39	0	4.84	0.95	9.86	78.05
Groups PAS-UL & POR-UL	Average dissimilarity = 35.79					
	Group PAS-UL	Group POR-UL				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	0.97	1.29	10.24	1.29	28.62	28.62
Harpacticoida	0.5	0.37	6.15	1.32	17.17	45.8
Nematoda	0.22	0	5.49	1.63	15.34	61.14
Gastropoda	0.19	0	4.86	0.89	13.57	74.71
Groups PAS-DP & POR-DP	Average dissimilarity = 60.34					
	Group PAS-DP	Group POR-DP				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Copepod <i>nauplii</i>	1.04	2.73	15.27	1.55	25.31	25.31
Gastropoda	1.20	0.00	8.40	1.03	13.91	39.23
Polychaeta	0.71	0.00	6.49	2.53	10.75	49.98
Nematoda	0.68	0.00	6.24	2.53	10.34	60.31

Harpacticoida	1.85	1.23	5.00	1.70	8.28	68.60
Amphipoda	0.54	0.00	4.19	1.62	6.95	75.55
