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Coralligenous formations dominated by Eunicella cavolini (Koch, 1887) in the NE Mediterranean: biodiversity and structure

MARIA SINI, JOAQUIM GARRABOU, VASILIS TRYGONIS, DROSOS KOUTSOUBAS

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Supplementary Data

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The supplementary material includes additional information on: the sampling methods, the list of species and morpho-functional groups used for the analyses, the statistical results, and a full inventory of all species observed quantitatively or qualitatively during the study.

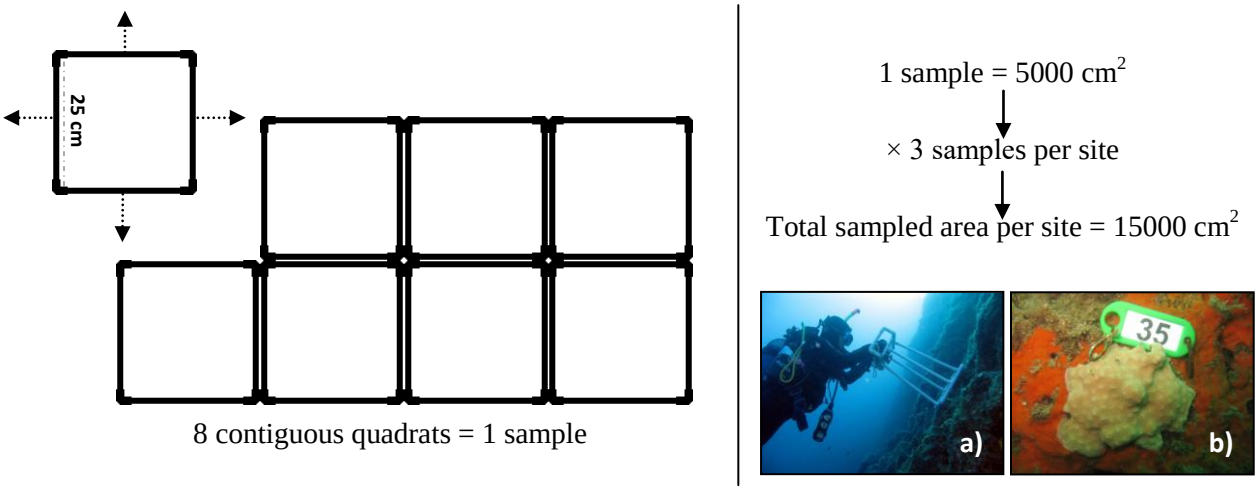

Fig. S1 Schematic representation of the sampling protocol used on coralligenous assemblages for the acquisition of photographic quadrat samples. Each sample consisted of eight images. The first image per sample was acquired at a haphazardly chosen position within the coralligenous assemblage, while the remaining seven images were obtained in a contiguous manner following any possible direction (black dotted arrows) in order to avoid potential discontinuities of the assemblage. Inset images illustrate a) the *in situ* use of the quadrat-camera apparatus, and b) a labelled voucher specimen before collection for further analysis in the laboratory.

Table S1. Main species/morphological clusters recorded in photoquadrat image samples of coralligenous assemblages in the N Aegean Sea. MFG: morpho-functional group, AV: Ag. Vasso, Lef: Lefteris, Nem: Nemessis, Spi: Spilia, Pal: Palios, Kal: Kalloni. Grey colour indicates species/morphological clusters found at all six sites. Asterisks denotes species/morphological clusters found in all localities.

Taxa	MFG	Generation time	AV	Lef	Nem	Spi	Pal	Kal
Ochrophyta								
Dictyota implexa (Desfontaines) J.V.Lamouroux	Algae erect	Seasonal			+			
Mucilaginous algae indet.	Algae turf/encrusting	Seasonal			+	+		+
Chlorophyta								
Codium effusum (Rafinesque) Delle Chiaje	Algae encrusting	Perennial			+			
Cladophora pellucida (Hudson) Kützing	Algae turf	Perennial	+	+	+	+		
Flabellia petiolata (Turra) Nizamuddin*	Algae erect	Perennial	+		+	+	+	
Halimeda tuna (J.Ellis & Solander) J.V.Lamouroux	Algae erect	Perennial			+	+	+	
Pseudochlorodesmis furcellata (Zanardini) Børgesen	Algae turf	Perennial			+	+		
Valonia macrophysa Kützing	Algae encrusting	Seasonal	+	+	+	+		
Turf indet.	Algae turf	Seasonal	+	+	+	+	+	+
Rhodophyta								
Acrodiscus vidovichii (Meneghini) Zanardini	Algae erect	Seasonal			+	+	+	
Amphiroa rigida J.V.Lamouroux	Algae erect	Perennial			+			
Lithophyllum cf. *stictaeforme/cabiochiae**	Algae encrusting	Perennial	+	+	+	+	+	
Mesophyllum spp.	Algae encrusting	Perennial	+	+	+	+	+	+
Neogoniolithon mamillosum (Hauck) Setchell & L.R.Mason*	Algae encrusting	Perennial	+	+	+	+	+	
Peyssonnelia rosa-marina Boudouresque & Denizot*	Algae encrusting	Perennial	+	+	+	+	+	
Peyssonnelia cf. *rubra/bornetii*	Algae encrusting	Perennial	+	+	+	+	+	+
Peyssonnelia squamaria (S.G.Gmelin) Decaisne	Algae encrusting	Perennial	+	+	+	+	+	+
Peyssonnelia spp.*	Algae encrusting	Perennial	+	+	+	+	+	
Sphaerococcus coronopifolius Stackhouse	Algae erect	Seasonal			+	+		
Soft red algae indet.*	Algae turf	Seasonal	+	+	+	+	+	
Encrusting calcareous algae.	Algae encrusting	Perennial	+	+	+	+	+	+
Foraminifera								
Miniacina miniacea (Pallas, 1766)	Animal encrusting	Perennial		+	+			
Porifera								
Acanthella acuta Schmidt, 1862	Animal massive	Perennial	+				+	+
Agelas oroides (Schmidt, 1864)*	Animal massive	Perennial	+	+	+	+	+	
Aplysilla sulfurea Schulze, 1878*	Animal encrusting	Perennial	+	+		+	+	+
Axinella cannabina (Esper, 1794)	Animal tree	Perennial						+
Axinella damicornis (Esper, 1794)	Animal tree	Perennial	+	+	+	+	+	+
Axinella verrucosa (Esper, 1794)	Animal tree	Perennial	+	+			+	+
Axinella spp.*	Animal tree	Perennial	+	+	+	+	+	
Black/grey encrusting Porifera	Animal encrusting	Perennial	+	+	+	+	+	+
Cacospongia mollior (Schmidt, 1862)	Animal encrusting	Perennial					+	
Chondrosia reniformis Nardo, 1847*	Animal massive	Perennial		+		+		+
Clathrina clathrus (Schmidt, 1864)	Animal massive	Perennial		+				+
Cliona celata Grant, 1826	Animal borer	Perennial					+	
Cliona schmidti (Ridley, 1881)*	Animal borer	Perennial		+	+		+	
Cliona viridis (Schmidt, 1862)*	Animal borer	Perennial	+	+	+	+		+
Cliona spp.	Animal borer	Perennial		+	+	+		
Crambe crambe/*Spirastrella cunctatrix*	Animal encrusting	Perennial	+	+	+	+	+	+
Dendroxea lenis (Topsent, 1892)	Animal encrusting	Perennial	+	+			+	
Dictyonella incisa (Schmidt, 1880)*	Animal massive	Perennial	+			+	+	+
Dictyonella sp.	Animal massive	Perennial				+		+

Taxa	MFG	Generation time	AV	Lef	Nem	Spi	Pal	Kal
Dysidea fragilis (Montagu, 1814)	Animal massive	Perennial	+	+			+	
Fasciospongia cavernosa (Schmidt, 1862)	Animal encrusting	Perennial						+
Haliclona (Halichoclona) fulva (Topsent, 1893)*	Animal encrusting	Perennial	+	+		+	+	+
Haliclona (Soestella) mucosa (Griessinger, 1971)*	Animal encrusting	Perennial	+	+	+		+	
Haliclona sp.1	Animal encrusting	Perennial				+		
Haliclona sp.2	Animal encrusting	Perennial						+
Hemimycale columella (Bowerbank, 1874)	Animal encrusting	Perennial					+	
Hexadella racovitzai Topsent, 1896	Animal encrusting	Perennial	+	+	+	+		
Ircinia oros (Schmidt, 1864)*	Animal massive	Perennial	+			+	+	+
Ircinia paucifilamentosa Vacelet, 1961	Animal massive	Perennial				+		
Ircinia variabilis (Schmidt, 1862)	Animal massive	Perennial	+			+		
Oscarella imperialis Muricy, Boury-Esnault, Bézac & Vacelet, 1996	Animal encrusting	Perennial		+				
Petrosia (Petrosia) ficiformis (Poiret, 1789)*	Animal massive	Perennial		+	+		+	+
Phorbas tenacior (Topsent, 1925)	Animal encrusting	Perennial	+	+			+	+
Plakina sp.	Animal encrusting	Perennial		+				
Pleraplysilla spinifera (Schulze, 1879)	Animal encrusting	Perennial					+	
Sarcotragus foetidus Schmidt, 1862*	Animal massive	Perennial	+			+	+	+
Sarcotragus spinosulus Schmidt, 1862	Animal massive	Perennial		+			+	+
Suberitidae indet.	Animal massive	Perennial						+
Tethya aurantium (Pallas, 1766)	Animal massive	Perennial					+	
Yellow encrusting Porifera	Animal encrusting	Perennial	+	+	+	+	+	+
Cnidaria								
Hydrozoa indet.	Animal erect	Seasonal			+	+		
Caryophyllia (Caryophyllia) inornata (Duncan, 1878)	Animal cup	Perennial	+	+	+	+	+	+
Eunicella cavolini (Koch, 1887)	Animal tree	Perennial	+	+	+	+	+	+
Hoplangia durotrix Gosse, 1860	Animal cup	Perennial		+		+		
Leptopsammia pruvoti Lacaze-Duthiers, 1897*	Animal cup	Perennial	+	+	+	+	+	
Madracis pharensis (Heller, 1868)	Animal encrusting	Perennial	+	+			+	
Paracyathus pulchellus (Philippi, 1842)	Animal cup	Perennial		+		+		
Parazoanthus axinellae (Schmidt, 1862)	Animal encrusting	Perennial	+	+	+	+	+	+
Phyllangia americana mouchezii (Lacaze-Duthiers, 1897)	Animal cup	Perennial		+				
Polycyathus muellerae (Abel, 1959)	Animal cup	Perennial	+	+				+
Scleractinia indet.*	Animal cup	Perennial	+	+	+	+		+
Annelida								
Eupolymnia nebulosa (Montagu, 1818)	Animal encrusting	Perennial						+
Myxicola infundibulum (Montagu, 1808)	Animal encrusting	Perennial	+	+				
*Filograna implexa / Salmacina dysteri**	Animal epibiont	Perennial		+	+	+		+
Serpula vermicularis Linnaeus, 1767	Animal encrusting			+			+	+
Serpulidae indet.*	Animal encrusting	Perennial	+	+	+		+	+
Bryozoa								
Adeonella spp.*	Animal tree	Perennial		+	+	+		+
Beania magellanica (Busk, 1852)	Animal encrusting	Perennial			+	+		
Bugula spp.	Animal tree	Perennial		+	+			
Cellaria sp.	Animal erect	Seasonal			+	+		
Hornera frondiculata (Lamarck, 1816)	Animal tree	Perennial			+	+		
Reteporella grimaldii (Jullien, 1903)	Animal tree	Perennial	+	+		+		
Rhynchozoon neapolitanum Gautier, 1962	Animal encrusting	Perennial	+	+	+	+	+	+
Schizomavella spp. (Hassall, 1842)	Animal encrusting	Perennial	+	+	+	+	+	+
Schizoretepora sp.	Animal tree	Perennial				+		
Smittina cervicornis (Pallas, 1766)	Animal tree	Perennial				+		

Taxa	MFG	Generation time	AV	Lef	Nem	Spi	Pal	Kal
Bryozoa indet.*	Animal encrusting	Perennial	+		+	+	+	
Tunicata								
Aplidium elegans (Giard, 1872)	Animal encrusting	Perennial	+	+				
Clavelina dellavallei (Zirpolo, 1825)	Animal epibiont	Seasonal			+	+		+
Cystodytes dellechiajei (Della Valle, 1877)	Animal encrusting	Perennial						+
Didemnum sp.1	Animal encrusting	Perennial						+
Didemnum sp.2	Animal encrusting	Perennial						+
Halocynthia papillosa (Linnaeus, 1767)*	Animal massive	Perennial	+	+	+			+
Mollusca								
Lithophaga lithophaga (Linnaeus, 1758)	Animal borer						+	
Rocellaria dubia (Pennant, 1777)	Animal borer	Perennial			+			
Thylacodes arenarius (Linnaeus, 1758)	Animal encrusting	Perennial					+	
Bivalvia indet.	Animal encrusting	Perennial			+			

Table S2. PERMANOVA analyses and pairwise comparisons of coralligenous assemblage structure based on the a) number of species and b) percent cover (square-root transformation) of perennial morpho-functional groups using Bray-Curtis similarity matrices. Statistically significant differences (P<0.05) are noted in bold.

	PERMANOVA						Pairwise comparisons		
	Source	df	SS	MS	Pseudo-F	*P* (perm)	Sites within Locality	t	*P* (perm)
Num. species	Locality	2	2987.8	1493.9	4.0	0.09	Ag. Vasso – Lefteris (Pelio)	2.7	**0.02**
	Site(Locality)	3	1200.2	400.1	2.7	**0.04**	Nemessis – Spilia (Chalkidiki)	1.0	0.
	Res	12	1813.8	151.2			Palios – Kalloni (Lesvos)	17	0.
	Total	17	6001.8						
Percent cover	Locality	2	5377	2688.5	2.8	0.14	Ag. Vasso – Lefteris (Pelio)	2	**0.03**
	Site(Locality)	3	2853.2	951.1	3.9	**0.01**	Nemessis – Spilia (Chalkidiki)	0.7	0.58
	Res	12	2884	240.3			Palios – Kalloni (Lesvos)	4.5	**0.01**
	Total	17	11114						

Table S3. PERMANOVA analyses and pairwise comparisons of coralligenous community composition based on the a) number of species and b) percent cover (square-root transformation) of perennial species using Bray-Curtis similarity matrices. Statistically significant differences (P<0.05) are noted in bold.

	PERMANOVA						Pairwise comparisons		
	Source	df	SS	MS	Pseudo-F	*P* (perm)	Sites within Locality	t	*P* (perm)
Num. species	Locality	2	6762.2	3381.1	1.7	0.17	Ag. Vasso – Lefteris (Pelio)	1.9	**0.04**
	Site(Locality)	3	5897.6	1965.9	5.0	**0.00**	Nemessis – Spilia (Chalkidiki)	1.6	0.09
	Res	12	4755.9	396.3			Palios – Kalloni (Lesvos)	2.7	**0.01**
	Total	17	17416.0						
Percent cover	Locality	2	10121.0	5060.7	1.5	0.22	Ag. Vasso – Lefteris (Pelio)	2.3	**0.02**
	Site(Locality)	3	1017.0	3390.7	4.8	**0.00**	Nemessis – Spilia (Chalkidiki)	1.1	0.37
	Res	12	8531.7	711.0			Palios – Kalloni (Lesvos)	3.0	**0.01**
	Total	17	28825.0						

Table S4. Summary of similarity percentage analysis (SIMPER) listing species per morpho-functional group (MFG) that cumulatively contribute 80% to the observed dissimilarity (Bray Curtis) of coralligenous assemblages among distinct localities. Analysis was performed on square-root transformed data of perennial species percent cover. Asterisks denote species with the highest percent cover in the first locality appearing per column.

Dissimilarity among localities					
Pelio vs. Chalkidiki (54.3%)	%	Pelio vs. Lesvos (59.8%)	%	Chalkidiki vs. Lesvos (66.2%)	%
Algae encrusting					
P. squamaria	6.3	*N. mamillosum*	4.8	*P. squamaria**	7.3
Mesophyllum spp.	3.6	Encrusting calcareous algae*	4.1	*N. mamillosum*	4.7
*P. rubra/borneti**	3.6	*P. squamaria**	4.0	*Mesophyllum* spp.*	3.6
N. mamillosum	3.4	*P. rubra/borneti**	3.3	Encrusting calcareous algae*	3.5
Peyssonnelia indet.	3.4	*L. stictaeforme/cabiochiae*	2.7	*Peyssonnelia* indet.*	3.3
P. rosa-marina	2.9	*Peyssonnelia* indet.*	2.4	*P. rosa-marina**	2.9
Encrusting calcareous algae*	2.6	*P. rosa-marina**	2.2	*L. stictaeforme/cabiochiae*	2.7
L. stictaeforme/cabiochiae	1.9	*Mesophyllum* spp. *	1.9	*P. rubra/bornetii**	1.6
Algae erect					
F. petiolata	5.9	*F. petiolata**	1.2	*F. petiolata**	5.7
H. tuna	1.3	–		*H. tuna**	1.0
Algae turf					
*C. pellucida**	3.1	*C. pellucida**	3.1	–	
Animal borer					
C. viridis	1.6	–		*C. viridis**	1.2
Animal cup					
*P. muellerae**	1.1	*P. muellerae**	1.1	–	
Animal encrusting					
*P. axinellae**	5.9	*P. axinellae**	4.1	*C. crambe/S. cunctatrix*	4.7
*H. racovitzai**	2.7	*C. crambe / S. cunctatrix*	4.0	*P. tenacior*	3.2
*C. crambe/S. cunctatrix **	2.3	*P. tenacior*	3.1	*H. fulva*	2.9
*H. fulva**	1.7	*H. racovitzai**	3.0	*C. dellechiajei*	2.4
*D. lenis**	1.5	*C. dellechiajei*	2.5	*P. axinellae*	2.0
B. magellanica	1.4	*H. fulva*	2.5	*Didemnum* sp.2	1.7
Black/grey encrusting Porifera*	1.4	*Didemnum* sp.2	1.8	*B. magellanica**	1.2
*M. pharensis**	1.3	*M. pharensis**	1.2		1.2
–		*D. lenis**	1.1	–	
–		Black/grey encrusting Porifera*	1.1	–	
Animal epibiont					
F. implexa/S. dysteri	1.5	–		*F. implexa/S. dysteri**	1.3
Animal massive					
*A. oroides**	7.6	*A. oroides**	5.7	*P. ficiformis*	3.9
*C. reniformis**	5.2	*C. reniformis**	4.6	*C. reniformis*	3.7
*I. oros**	1.3	*P. ficiformis*	4.0	*A. oroides*	3.6
*S. foetidus**	1.3	*S. foetidus*	2.6	*S. foetidus*	2.6
I. paucifilamentosa	1.1	*I. oros*	1.5	*I. oros*	1.4
–		*D. fragilis*	1.3	*D. fragilis*	1.2
–		*S. spinosulus*	1.2	*S. spinosulus*	1.1
Animal tree					
Adeonella spp.	2.0	*E. cavolini**	2.1	*E. cavolini**	2.2
*E. cavolini**	1.8	*A. damicornis*	1.5	*Adeonella* spp.*	1.9
*A. verrucosa**	1.1	*A. verrucosa*	1.2	*A. damicornis*	1.3
–		–		*A. verrucosa*	1.3

Table S5. Summary of similarity percentage analysis (SIMPER) listing species along with their morpho-functional group (MFG) that cumulatively contribute 80% to the dissimilarity (Bray Curtis) between the Ag. Vasso and Lefteris sites (Pelio locality), based on square-root transformed data of perennial species percent cover. Av. Diss.: Average dissimilarity, Diss/SD: Dissimilarity to standard deviation ratio, Contrib. %: Percentage contribution of the different species to the overall dissimilarity, Cum. %: Cumulative percentage contribution of the different species to the overall dissimilarity.

		Pelio					
		Ag. Vasso	Lefteris				
		Av. dissimilarity = 44.1%					
MFG	**Species**	**Av. Abund.**		**Av. Diss.**	**Diss./SD**	**Contrib.%**	**Cum.%**
Animal massive	*C. reniformis*	0.0	9.3	5.2	3.7	11.7	11.7
Algae encrusting	*P rubra/bornetii*	0.5	7.0	3.6	6.7	8.2	19.9
Algae encrusting	*P. squamaria*	3.6	9.1	3.0	4.1	6.8	26.7
Algae turf	*C. pellucida*	5.2	1.0	2.4	2.3	5.4	32.1
Animal massive	*A. oroides*	10.8	7.0	2.1	3.6	4.8	36.9
Algae encrusting	*Mesophyllum* spp.	1.0	4.2	1.8	3.0	4.0	40.9
Algae erect	*F. petiolata*	2.3	0.0	1.3	5.9	2.9	43.7
Algae encrusting	Encrusting calcareous algae	9.3	7.6	1.3	1.4	2.8	46.6
Algae encrusting	*P. rosa-marina*	2.8	2.0	1.2	1.3	2.7	49.2
Animal encrusting	*H. fulva*	1.3	2.0	1.1	1.2	2.5	51.7
Animal erect	*R. grimaldii*	0.1	1.9	1.0	1.4	2.3	54.0
Animal massive	*S. foetidus*	1.8	0.0	1.0	1.1	2.2	56.3
Animal boring	*C. viridis*	1.9	0.1	1.0	0.9	2.2	58.5
Animal encrusting	*P. axinellae*	6.1	6.5	0.9	1.6	2.0	60.5
Algae encrusting	*L. stictaeforme/cabiociae*	2.2	1.7	0.9	1.3	2.0	62.5
Animal massive	*I. oros*	1.6	0.0	0.9	1.3	2.0	64.5
Algae encrusting	*Peyssonnelia* spp.	2.8	2.5	0.8	1.3	1.8	66.3
Animal tree	*E. cavolini*	4.0	4.8	0.8	1.3	1.7	68.0
Algae encrusting	*N. mamillosum*	0.5	1.5	0.7	1.3	1.7	69.6
Animal cup	*P. muellerae*	0.6	1.6	0.6	1.6	1.5	71.1
Animal encrusting	*M. pharensis*	0.8	1.7	0.6	1.2	1.4	72.5
Animal encrusting	*C. crambe/S. cunctatrix*	3.3	4.1	0.6	1.3	1.4	73.9
Animal massive	*D. incisa*	1.1	0.0	0.6	1.3	1.4	75.3
Animal tree	*Adeonella* spp.	0.0	1.1	0.6	2.5	1.4	76.7
Animal massive	*H. papillosa*	1.5	0.4	0.6	1.7	1.3	78.0
Animal tree	*A. verrucosa*	1.3	0.7	0.6	1.8	1.3	79.3
Animal encrusting	Black/grey encrusting Porifera	3.0	2.4	0.6	1.5	1.3	80.6

Table S6. Summary of similarity percentage analysis (SIMPER) listing species along with their morpho-functional group (MFG) that cumulatively contribute 80% to the dissimilarity (Bray Curtis) between the Palios and Kalloni sites (Lesvos locality), based on square-root transformed data of perennial species percent cover. Av. Diss.: Average dissimilarity, Diss/SD: Dissimilarity to standard deviation ratio, Contrib. %: Percentage contribution of the different species to the overall dissimilarity, Cum. %: Cumulative percentage contribution of the different species to the overall dissimilarity.

		Lesvos					
		Palios	Kalloni				
		Av. dissimilarity = 75.3%					
MFG	**Species**	**Av. Abund.**		**Av. Diss.**	**Diss./SD**	**Contrib.%**	**Cum.%**
Algae encrusting	*N. mamillosum*	9.8	0.0	6.0	2.9	8.0	8.0
Animal encrusting	*C. crambe/S. cunctatrix*	2.9	10.6	4.7	2.7	6.2	14.2
Animal massive	*P. ficiformis*	0.5	7.8	4.5	15.2	5.9	20.2
Animal massive	*C. reniformis*	0.0	6.6	4.0	3.5	5.4	25.6
Animal massive	*A. oroides*	5.9	0.0	3.6	16.1	4.8	30.4
Algae encrusting	*L. stictaeforme/cabiociae*	5.6	0.0	3.4	4.6	4.5	34.9
Animal encrusting	*C. dellechiajei*	0.0	5.2	3.2	4.9	4.2	39.2
Algae encrusting	*Peyssonnelia* spp.	4.9	0.0	3.1	4.8	4.1	43.2
Animal encrusting	*P. tenacior*	0.9	6.0	3.0	1.6	4.1	47.3
Algae encrusting	Encrusting calcareous algae	6.7	1.9	2.9	2.7	3.9	51.2
Animal encrusting	*Didemnum* sp.2	0.0	3.8	2.3	1.3	3.0	54.2
Algae encrusting	*P. squamaria*	4.2	2.2	2.2	1.6	2.9	57.1
Animal encrusting	*H. fulva*	4.9	1.6	2.1	1.8	2.7	59.8
Animal massive	*S. foetidus*	3.6	2.1	2.0	1.3	2.7	62.5
Animal erect	*E. cavolini*	1.9	5.3	2.0	1.7	2.7	65.2
Animal encrusting	*P. axinellae*	1.5	3.5	1.9	1.1	2.5	67.7
Animal massive	*D. fragilis*	2.7	0.0	1.6	2.0	2.1	69.8
Animal erect	*A. damicornis*	2.9	0.4	1.6	2.8	2.1	71.8
Algae encrusting	*P. rubra/bornetii*	2.8	0.4	1.5	1.2	1.9	73.8
Animal erect	*A. cannabina*	0.0	2.0	1.3	0.7	1.7	75.5
Animal encrusting	*Didemnum* sp.1	0.0	2.1	1.2	1.1	1.6	77.1
Animal massive	*I. oros*	0.7	1.8	1.2	0.9	1.6	78.7
Algae encrusting	*Mesophyllum* spp.	1.5	1.2	1.1	4.2	1.4	80.1

Table S7. PERMANOVA and PERMDISP analyses for α- and β-diversity measures, respectively. PERMANOVA was conducted using Euclidean distances of untransformed data, PERMDISP on Jaccard distances of presence/absence data. Statistically significant differences (P<0.05) are noted in bold.

α-diversity						β-diversity					β-diversity		
PERMANOVA						PERMDISP					PERMIDSP (pairwise comparisons)		
Source	df	SS	MS	Pseudo-F	*P* (perm)	Source	df1	df2	F	*P* (perm)	Source	t	*P* (perm)
Locality	2	124.11	62.06	3.48	0.16	Locality	2	15	20.46	**0.00**	Pelio – Chalkidiki	1.6	0.20
Site(Locality)	3	53.50	17.83	1.08	0.39	Sites	5	12	4.27	0.12	Pelio – Lesvos	5.9	**0.00**
Res	12	198.67	16.55								Chalkidiki – Lesvos	4.5	**0.00**
Total	17	376.3											

Table S8. Full list of taxa recorded quantitatively (photoquadrat samples) or qualitatively (visual observations and collection of voucher specimens) in the coralligenous assemblages of the N Aegean Sea, and their current conservation status. 1: Ag. Vasso, 2: Lefteris, 3: Nemessis, 4: Spilia, 5: Palios, 6: Kalloni

Taxa	Authority	Conservation Status	Site
Kingdom Chromista			
Phylum Ochrophyta			
Dictyota implexa	(Desfontaines) J.V.Lamouroux		1,3,4
Dictyota dichotoma	(Hudson) J.V.Lamouroux		3,4,5
Mucilaginous algae indet.			3,4,5,6
Kingdom Protozoa			
Phylum Foraminifera			
Miniacina miniacea	(Pallas, 1766)		2,3
Kingdom Plantae			
Phylum Chlorophyta			
Caulerpa cylindracea	Sonder	A	5,6
Codium bursa	(Olivi) C.Agardh		3,5,6
Codium effusum	(Rafinesque) Delle Chiaje		2,3
Cladophora peullucida	(Hudson) Kützing		1,2,3,4
Flabellia petiolata	(Turra) Nizamuddin		1,3,4,5
Halimeda tuna	(J.Ellis & Solander) J.V.Lamouroux		1,2,3,4,5
Pseudoclorodesmis furcellata	(Zanardini) Børgesen		3,4
Valonia macrophysa	Kützing		1,2,3,4
Phylum Rhodophyta			
Acrodiscus vidovichii	(Meneghini) Zanardini		3,4,5
Acrosymphyton pururiferum	(J.Agardh) Sjöstedt		5
Amphiroa rigida	J.V.Lamouroux		3
Laurencia chondrioides	Børgesen		5
Lithophyllum cf. *stictaephorme/cabiochiae*	(J.E. Areschoug) Hauck/(Boudouresque & Verlaque) Athanasiadis		1,2,3,4,5
Mesophyllum spp.	(Foslie) Cabioch & M.L.Mendoza	O/b,c	1,2,3,4,5,6
Neogoniolithon mamillosum	(Hauck) Setchell & L.R.Mason	O/c	1,2,3,4,5
Peyssonnelia rosa-marina	Boudouresque & Denizot	O/c	1,2,3,4,5
Peyssonnelia cf. *rubra/bornetii*	(Greville) J.Agardh/Boudouresque & Denizot)		1,2,3,4,5,6
Peyssonnelia squamaria	(S.G.Gmelin) Decaisne		1,2,3,4,5,6
Sebdenia dichotoma	Berthold		5
Sphaerococus coronopifolius	Stackhouse		1,3,4
Womersleyella setacea	(Hollenberg) R.E.Norris	A	3
Kingdom Animalia			
Phylum Porifera			
Acanthella acuta	Schmidt, 1862		1,5,6
Agelas oroides	(Schmidt, 1864)		1,2,3,4,5,6
Aplysilla rosea	(Barrois, 1876)		6
Aplysilla sulfurea	Schulze, 1878		1,2,3,4,5,6
Aplysina aerophoba	(Nardo, 1833)	BC/II; O/a	3,4,5,6
Axinella cannabina	(Esper, 1794)	BC/II	1,5,6
Axinella damicornis	(Esper, 1794)		1,2,3,4,5,6
Axinella verucosa	(Esper, 1794)		1,2,4,5,6
Axinyssa aurantiaca	(Schmidt, 1864)		5
Axinyssa digitata	(Cabioch, 1968)		6
Cacospongia molior	Schmidt, 1862		5
Calyx nicaeensis	(Risso, 1826)	O/a	5,6

Taxa	Authority	Conservation Status	Site
Chondrosia reniformis	Nardo, 1847		2,4,5,6
Clathrina clathrus	(Schmidt, 1864)		2,6
Cliona celata	Grant, 1826		1,5
Cliona schmidtii	(Ridley, 1881)		2,3,4,5
Cliona viridis	(Schmidt, 1862)		1,3,4,5,6
Coscinoderma sporadense	Voultsiadou-Koukoura, van Soest & Koukouras, 1991		5
Crambe crambe	(Schmidt, 1862)		1,2,3,4,5,6
Crella (Grayella) pulvinar	(Schmidt, 1868)		4,5,6
Dendroxea lenis	(Topsent, 1892)		1,2,5,6
Diplastrella bistellata	(Schmidt, 1862)		5
Dictyonella incisa	(Schmidt, 1880)		1,3,4,5,6
Dysidea fragilis	(Montagu, 1814)		1,2,5,6
Dysidea avara	(Schmidt, 1862)		1,5
Fasciospongia cavernosa	(Schmidt, 1862)		1,5,6
Geodia cydonium	(Jameson, 1811)	BC/II	6
Halichondria sp.			1
Haliclona (Halichoclona) fulva	(Topsent, 1893)		1,2,4,5,6
Haliclona (Soestella) mucosa	(Griessinger, 1971)		1,2,3,5
Hemimycale columella	(Bowerbank, 1874		5,6
Hexadella racvitzai	Topsent, 1896		1,2,3,4,5
Ircinia oros	(Schmidt, 1864)		1,3,4,5,6
Ircinia paucifilamentosa	Vacelet, 1961		4
Ircinia variabilis	(Schmidt, 1862)		1,4,5,6
Merlia sp.			4,5
Oscarella imperialis	Muricy, Boury-Esnault, Bézac & Vacelet, 1996		2,5
Penares sp.			5
Penares euastrum	(Schmidt, 1868)		6
Petrosia (Petrosia) ficiformis	(Poiret, 1789)	O/a	1,2,3,5,6
Phorbas fictitius	(Bowerbank, 1866)		5
Phorbas tenacior	(Topsent, 1925)		1,2,5,6
Plakina sp.	Schulze, 1880		2
Pleraplysilla spinifera	(Schulze, 1879)		5
Sarcotragus foetidus	Schmidt, 1862	BC/II	1,3,4,5,6
Sarcotragus spinosulus	Schmidt, 1862		2,5,6
Spirastrella cunctatrix	Schmidt, 1868		1,2,3,4,5,6
Spongia (Spongia) officinalis	Linnaeus, 1759	BC/III; Bern/III	5
Spongia (Spongia) virgultosa	(Schmidt, 1868)		5
Suberites carnosus	(Johnston, 1842)		6
Suberitidae indet.	Schmidt, 1870		6
Terpios gelatinosa	(Bowerbank, 1866)		5
Tethya aurantium	(Pallas, 1766)	BC/II; O/a	6
Phylum Cnidaria			
Antennella secundaria	(Gmelin, 1791)		5
Balanophyllia (Balanophyllia) europaea	(Risso, 1826)	CITES II; IUCN/DD	5
Caryophyllia (Caryophyllia) inornata	(Duncan, 1878)	CITES/II	1,2,3,4,5,6
Cladocora caespitosa	(Linnaeus, 1767)	BC/II; CITES/II; IUCN/En; O/a	6
Cerianthus membranaceus	(Spallanzani, 1784)		3,5
Eudendrium spp.	Ehrenberg, 1834		3,4,5,6
Eunicella singularis	(Esper, 1791)	IUCN/NT	5,6
Eunicella cavolini	(Koch, 1887)	IUCN/NT	1,2,3,4,5,6

Taxa	Authority	Conservation Status	Site
Hoplangia durotrix	Gosse, 1860	CITES/II	2,4,5
Leptopsammia pruvoti	Lacaze-Duthiers, 1897	CITES/II	1,2,3,4,5
Madracis pharesnsis	(Heller, 1868)	CITES/II; IUCN/LC	1,2,5
Paracyathus pulchelus	(Philippi, 1842)	CITES/II	1,2,4,5
Parazoanthus axinellae	(Schmidt, 1862)	O/a	1,2,3,4,5,6
Penaria disticha	Goldfuss, 1820		6
Phyllangia americana mouchezii	(Lacaze-Duthiers, 1897)	CITES/II; O/a	2,3,5,6
Polycyathus muellerae	(Abel, 1959)	CITES/II	1,2,5,6
Phylum Platyhelminthes			
Prostheceraeus sp.			5
Pseudoceros maximus	Lang, 1884		5
Phylum Annelida **Class Polychaeta**			
Bispira volutacornis	(Montagu, 1804)		1,3,5
Eupolymnia nebulosa	(Montagu, 1819)		5,6
Filograna implexa/Salmacina dysteri	Berkeley, 1835/Claparède, 1870		1,2,3,4,5,6
Hermodice carunculata	(Pallas, 1766)		3,4,5,6
Myxicola infundibulum	(Montagu, 1808)		1,2,3,5
Protula tubularia	(Montagu, 1803)		5
Sabella pavonina	Savigny, 1822		3
Sabella spallanzanii	(Gmelin, 1791)		3,6
Spirobranchus triqueter	(Linnaeus, 1758)		4
Serpula vermicularis	Linnaeus, 1767		2,5,6
Serpulidae indet.			1,2,3,4,5,6
Class Echiura			
Bonellia viridis	Rolando, 1821		5,6
Bryozoa			
Adeonella spp.			2,3,4,6
Beania magellanica	(Busk, 1852)		3,4,5
Bugula spp.			2,3
Cellaria sp.			3,4
Caberea boryi	(Audouin, 1826)		3
Hornera frondiculata	(Lamarck, 1816)		3,4,5,6
Reteporella grimaldii	(Jullien, 1903)		1,2,4
Rhynchozoon neapolitanum	Gautier, 1962		1,2,3,4,5,6
Schizomavella (Schizomavella) mamillata	(Hincks, 1880)		1,2,3,4,5,6
Schizoporella errata	(Waters, 1878)		6
Schizoretepora serratimargo	(Hincks, 1886)		3,4
Schizoretepora sp.			4
Scrupocellaria sp.			5
Smittina cervicornis	(Pallas, 1766)		3,4
Phylum Mollusca **Class Gasteropoda**			
Caloria elegans	(Alder & Hancock, 1845)		5
Calliostoma zizyphinum	(Linnaeus, 1758)		5
Cratena peregrina	*(Gmelin, 1791)*		*5,6*
Dondice banyulensis	Portmann & Sandmeier, 1960		5,6
Felimare picta	(Schultz in Philippi, 1836)		5
Felimare tricolor	(Cantraine, 1835)		4,5
Felimida luteorosea	(Rapp, 1827)		2,3,5
Flabellina affinis	(Gmelin, 1791)		5,6

Taxa	Authority	Conservation Status	Site
Flabellina ischinata	Hirano & Thompson, 1990		5,6
Flabellina rubrolineata	(O'Donoghue, 1929)	A	6
Haminoea cyanomarginata	Heller & Thompson, 1983		5
Janolus cristatus	(Delle Chiaje, 1841)		5
Jujubinus exasperatus	(Pennant, 1777)		6
Peltodoris atromaculata	Bergh, 1880		1,5,6
Phyllidia flava	Aradas, 1847		5
Simnia spelta	(Linnaeus, 1758)		3,4
Thuridilla hopei	(Vérany, 1853)		2,3,4
Thylacodes arenarius	(Linnaeus, 1758)		5,6
Tritonia nilsodhneri	Marcus Ev., 1983		2
Umbraculum umbraculum	(Lightfoot, 1786)		5
Class Bivalvia			
Lithophaga lithophaga	(Linnaeus, 1758)	BC/II; Bern/II; CITES/II; HD/IV; O/a	5
Ostrea sp.			5
Pinna nobilis	Linnaeus, 1758	BC/II; HD IV; IUCN/VU; O/a; PD 67/1981	6
Pteria hirundo	(Linnaeus, 1758)		5
Rocellaria dubia	(Pennant, 1777)		3,5
Class Cephalopoda			
Loligo sp. eggs			5
Octopus vulgaris	Cuvier, 1797		5,6
Phylum Arthropoda **Subphylum Crustacea**			
Galathea strigosa	(Linnaeus, 1761)		5
Maja squinado	(Herbst, 1788)	BC/III; Bern/III; O/a	5
Palinurus elephas	(Fabricius, 1787)	BC/III; Bern/III; IUCN/VU; O/a	5,6
Scyllarides latus	(Latreille, 1803)	BC/III; Bern/III; HD/V; IUCN/DD	5
Stenopus spinosus	Risso, 1827		5
Phylum Echinodermata			
Antedon mediterranea	(Lamarck, 1816)		3,4,5
Hacelia attenuata	Gray, 1840	O/a	1,3,4,5,6
Holothuria (Panningothuria) forskali	Delle Chiaje, 1823		6
Holothuria (Platyperona) sanctori	Delle Chiaje, 1823		6
Ophidiaster ophidianus	(Lamarck, 1816)	BC/II; Bern/II; O/a	2
Paracentrotus lividus	(Lamarck, 1816)	BC/II; Bern/III; IUCN/VU	6
Peltaster placenta	(Müller & Troschel, 1842)		3,4
Sphaerechinus granularis	(Lamarck, 1816		5
Stylocidaris affinis	(Philippi, 1845)		5
Phylum Chordata **Subphylum Tunicata**			
Class Ascidiacea			
Diplosoma spongiforme	(Giard, 1872)		6
Aplidium elegans	(Giard, 1872)		1,2
Cystodytes dellechiajei	(Della Valle, 1877)		6
Clavelina dellavallei	(Zirpolo, 1825)		1,2,3,4,6
Clavelina lepadiformis	(Müller, 1776)		6
Didemnum maculosum	(Milne Edwards, 1841)		6
Didemnum spp.			6

Taxa	Authority	Conservation Status	Site
Halocynthia papillosa	(Linnaeus, 1767)		1,2,3,4,5,6
Lissoclinum perforatum	(Giard, 1872)		2,6
Microcosmus sabatieri	Roule, 1885		5
Polysyncraton lacazei	(Giard, 1872)		5
Pyura dura	(Heller, 1877)		6
Subphylum Vertebrata **Class Actinopterygii**			
Anthias anthias	(Linnaeus, 1758)		2,3,4,5
Chromis chromis	(Linnaeus, 1758)		1,4,6
Conger conger	(Linnaeus, 1758)		
Coris julis	(Linnaeus, 1758)		3,5,6
Dentex dentex	(Linnaeus, 1758)		5
Diplodus puntazzo	(Walbaum, 1792)		6
Diplodus sargus sargus	(Linnaeus, 1758)		4,5,6
Diplodus vulgaris	(Geoffroy Saint-Hilaire, 1817)		3,5,6
Epinephelus costae	(Steindachner, 1878)	IUCN/DD	3,6
Epinephelus marginatus	(Lowe, 1834)	BC/III; Bern/II; IUCN/EN	5,6
Gobius auratus	Risso, 1810		2
Gobius vittatus	Vinciguerra, 1883		5
Labrus viridis	Linnaeus, 1758		5,6
Muraena helena	Linnaeus, 1758		2,5
Oblada melanura	Linnaeus, 1758		6
Phycis phycis	Linnaeus, 1766		4
Sarpa salpa	Linnaeus, 1758		6
Sciaena umbra	Linnaeus, 1758	BC/III; Bern/II; IUCN/VU	3,5
Scorpaena notata	Rafinesque, 1810		3
Scorpaena scrofa	Linnaeus, 1758		1,2,4,5
Seriola dumerili	(Risso, 1810)		5
Serranus cabrilla	(Linnaeus, 1758)		3,5,6
Serranus scriba	(Linnaeus, 1758)		5,6
Sparus aurata	Linnaeus, 1758		5,6
Spicara smaris	(Linnaeus, 1758)		3,4
Spondyliosoma cantharus	(Linnaeus, 1758)		3,5,6
Symphodus mediterraneus	(Linnaeus, 1758)		5
Symphodus melanocercus	(Risso, 1810)		5
Thorogobius ephippiatus	(Lowe, 1839)		5
Tripterygion delaisi	Cadenat & Blache, 1970		5
Zeus faber	Linnaeus, 1758		5

BC: Barcelona convention – II: Annex of endangered or threatened species, III: Annex of species whose exploitation is regulated. **Bern**: Convention on the conservation of European wildlife and natural habitats – II: Annex of strictly protected fauna species, III: Annex of protected fauna species. **CITES**: Convention on International Trade in Endangered Species of wild fauna and flora, 1973, Council Regulation (EC) No 338/97 – II: Species of Annex II. **HD**: Habitats Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora – IV: Animal and plant species of community interest in need of strict protection, V: Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures. **IUCN**: The IUCN Red List of Threatened Species – DD: Data Deficient, NT: Near Threatened, VU: Vulnerable, EN: Endangered. **O**: Oceana list of threatened species (2009) – a: Species that are regionally threatened and included in regional or national lists, b: Species whose protection is recommended by experts, c: Species that require protection due to their fragility or role as essential habitat creators. **PD 67/1981**: Greek Presidential Decree for the protection of wild flora and fauna. **A**: Allochthonous