

Table S1. Summary table with the average percentage of coverage (%) of all sessile taxa and morpho-functional groups recorded at the ecological zones of the six studied caves. + Presence of non-pointed taxa identified within the quadrats, * Protected species under the Bern and Barcelona Conventions (Annex II: List of endangered or threatened species), † Protected species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES - Appendix II), ALO: Alona, GIOU: Giourious, OXO: Oxonisos, PAL: Palatia, PANT: Panteleimonas, TROU: Troulakas, CE: entrance zone, SD: semi-dark zone.

Sessile taxa	ALO		GIOU		OXO		PAL		PANT		TROU	
	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD
Macroalgae												
<i>Amphiroa</i> sp.			0.1						0.1			
Encrusting Rhodophyta	8.2		10.4	14.3	4.8	3.8	10.1	1.1	4.5	7.7	13	0.7
<i>Gelidium</i> sp.	+											
Green filamentous algae												0.6
<i>Hildenbrandia</i> sp.												0.3
<i>Mesophyllum</i> sp.	1.6		9.1	1.6	6.9	0.6	2.4		14.6		1.4	
<i>Palmophyllum crassum</i> (Naccari)	+		13.4		23.1	2	0.5		15		1.2	
Rabenhorst												
<i>Peyssonnelia</i> sp.	18.3		22.3	2.9	12	2.2	51.2		27	2.6	7.3	
<i>Valonia macrophysa</i> Kützting							+		+			
Turf-forming algae	0.4					+					0.4	
Foraminifera												
<i>Miniacina miniacea</i> (Pallas, 1766)	0.1	0.2	0.4	1.2	0.4	1.5	0.1	0.7	0.1	4.3		0.9
Porifera												
<i>Acanthella acuta</i> Schmidt, 1862												+
<i>Agelas oroides</i> (Schmidt, 1864)			0.4	1.1	3.8	3.4	0.4		4.5		4.9	1.5
<i>Aplysilla sulfurea</i> Schulze, 1878						0.1		+				1.5
<i>Aplysina</i> sp. *								+				
<i>Axinella damicornis</i> (Esper, 1794)	+		0.4	+	0.1	0.7	+	+	0.3		1.2	0.7
<i>Chondrosia reniformis</i> Nardo, 1847	0.1		0.5		1.1			+				+
<i>Cliona celata</i> Grant, 1826		0.2		+		+	0.1	+			+	
<i>Cliona schmidtii</i> (Ridley, 1881)	+			+			0.4	0.4				
<i>Dendroxea lenis</i> (Topsent, 1892)	0.3		2.1	20.8	4	12.9	1.8	14.5	0.1	9.9	1.4	25.8
<i>Diplastrella bistellata</i> (Schmidt, 1862)		1.5				0.4		0.1				0.7
<i>Fasciospongia cavernosa</i> (Schmidt, 1862)	1.4			0.6	1.1				0.1		0.4	
<i>Haliclona</i> (<i>Reniera</i>) <i>aquaeductus</i> (Schmidt, 1862)						+	0.2	+				
<i>Haliclona</i> (<i>Soestella</i>) <i>mucosa</i> (Griessinger, 1971)			0.3	1.3		0.4	0.2	0.2	0.1		1.2	0.5
<i>Hexadella</i> sp.		+	0.2	0.8	0.1	0.8		0.3			0.1	+
<i>Ircinia oros</i> (Schmidt, 1864)			0.5	0.1		+			+			
<i>Ircinia variabilis</i> (Schmidt, 1862)						0.1					0.2	
<i>Merlia normani</i> Kirkpatrick, 1908			0.2	15.1	0.8	1.1	0.1	+		2.5		1.1
<i>Myrmekioderma spelaeum</i> (Pulitzer-Finali, 1983)								+				
<i>Oceanapia</i> sp.							+					
Orange encrusting sponge	0.1	3.7	1.4	1.9	0.3	1.3	0.2	2.5		7	1.9	2.7
<i>Penares euastrum</i> (Schmidt, 1868)			1.1	3.8	1	6.6	0.1	1.1	0.5	12	2.9	5.9
<i>Petrobionta massiliana</i> Vacelet & Lévi, 1958 *						+						+
<i>Petrosia</i> (<i>Petrosia</i>) <i>ficiformis</i> (Poirret, 1789)				+		+	0.1	+	+		0.2	+
<i>Phorbos topsenti</i> Vacelet & Pérez, 2008											+	+
<i>Phorbos tenacior</i> (Topsent, 1925)	1.6									13.9	0.3	
<i>Plakina</i> sp.								4.4				0.2
Plakinidae		6.8						+				
<i>Pleraplysilla spinifera</i> (Schulze, 1879)									0.6		0.2	
<i>Prosuberites</i> sp.			0.5	1.8	0.2	0.2			0.2	2.1	0.9	1.8
<i>Sarcotragus</i> sp.	+		+									

Sessile taxa	ALO		GIOU		OXO		PAL		PANT		TROU	
	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD
<i>Spirastrella cunctatrix</i> Schmidt, 1868	21.6	4.7	3.1	5.6	17.6	23	0.2	2.6	0.1	3.9	0.3	4.8
<i>Spongosorites</i> sp.				+	0.1	+		0.1	+			0.4
<i>Sycon</i> sp.							+			+		+
<i>Terpios gelatinosus</i> (Bowerbank, 1866)									0.2			+
<i>Thymosiopsis cuticulatus</i> Vacelet & Pérez, 1998			0.6		0.2	1.5			0.2	3.2	0.1	1.8
White sponge						0.1		0.3				
Yellow encrusting sponge	2.1		0.4		0.1	0.4	0.2	0.4		5.5	0.2	3.8
Cnidaria												
<i>Caryophyllia</i> (<i>Caryophyllia</i>) <i>inornata</i> (Duncan, 1878) †	0.1	+		+		+		+	+	0.1		+
Hydrozoa spp.					+	+			+			
<i>Leptopsammia pruvoti</i> Lacaze-Duthiers, 1897 †	+		0.5	0.5		0.2				0.1	3.4	0.2
<i>Madracis pharensis</i> (Heller, 1868) †				0.5		0.8			1.8		3.1	0.4
<i>Parazoanthus axinellae</i> (Schmidt, 1862)												+
<i>Polycyathus muelleriae</i> (Abel, 1959) †				+								
Polychaeta												
Serpulidae	5.6	10.6	0.2	0.2	0.3	3	1.4	11.1	0.3	0.4	15.7	8.3
Mollusca												
<i>Neopycnodonte cochlear</i> (Poli, 1795)	0.3	1										
<i>Lithophaga lithophaga</i> (Linnaeus, 1758) *			+	+					+			
<i>Spondylus</i> sp.	+											
Crustacea												
Cirripedia				+						0.2		
Bryozoa												
<i>Adeonella</i> sp.						+						
Bryozoan turf	11.6	5.2	24.6	18.3	10.8	7.8	9.2	1.2	22.3	2.8	4.4	2.2
<i>Bugula</i> sp.		0.2										
<i>Caberea boryi</i> (Audouin, 1826)	0.3		0.2			+		+	0.2		0.2	
<i>Celleporina</i> sp.	+							+				+
Encrusting Bryozoa	6.8	7.4	2.9	2	3.8	6.7	1	0.7	0.5	2.7	11.6	9.3
<i>Margaretta cereoides</i> (Ellis & Solander, 1786)									0.4			
<i>Myriapora truncata</i> (Pallas, 1766)	+								0.1			+
<i>Patinella radiata</i> (Audouin, 1826)				+					+	+	+	+
<i>Reptadeonella violacea</i> (Johnston, 1847)									0.1			
<i>Reteporella</i> sp.				0.1	0.1	0.9			0.6	0.1		0.3
<i>Schizobrachiella sanguinea</i> (Norman, 1868)	0.5											
<i>Schizomavella</i> sp.	0.1		2.1	2.2	2.2	2.6			1.7	0.5	1	1.1
Brachiopoda												
<i>Argyrotheca cuneata</i> (Risso, 1826)		+		+			+	+	+			+
<i>Megathiris detruncata</i> (Gmelin, 1791)		+		+			+	+				+
<i>Novocrania</i> sp.		+										
Ascidacea												
<i>Ascidia mentula</i> Müller, 1776				+								
<i>Didemnum</i> sp.1					+				+			+
<i>Didemnum</i> sp.2	+	+		+	+	+	+	+	+			+
<i>Halocynthia papillosa</i> (Linnaeus, 1767)	+		0.1			+			0.2			+
<i>Pycnoclavella nana</i> (Lahille, 1890)	0.1			+			+	+	+			+
<i>Pyura dura</i> (Heller, 1877)											+	+
Other												
Bare rock	18	58	0.2	0.3	2.5	12	0.2	56.3		17.2	11.1	5.1
Holes	0.3		0.3	0.2	0.3		0.6	0.3	0.5	0.8	1.8	0.1
Sediment						2.5	19.2	1.7			6.2	17.5

Sessile taxa	ALO		GIOU		OXO		PAL		PANT		TROU	
	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD	CE	SD
UBS	0.5	0.5	0.5	0.6	1.2	0.2	0.1		0.2	0.5	0.4	0.4
Total number of taxa	35	18	30	39	28	43	30	36	43	21	34	48

Table S2. Results of one-way ANOSIM for six geomorphological and topographic factors of the studied marine caves.

Factor	Global R	p-value
Cave	0.412	0.001
Ecological Zone	0.467	0.001
Cave Type	0.238	0.001
Entrance Area	0.222	0.001
Entrance Depth	0.317	0.001
Entrance Orientation	0.276	0.001

Table S3. p-values of one-way ANOSIM pairwise tests for the factor 'Cave'.

	Alona	Giourious	Oxonisos	Palatia	Panteleimonas	Troulakas
Alona						
Giourious	0.001					
Oxonisos	0.001	0.001				
Palatia	0.001	0.001	0.001			
Panteleimonas	0.001	0.004	0.002	0.001		
Troulakas	0.001	0.001	0.001	0.001	0.001	

Table S4. p-values of one-way ANOSIM pairwise tests for the factor 'Entrance Area'.

	15–40 m ²	110–230 m ²	630 m ²
15–40 m ²			
110–230 m ²	0.001		
630 m ²	0.001	0.001	

Table S5. p-values of one-way ANOSIM pairwise tests for the factor 'Entrance Orientation'.

	North	South	East	West
North				
South	0.001			
East	0.001	0.001		
West	0.042	0.001	0.001	

Table S6. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in each ecological zone of the studied caves (CE: entrance zone, SD: semi-dark zone).

Major taxonomic group	Ecological zone	CE	SD
	Average Similarity (%)	46.01	37.16
Sessile taxa			
Macroalgae	Encrusting Rhodophyta	16.52	4.24
	<i>Mesophyllum</i> sp.	6.59	-
	<i>Palmophyllum crassum</i>	7.49	-
	<i>Peyssonnelia</i> sp.	23.16	-
Foraminifera	<i>Miniacina miniacina</i>	-	8.16
Porifera	<i>Dendroxea lenis</i>	3.20	16.70
	Orange encrusting sponge	-	5.00
	<i>Penares euastrum</i>	-	9.21
	<i>Spirastrella cunctatrix</i>	4.15	7.94
	Yellow encrusting sponge	-	1.98

Polychaeta	Serpulidae	4.28	13.09
Bryozoa	Bryozoan turf	18.03	12.40
	Encrusting Bryozoa	6.57	11.23
	<i>Schizomavella</i> sp.	1.79	1.46

Table S7. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in the six studied caves (ALO: Alona, GIOU: Giourious, OXO: Oxonisos, PAL: Palatia, PANT: Panteleimonas, TROU: Troulakas).

Major taxonomic group	Caves	ALO	GIOU	OXO	PAL	PANT	TROU
	Average Similarity (%)	44.34	52.77	50.94	42.85	35.18	47.91
	Sessile taxa						
Macroalgae	Encrusting Rhodophyta	4.13	17.20	5.41	10.93	14.01	5.52
	<i>Mesophyllum</i> sp.	-	4.91	4.64	-	4.26	-
	<i>Palmophyllum crassum</i>	-	4.41	10.11	-	6.54	-
	<i>Peyssonnelia</i> sp.	-	10.29	6.70	18.26	15.95	3.30
Foraminifera	<i>Miniacina miniacina</i>	-	3.89	2.86	3.55	5.71	-
Porifera	<i>Agelas oroides</i>	-	-	-	-	1.81	-
	<i>Axinella damicornis</i>	-	-	-	-	-	2.23
	<i>Dendroxea lenis</i>	-	9.45	8.29	18.94	-	11.45
	Orange encrusting sponge	-	-	-	2.76	2.57	5.23
	<i>Penares euastrum</i>	-	4.29	4.70	-	7.38	9.52
	<i>Phorbos tenacior</i>	-	-	-	-	2.84	-
	<i>Plakina</i> sp.	-	-	-	3.70	-	-
	Plakinidae	3.44	-	-	-	-	-
	<i>Prosuberites</i> sp.	-	2.16	-	-	-	2.66
	<i>Spirastrella cunctatrix</i>	17.66	2.34	20.32	3.12	-	-
	Yellow encrusting sponge	-	-	-	-	2.59	2.64
Cnidaria	<i>Leptopsammia pruvoti</i>	-	-	-	-	-	3.13
Polychaeta	Serpulidae	28.44	-	-	13.89	-	19.28
Mollusca	<i>Neopycnodonte cochlear</i>	2.79	-	-	-	-	-
Brachiopoda	<i>Megathiris detruncata</i>	-	-	-	4.75	-	-
Bryozoa	Bryozoan turf	21.25	22.56	14.64	8.75	20.20	4.55
	Encrusting Bryozoa	14.08	5.44	9.55	3.08	3.54	18.86
	<i>Schizomavella</i> sp.	-	3.83	2.97	-	3.90	2.16

Table S8. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in each cave type (Semi-sub., semi-submerged; Sub., fully submerged).

Major taxonomic group	Cave type	Semi-sub.	Sub.
	Average Similarity (%)	38.30	38.02
	Sessile taxa		
Macroalgae	Encrusting Rhodophyta	13.24	5.98
	<i>Mesophyllum</i> sp.	4.06	-
	<i>Palmophyllum crassum</i>	5.24	-
	<i>Peyssonnelia</i> sp.	13.51	2.67
Foraminifera	<i>Miniacina miniacina</i>	4.34	1.81
Porifera	<i>Dendroxea lenis</i>	10.28	4.01
	Orange encrusting sponge	-	3.28
	<i>Penares euastrum</i>	4.64	3.09
	<i>Spirastrella cunctatrix</i>	5.77	7.36
	Yellow encrusting sponge	-	1.78
Polychaeta	Serpulidae	3.19	27.91
	Bryozoan turf	18.29	13.07
Bryozoa	Encrusting Bryozoa	6.08	19.60
	<i>Schizomavella</i> sp.	2.39	-

Table S9. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in each cave entrance area range.

Major taxonomic group	Entrance area	15–40 m ²	110–230 m ²	630 m ²
	Average Similarity (%)	35.44	48.94	35.18
	Sessile taxa			
Macroalgae	Encrusting Rhodophyta	8.51	10.98	14.01
	<i>Mesophyllum</i> sp.	-	5.14	4.26
	<i>Palmophyllum crassum</i>	-	7.43	6.54
	<i>Peyssonnelia</i> sp.	6.95	9.04	15.95
Foraminifera	<i>Miniacina miniacina</i>	2.67	3.57	5.71
Porifera	<i>Agelas oroides</i>	-	-	1.81
	<i>Dendroxea lenis</i>	8.88	9.51	-
	Orange encrusting sponge	3.56	-	2.57
	<i>Penares euastrum</i>	2.62	4.78	7.38
	<i>Phorbates tenacior</i>	-	-	2.84
	<i>Spirastrella cunctatrix</i>	6.07	9.52	-
	Yellow encrusting sponge	-	-	2.59
Polychaeta	Serpulidae	25.31	-	-
Bryozoa	Bryozoan turf	12.87	18.87	20.20
	Encrusting Bryozoa	12.96	7.70	3.54
	<i>Schizomavella</i> sp.	-	3.62	3.90

Table S10. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in each entrance depth range.

Major taxonomic group	Entrance depth	0–10 m	10–20 m
	Average Similarity (%)	36.24	39.87
	Sessile taxa		
Macroalgae	Encrusting Rhodophyta	8.79	11.31
	<i>Mesophyllum</i> sp.	-	3.61
	<i>Palmophyllum crassum</i>	-	5.21
	<i>Peyssonnelia</i> sp.	9.53	9.51
Foraminifera	<i>Miniacina miniacina</i>	3.11	3.57
Porifera	<i>Dendroxea lenis</i>	6.16	8.83
	Orange encrusting sponge	2.19	2.45
	<i>Penares euastrum</i>	-	7.20
	<i>Proserius</i> sp.	-	1.85
	<i>Spirastrella cunctatrix</i>	10.03	4.77
Polychaeta	Serpulidae	24.98	3.76
Bryozoa	Bryozoan turf	17.10	15.92
	Encrusting Bryozoa	8.71	9.69
	<i>Schizomavella</i> sp.	-	3.71

Table S11. Similarity percentage analysis (SIMPER), showing the contribution of sessile taxa to the average similarity (%) in caves with different entrance orientation.

Major taxonomic group	Entrance orientation	East	West	North	South
	Average Similarity (%)	38.02	41.86	50.94	42.85
	Sessile taxa				
Macroalgae	Encrusting Rhodophyta	5.98	15.95	5.41	10.93
	<i>Mesophyllum</i> sp.	-	4.88	4.64	-
	<i>Palmophyllum crassum</i>	-	5.71	10.11	-
	<i>Peyssonnelia</i> sp.	2.67	13.21	6.70	18.26
Foraminifera	<i>Miniacina miniacina</i>	1.81	4.51	2.86	3.55
Porifera	<i>Dendroxea lenis</i>	4.01	5.56	8.29	18.94
	Orange encrusting sponge	3.28	2.11	-	2.76
	<i>Penares euastrum</i>	3.09	5.58	4.70	-

	<i>Plakina</i> sp.	-	-	-	3.70
	<i>Prosuberites</i> sp.	-	1.98	-	-
	<i>Spirastrella cunctatrix</i>	7.36	-	20.32	3.12
	Yellow encrusting sponge	1.78	-	-	-
Polychaeta	Serpulidae	27.91	-	-	13.89
Brachiopoda	<i>Megathiris detruncata</i>	-	-	-	4.75
Bryozoa	Bryozoan turf	13.07	22.28	14.64	8.75
	Encrusting Bryozoa	19.60	4.79	9.55	3.08
	<i>Schizomavella</i> sp.	-	4.09	2.97	-

Table S12. Summary table of the presence of motile species recorded in the caves through visual census (* NIS species, † Protected species, ^A Associate carnivores, ^C Characteristic carnivores, ^{DO} Detritus feeders and omnivores, ^H Herbivores). ALO: Alona, GIOU: Giourious, OXO: Oxonisos, PAL: Palatia, PANT: Panteleimonas, TROU: Troulakas.

Motile taxa	ALO	GIOU	OXO	PAL	PANT	TROU
Polychaeta						
<i>Bonellia viridis</i> Rolando, 1822 ^{DO}				+		
<i>Hermodice carunculata</i> (Pallas, 1766) ^{DO}	+	+	+		+	+
Mollusca						
<i>Cerithium scabridum</i> Philippi, 1848 * ^{DO}			+			+
<i>Umbraculum umbraculum</i> ([Lightfoot], 1786) ^A		+				
Crustacea						
<i>Calcinus tubularis</i> (Linnaeus, 1767) ^{DO}						+
<i>Dromia personata</i> (Linnaeus, 1758) ^A	+					
<i>Lysmata seticaudata</i> (Risso, 1816) ^C	+					
Mysida	+					
<i>Palaemon serratus</i> (Pennant, 1777) ^C	+	+				
<i>Palinurus elephas</i> (JC Fabricius, 1787) † ^A		+				
<i>Plesionika narval</i> (JC Fabricius, 1787) ^C	+	+		+		
<i>Scyllarides latus</i> (Latreille, 1803) † ^A	+			+	+	+
<i>Stenopus spinosus</i> Risso, 1827 in [Risso, 1826-1827] ^C	+					
<i>Urocaridella pulchella</i> Yokes & Galil, 2006 * ^{DO}	+					
Echinodermata						
<i>Antedon mediterranea</i> (Lamarck, 1816) ^{DO}	+			+		
<i>Arbacia lixula</i> (Linnaeus, 1758) ^H	+	+	+			
<i>Diadema setosum</i> (Leske, 1778) * ^H				+	+	+
<i>Holothuria</i> sp. ^{DO}			+			+
Ophiuridae ^{DO}	+					+
<i>Paracentrotus lividus</i> (Lamarck, 1816) † ^H		+				
Pisces						
<i>Anthias anthias</i> (Linnaeus, 1758) ^A			+		+	
<i>Apogon imberbis</i> (Linnaeus, 1758) ^C	+	+	+	+	+	+
<i>Atherina</i> sp. ^A		+	+		+	+
<i>Chromis chromis</i> (Linnaeus, 1758) ^A	+	+	+		+	
<i>Coris julis</i> (Linnaeus, 1758) ^A	+		+		+	+
<i>Diplodus sargus</i> (Linnaeus, 1758) ^A			+		+	
<i>Epinephelus marginatus</i> (Lowe, 1834) † ^A	+			+		+
<i>Microlophophrys nigriceps</i> (Vinciguerra, 1883) ^A		+				
<i>Muraena helena</i> Linnaeus, 1758 ^A						+
<i>Oblada melanura</i> (Linnaeus, 1758) ^A			+		+	
<i>Parupeneus forsskali</i> (Fourmanoir & Guézé, 1976) * ^A	+					
<i>Pempheris rhomboidea</i> Kossmann & Räuber, 1877 * ^A			+		+	+
<i>Pterois miles</i> (Bennett, 1828) * ^A	+	+	+		+	+
<i>Sargocentron rubrum</i> (Forsskal, 1775) * ^A	+		+	+	+	+
<i>Scorpaena maderensis</i> Valenciennes, 1833 ^C	+	+	+		+	+
<i>Scorpaena scrofa</i> Linnaeus, 1758 ^A				+		

Motile taxa	ALO	GIOU	OXO	PAL	PANT	TROU
<i>Serranus cabrilla</i> (Linnaeus, 1758) ^A	+				+	+
<i>Serranus scriba</i> (Linnaeus, 1758) ^A						+
<i>Siganus luridus</i> (Rüppell, 1829) ^{*H}	+		+		+	+
<i>Siganus rivulatus</i> Forsskål & Niebuhr, 1775 ^{*H}						+
<i>Sparisoma cretense</i> (Linnaeus, 1758) ^H		+			+	+
<i>Thalassoma pavo</i> (Linnaeus, 1758) ^A		+	+		+	+
<i>Torquigener flavimaculosus</i> Hardy & Randall, 1983 ^{*A}	+			+		
<i>Tripterygion melanurum</i> Guichenot, 1850 ^A	+	+	+		+	
Mammalia						
<i>Monachus monachus</i> (Hermann, 1779) ^{‡A}	+					
SUM	26	16	18	10	19	21

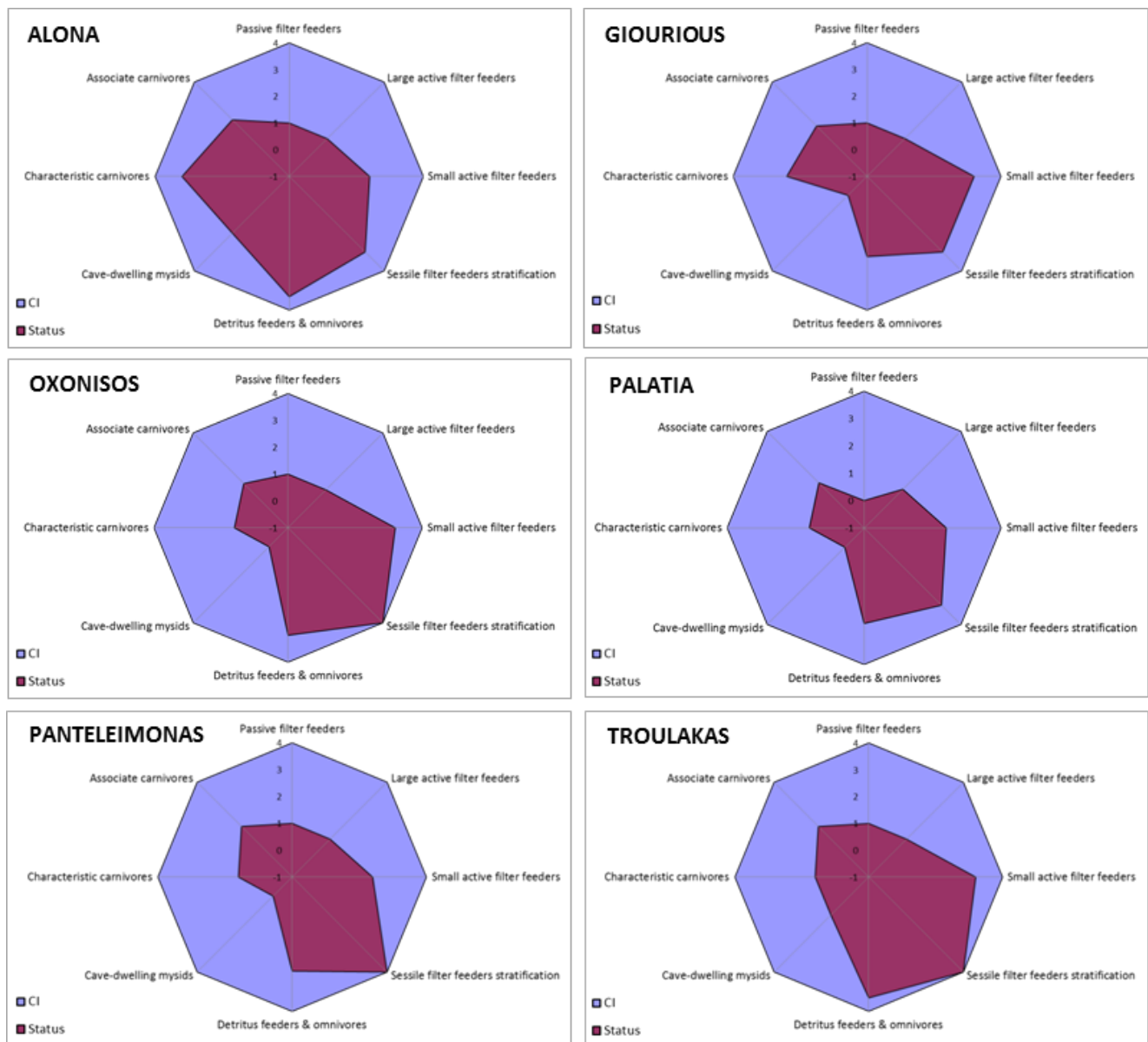


Figure S1. Spider-web graphics representing the ecosystem-based ecological quality evaluation of each studied marine cave. CI: Confidence Index. Status scaled from 0 to 10 as follows: Bad ≤ 2 , 2 < Poor ≤ 4 , 4 < Moderate ≤ 6 , 6 < Good ≤ 8 , 8 < High.