Patterns of spatial variability of seagrass epiphytes in the north-west Mediterranean Sea

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Published online: 18 April 2007
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Erratum to: Mar Biol
DOI 10.1007/s00227-006-0559-y

Unfortunately Tables 1–5 contained errors. The correct tables 1–5 are shown below.

The online version of the original article can be found at
<http://dx.doi.org/10.1007/s00227-006-0559-y>.

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Table 1 List of taxa identified in the epiphytic assemblages of leaves and rhizomes

Taxa	Leaves	Rhizomes
Chlorophyta		
<i>Caulerpa racemosa</i> (Forsskål) C. Agardh var. <i>cylindracea</i> (Sonder) Verlaque, Huisman <i>et</i> Boudouresque	—	+
<i>Chaetomorpha linum</i> (O. F. Müller) Kützinger	+	—
<i>Cladophora prolifera</i> (Roth) Kützinger	+	—
<i>Derbesia tenuissima</i> (Moris <i>et</i> De Notaris) P. L. <i>et</i> H. M. Crouan	—	+
<i>Flabellia petiolata</i> (Turra) Nizamuddin	—	+
<i>Pseudochlorodesmis furcellata</i> (Zanardini) Børgesen	+	+
<i>Siphonocladus pusillus</i> (C. Agardh ex Kützinger) Hauck	+	—
Phaeophyta		
<i>Asperococcus</i> sp.	+	+
<i>Cladosiphon cylindricus</i> (Sauvageau) Kylin	+	+
<i>Cladosiphon irregularis</i> (Sauvageau) Kylin	+	+
<i>Dictyota dichotoma</i> (Hudson) J. V. Lamouroux	+	+
<i>Dictyota fasciola</i> (Roth) J. V. Lamouroux	+	+
<i>Dictyota linearis</i> (C. Agardh) Greville	+	+
<i>Ectocarpus siliculosus</i> (Dillwyn) Lyngbye	+	—
<i>Elachista intermedia</i> P. L. <i>et</i> H. M. Crouan	+	—
<i>Giraudia sphacelarioides</i> Derbès <i>et</i> Solier	+	—
<i>Padina pavonica</i> (Linnaeus) Thivy	—	+
<i>Sphacelaria cirrosa</i> (Roth) C. Agardh	—	+
Rhodophyta		
<i>Acrothamnion preissii</i> (Sonder) Wollaston	+	+
<i>Amphiroa rigida</i> J. V. Lamouroux	+	+
<i>Anthithamnion cruciatum</i> (C. Agardh) Nägeli	+	—
<i>Apoglossum ruscifolium</i> (Turner) J. Agardh	+	+
<i>Botryocladia boergesenii</i> J. Feldmann	+	+
<i>Botryocladia botryoides</i> (Wulfen) J. Feldmann	—	+
<i>Ceramium codii</i> (Richards) G. Feldmann	+	—
<i>Ceramium diaphanum</i> (Lighfoot) Roth	+	—
<i>Chondria mairei</i> G. Feldmann	—	+
<i>Contarinia peyssonelliaeformis</i> Zanardini	—	+
<i>Dipterosiphonia dendritica</i> (C. Agardh) F. Schmitz	—	+
<i>Dipterosiphonia rigens</i> (Schousboe) Falkenberg	—	+
<i>Feldmannophycus rayssiae</i> (Feldmann <i>et</i> Feldmann-Mazoyer) Augier <i>et</i> Boudouresque	—	+
<i>Halitilon virgatum</i> (Zanardini) Garbary <i>et</i> H. W. Johansen	—	+
<i>Heterosiphonia crispella</i> (C. Agardh) Wynne	+	—
<i>Hydrolithon cruciatum</i> (Bressan) Chamberlain	+	+
<i>Hydrolithon farinosum</i> (Lamouroux) Penrose <i>et</i> Chamberlain	+	—
<i>Hypoglossum hypoglossoides</i> (Stackhouse) Collins <i>et</i> Harvey	+	+
<i>Jania rubens</i> J. V. Lamouroux	+	+
<i>Laurencia</i> spp.	+	+
<i>Lithophyllum cystoseirae</i> (Hauck) Heydrich	—	+
<i>Mesophyllum lichenoides</i> (J. Ellis) M. Lemoine	—	+
<i>Monosporus pedicellatus</i> (Smith) Solier	+	+
<i>Nitophyllum punctatum</i> (Stackhouse) Greville	+	+
<i>Peyssonnelia bornetii</i> Boudouresque <i>et</i> Denizot	—	+
<i>Plocamium cartilagineum</i> (Linnaeus) Dixon	—	+

Table 1 continued

Taxa	Leaves	Rhizomes
<i>Pneophyllum coronatum</i> (Rosanoff) Penrose	+	+
<i>Pneophyllum fragile</i> Kützinger	+	+
<i>Polysiphonia</i> spp.	+	+
<i>Rhodomenia</i> sp.	—	+
<i>Womersleyella setacea</i> (Hollenberg) R. E. Norris	+	+
<i>Wrangelia penicillata</i> (C. Agardh) C. Agardh	+	—
Rhizopoda		
<i>Cyclocibicides vermiculatus</i> d'Orbigny	+	+
<i>Elphidium crispum</i> Linnaeus	+	+
<i>Lobatula lobatula</i> Walker et Jacob	+	+
<i>Miniacina miniacea</i> Linnaeus	—	+
<i>Planorbulina mediterraneensis</i> Walker et Jacob	+	+
<i>Rosalina brady</i> Cushman	+	—
Porifera		
<i>Clathrina contorta</i> Bow	—	+
<i>Cliona viridis</i> Schmidt	—	+
<i>Dysidea</i> sp.	—	+
<i>Oscarella lobularis</i> Schmidt	—	+
<i>Plakortis simplex</i> Schulze	+	+
<i>Sycon raphanus</i> Schmidt	—	+
<i>Tethya citrina</i> Sarà et Melone	—	+
Cnidaria		
<i>Laomedea angulata</i> Hinks	—	+
<i>Dynamena</i> sp.	+	—
<i>Obelia geniculata</i> Linnaeus	+	+
<i>Orthopyxis asymmetrica</i> Stechow	+	+
<i>Plumularia obliqua</i> Thompson	+	+
<i>Podocoryne carnea</i> M. Sars	—	+
<i>Sertularia perpusilla</i> Stechow	+	+
Anellida		
<i>Janua pagenstecheri</i> Quatrefageau	+	+
<i>Pomatoceros triqueter</i> Linnaeus	—	+
Bryozoa		
<i>Aetea truncata</i> Landsborough	+	+
<i>Beania hirtissima</i> Heller	—	+
<i>Beania magellanica</i> Bush	—	+
<i>Caberea boryi</i> Audouin	—	+
<i>Callopora lineata</i> Linnaeus	+	+
<i>Carbasea papyrea</i> Pallas	—	+
<i>Cellepora pumicosa</i> Pallas	—	+
<i>Cellaria salicornioides</i> Lamouroux	—	+
<i>Chlidonia pyriformis</i> Bertolini	—	+
<i>Chorizopora brogliartii</i> Audouin	+	+
<i>Collarina balzaci</i> Audouin et Savigny	+	+
<i>Cribrilaria radiata</i> Moll	+	+
<i>Cryptosula pallasiana</i> Moll	—	+
<i>Electrae posidonia</i> Gautier	+	+
<i>Escharoides coccinea</i> Abildgaard	—	+

Table 1 continued

Taxa	Leaves	Rhizomes
<i>Fenestrulina malusii</i> Audouin	+	+
<i>Idmonea</i> sp.	+	+
<i>Lichenopora radiata</i> Audouin et Savigny	+	+
<i>Margaretta cereoides</i> Ellis et Solander	—	+
<i>Microporella ciliata</i> Pallas	—	+
<i>Pherusella tubulosa</i> Ellis et Solander	+	+
<i>Plagioecia patina</i> Lamarck	—	+
<i>Reteporella</i> sp.	—	+
<i>Schizobrachiella sanguinea</i> Norman	—	+
<i>Scrupocellaria reptans</i> Linneaus	+	+
<i>Tubulipora</i> sp.	+	+
Tunicata		
<i>Botryllus schlosseri</i> Pallas	+	+
<i>Didemnum fulgens</i> Milne-Edwards	—	+
<i>Diplosoma listerianum</i> Milne-Edwards	—	+
<i>Sidnyum turbinatum</i> Savigny	—	+
<i>Trididemnum cereum</i> Giard	+	+

Table 2 PERMANOVA on the structure of the epiphytic assemblages of leaves and of rhizomes

Source	df	Epiphytic assemblages of leaves				Epiphytic assemblages of rhizomes				Denominator for F	Number of permutable units
		MS	Pseudo F	P	P (MC)	MS	Pseudo F	P	P (MC)		
Habitat = Ha	2	66453.63	0.79	0.574	0.605	23443.40	0.70	0.607	0.806	Me (Ha)	6
Meadow (Ha) = Me(Ha)	3	84027.47	36.50	0.002	0.001	33658.71	5.19	0.001	0.001	Si (Me(Ha))	12
Site (Me(Ha)) = Si(Me(Ha))	6	2302.18	1.79	0.046	0.032	6480.13	1.01	0.439	0.447	Pl (Si(Me(Ha)))	36
Plot (Si(Me(Ha))) = Pl(Si(Me(Ha)))	24	1283.57	1.74	0.001	0.001	6395.89	4.00	0.001	0.001	Residual	180
Residual	144	736.48				1597.37					
Total	179										

Significant effects are indicated in bold

Table 3 Results of the indicator species analysis (IndVal), of epyphytic assemblages of leaves

Meadows	Species	IndVal	Level	Meadows					
				<i>L</i> <i>a/p</i>	<i>B</i> <i>a/p</i>	<i>V</i> <i>a/p</i>	<i>M</i> <i>a/p</i>	<i>G</i> <i>a/p</i>	<i>P</i> <i>a/p</i>
<i>L</i>	<i>Pneuphyllum</i> spp.	84.40	1	104./30	114./30	0./3	87./30	111./30	141./29
	<i>Womersleyella setacea</i>	51.98	1	3./17	0./0	0./0	0./0	0./3	0./0
	<i>Electrae posidoniae</i>	49.83	1	32./25	0./0	0./4	21./26	0./10	0./4
	<i>Rosalina brady</i>	21.86	1	1./9	0./1	0./0	0./0	0./3	0./1
<i>B</i>	<i>Laurencia</i> spp.	64.01	1	0./0	9./24	1./9	1./7	0./0	0./0
	<i>Hypoglossum hypoglossoides</i>	30.87	1	0./0	1./18	1./15	0./0	0./4	0./2
	<i>Collapora lineata</i>	13.64	3	0./0	0./5	0./1	0./0	0./0	0./0
	<i>Ectocarpus siliculosus</i>	11.45	15	0./0	1./8	0./1	0./0	0./0	1./2
<i>V</i>	<i>Plumularia obliqua</i>	100	1	0./0	0./0	106/30	0./0	0./0	0./0
	<i>Heterosiphonia crispella</i>	79.61	1	0./1	0./1	24./30	2./14	1./5	3./13
	<i>Trididemnum cereum</i>	48.3	1	0./0	0./0	1./16	0./1	0./0	0./1
	<i>Obelia geniculata</i>	46.77	1	0./0	1./9	4./20	0./0	0./0	1./8
<i>M</i>	<i>Cladosiphon irregularis</i>	33.83	1	0./0	1./3	1./14	0./0	0./0	0./0
	<i>Dictyota linearis</i>	60.35	1	4./11	4./10	0./2	33./23	0./3	0./2
	<i>Wrangelia penicillata</i>	53.16	1	1./3	0./0	0./16	1./28	0./0	0./0
	<i>Sphacelaria cirrosa</i>	71.97	1	0./0	1./27	0./0	0./0	9./27	1./19
<i>P</i>	<i>Tubulipora</i> sp.	42.35	1	0./0	5./28	0./1	0./0	7./24	1./7
	<i>Polysiphonia</i> spp.	32.64	1	0./1	0./0	0./0	0./0	1./11	0./0
	<i>Ceramium codii</i>	24	1	0./0	0./0	0./0	0./0	0./9	0./4
	<i>Ceramium diaphanum</i>	19.1	2	0./3	0./0	0./0	0./0	1./7	0./1
<i>G</i>	<i>Elachista intermedia</i>	64.05	1	0./0	1./13	8./23	0./0	19./27	54./29
	<i>Elphidium crispum</i>	18.75	1	0./0	1./8	0./1	0	1./3	2./9
	<i>Chorizopora brogniartii</i>	9.58	20	0./0	0./2	0./0	0./0	0./2	1./4

Numbers indicate cases (numbers of sample out of 30) where each taxon is significantly different in abundance *a* or presence *p* among the studied meadows. *L* Livorno, *B* Baratti, *V* Secche di Vada, *M* Secche della Meloria, *G* Isola di Gorgona, *P* Isola di Pianosa

Table 4 Results of the indicator species analysis (IndVal), of epyphytic assemblages of rhizomes

Meadows	Species	IndVal	Level	Meadows					
				<i>L</i>	<i>B</i>	<i>V</i>	<i>M</i>	<i>G</i>	<i>P</i>
				<i>alp</i>	<i>alp</i>	<i>alp</i>	<i>alp</i>	<i>alp</i>	<i>alp</i>
<i>L</i>	<i>Sphacelaria cirrosa</i>	35.26	1	2/12	0/0	0/1	0/0	0/0	0/1
	<i>Pseudochlorodesmis furcellata</i>	19.92	1	1/8	0/1	0/1	0/0	0/0	0/0
	<i>Schizobrachiella sanguinea</i>	14.83	4	6/7	1/2	2/6	0/1	0/0	0/0
	<i>Rhodomenia</i> sp.	13.77	1	1/6	0/0	0/0	0/2	0/0	0/0
<i>B</i>	<i>Plakortis simplex</i>	33.47	1	0/3	18/19	7/6	1/2	6/4	2/2
	<i>Pherusella tubulosa</i>	24.61	1	0/0	5/13	1/4	0/0	2/7	1/5
<i>V</i>	<i>Fenestrulina malusii</i>	56.61	1	0/0	4/19	15/30	1/2	3/9	0/0
	<i>Janua pagenstecheri</i>	51.44	1	0/0	0/5	2/19	0/1	0/3	0/0
	<i>Cellepora pumicosa</i>	41.94	1	0/0	1/4	8/15	0/0	0/0	0/0
	<i>Laomedea angulata</i>	36.10	1	0/0	10/25	14/23	1/6	0/0	0/0
	<i>Sidnyum turbinatum</i>	34.07	1	1/9	2/4	7/18	2/12	0/2	1/9
	<i>Cribrilaria radiata</i>	27.00	1	0/0	0/1	2/13	1/6	0/0	0/0
	<i>Callopora lineata</i>	19.68	4	0/3	2/12	3/12	0/1	0/0	0/3
	<i>Dictyota dichotoma</i>	68.47	1	3/13	8/19	0/1	43/26	0/0	3/13
	<i>Didemnum fulgens</i>	45.07	1	0/3	0/1	1/1	35/14	0/0	0/3
	<i>Margaretta cereoides</i>	42.31	1	0/3	0/1	2/4	12/17	1/0	0/3
	<i>Dictyota linearis</i>	19.23	1	2/7	0/0	0/0	4/8	0/0	2/7
<i>M</i>	<i>Botryocladia boergesenii</i>	13.33	4	0/0	0/0	0/0	1/4	0/0	0/0
	<i>Trididemnum cereum</i>	11.01	15	0/0	2/2	2/4	4/6	0/0	0/0
	<i>Cliona viridis</i>	26.67	1	0/0	0/0	0/0	0/0	8/8	0/0
	<i>Podocoryne carnea</i>	26.67	1	0/0	0/0	0/0	0/0	4/8	0/0
	<i>Pneophyllum</i> spp.	23.02	2	1/3	0/1	1/1	1/1	10/11	3/4
	<i>Hypoglossum hypoglossoides</i>	19.91	1	0/3	0/0	0/0	0/0	3/7	0/1
	<i>Orthopyxis asymmetrica</i>	18.92	1	1/7	1/2	1/4	0/2	3/11	0/0
	<i>Tubulipora</i> sp.	16.35	2	0/0	0/1	0/0	0/0	3/7	1/6
	<i>Hydrolithon farinosum</i>	37.34	1	0/0	1/1	25/20	11/10	6/10	55/20
	<i>Miniacina miniacina</i>	36.29	1	0/0	0/1	6/13	0/0	15/22	14/27
<i>P</i>	<i>Idmonea</i> sp.	33.71	1	0/0	4/13	0/1	0/0	3/11	5/22
	<i>Peyssonnelia bornetii</i>	20.68	1	1/5	0/0	0/0	0/0	0/0	9/7
	<i>Oscarella lobularis</i>	12.63	4	0/1	0/0	0/0	0/0	4/2	15/5

Numbers indicate cases (numbers of samples out of 30) where each taxon is significantly different in abundance *a* or presence *p* among the studied meadows. *L* Livorno, *B* Baratti, *V* Secche di Vada, *M* Secche della Meloria, *G* Isola di Gorgona, *P* Isola di Pianosa

Table 5 Results of four-way ANOVA on number of species and on total percentage cover of epiphytic assemblages of leaves and of rhizomes

Source	df	Epiphytic assemblages of leaves						Epiphytic assemblages of rhizomes					
		Number of species			Percentage cover			Number of species			Percentage cover		
		MS	F	P	MS	F	P	MS	F	P	MS	F	P
Habitat = Ha	2	13.12	0.060	NS	30.93	29.400	*	51.45	0.490	NS	296.13	0.470	NS
Meadow (Ha) = Me(Ha)	3	222.57	4.460	NS	1.05	0.080	NS	105.69	1.110	NS	623.51	5.600	*
Site (Me(Ha)) = Si(Me(Ha))	6	49.86	8.390	***	12.81	1.570	NS	95.38	4.560	**	111.26	1.030	NS
Plot (Si(Me(Ha))) = Pl(Si(Me(Ha)))	24	5.94	1.760	**	8.17	2.120	**	20.91	2.080	**	107.58	4.630	***
Residual = Res	144	3.37			3.86			10.04			23.26		
Total	179												
Cochran's <i>C</i> test		0.0849	NS		0.0125	NS		0.0976	NS		0.1155	NS	
Transformation		None			None			None			None		
SNK test for factor habitat					Islands > coasts = banks								
Mean ($\pm$ SE)					6.47 ($\pm$ 0.31) > 5.14 ($\pm$ 0.33) = 5.33 ($\pm$ 0.18)								

NS not significant

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$