

## A4.26 Marmara coralligenous communities moderately exposed circalittoral rock

### Summary

The habitat is found in the Sea of Marmara only, and is closely related to Mediterranean types. Coralligenous habitats are hard bottoms of biogenic origin mainly produced by the accumulation of calcareous encrusting algae growing in dim light conditions. Although more typical of the circalittoral zone, they can also develop to some extent in dimly-lit infralittoral zones such as vertical walls, deep channels, or overhangs. The principle threats to this habitat comprise: pollution, high water turbidity, mechanical disturbance and breakage of the bioconstruction, fishing, high sedimentation rates and climate-related water quality changes. No current or future conservation measures have been identified for this habitat.

### Synthesis

Detailed information on the abundance and extent of this habitat is lacking. Information on the quantity and quality of this habitat including historical or recent trends is unknown. For the purposes of Red List assessment this habitat is considered to be Data Deficient.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
n/a	-	Data Deficient	-

### Sub-habitat types that may require further examination

None

### Habitat Type

#### Code and name

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Coralligenous outcrop at 22 meters depth (Tossa de Mar, Spain). (© E. Ballesteros)



Small coralligenous outcrop growing interspersed with a maërl bed in Tossa de Mar (Spain) at 42 m depth. (© E. Ballesteros)

#### Habitat description

Coralligenous habitats are hard bottoms of biogenic origin mainly produced by the accumulation of calcareous encrusting algae growing in dim light conditions. Although more widespread in the circalittoral zone, they can also develop in the infralittoral zone, provided that light is dim enough to allow growth of the coralline algae that produce the build-up; therefore, infralittoral coralligenous concretions always

develop in almost vertical walls, deep channels, or overhangs, and occupy reduced surfaces. Coralligenous bioconcretions are always very complex in structure allowing the development of several kinds of communities including those dominated by living algae (on the upper part of the concretions), suspension feeders (upper and lower part of the concretions, wall cavities, and overhangs of the build-up), borers (inside the concretions), and even soft-bottom fauna (in the sediment deposited in cavities and holes). This is a highly variable habitat that can be subdivided into different sub-habitats.

Indicators of quality:

Several indicators have been proposed to assess the health of coralligenous habitats based on the composition and abundance of species (biotic cover and conspicuous species richness), including the percent cover of different benthic assemblages (encrusting calcified Rhodophyta, non-calcified encrusting algae and fauna, turf forming algae, and sediment), boring species marks, percent cover of each species and the percentage of necrosis, Bryozoa percent cover, sludge percent cover and the builder species percent cover. Pollution has a severe impact on coralligenous outcrops where coralline algae are substituted first by *Mesophyllum alternans* and latterly by *Peyssonnelia rosa-marina*. High water turbidity decreases diversity, especially of Bryozoans, Crustaceans and Echinoderms. However the amount of bioeroders increases, i.e. Sipunculids and boring sponges (*Cliona*), along with more generalist species. Mechanical disturbance and breaks of the bioconstruction with increases of turbidity and sedimentation can also be observed. Fishing can affect the abundance of certain target species and high sedimentation rates result in overgrowth and invasion by exotic algae, altering assemblage composition.

Characteristic species

Rhodophyta (red algae) - *Mesophyllum expansum*, *Mesophyllum alternans*, *Mesophyllum macedonis*, *Lithophyllum stictaeforme*, *Lithophyllum cabiochiae*, *Neogoniolithon mamillosum*, *Peyssonnelia rosa marina*, *Peyssonnelia rubra*, *Peyssonnelia harveyana*, *Peyssonnelia bornetii*, *Amphiroa beauvoisii*, *Aglaothamnion tripinnatum*, *Seirospora giraudyi*, *Gulsonia nodulosa*, *Balliella cladoderma*, *Eupogodon planus*, *Acrosorium ciliolatum*, *Erythrogloussum balearicum*, *Erythrogloussum sandrianum*, *Myriogramme tristromatica*, *Rodriguezella pinnata*, *Rodriguezella bornetii*, *Rodriguezella strafforelloii*, *Gloiocladia furcata*, *Gloiocladia microspora*, *Gloiocladia repens*, *Leptofaucha coralligena*, *Lomentaria subdichotoma*, *Botryocladia chiajeana*, *Sebdenia monardiana*, *Sebdenia rodrigueziana*, *Aeodes marginata*, *Halymenia floresii*, *Predaea ollivieri*, *Platoma cyclocolpum*, *Bonnemaisonia asparagoides*, *Schmitzia neapolitana*, *Neurocaulon foliosum*, *Kallymenia feldmannii*, *Kallymenia lacerata*, *Kallymenia patens*, *Kallymenia requienii*, *Sphaerococcus rhizophylloides*, *Ptilophora mediterranea*

Phaeophyta - *Halopteris filicina*, *Nereia filiformis*,

Chlorophyta (green algae) - *Palmophyllum crassum*, *Codium coralloides*, *Valonia macrophysa*,

Sponges - *Agelas oroides*, *Axinella cannabina*, *Axinella damicornis*, *Axinella polypoides*, *Axinella*

## Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS (v1405):

Level 4. A sub-habitat of- 'Mediterranean coralligenous communities moderately exposed to hydrodynamic action' (A4.26) and 'Mediterranean coralligenous communities sheltered from hydrodynamic action' (A4.32)

Annex 1:

1170 Reefs

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral rock and biogenic reef

EUSeaMap:

Shallow photic rock or biogenic reef

IUCN:

10.1 Epipelagic

**Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?**

No

Justification

The Sea of Marmara has distinct environmental conditions compared to the Black Sea, with conditions more similar to those of the Mediterranean Sea. As such this habitat does not represent an outstanding example of the typical characteristics of the Black Sea region.

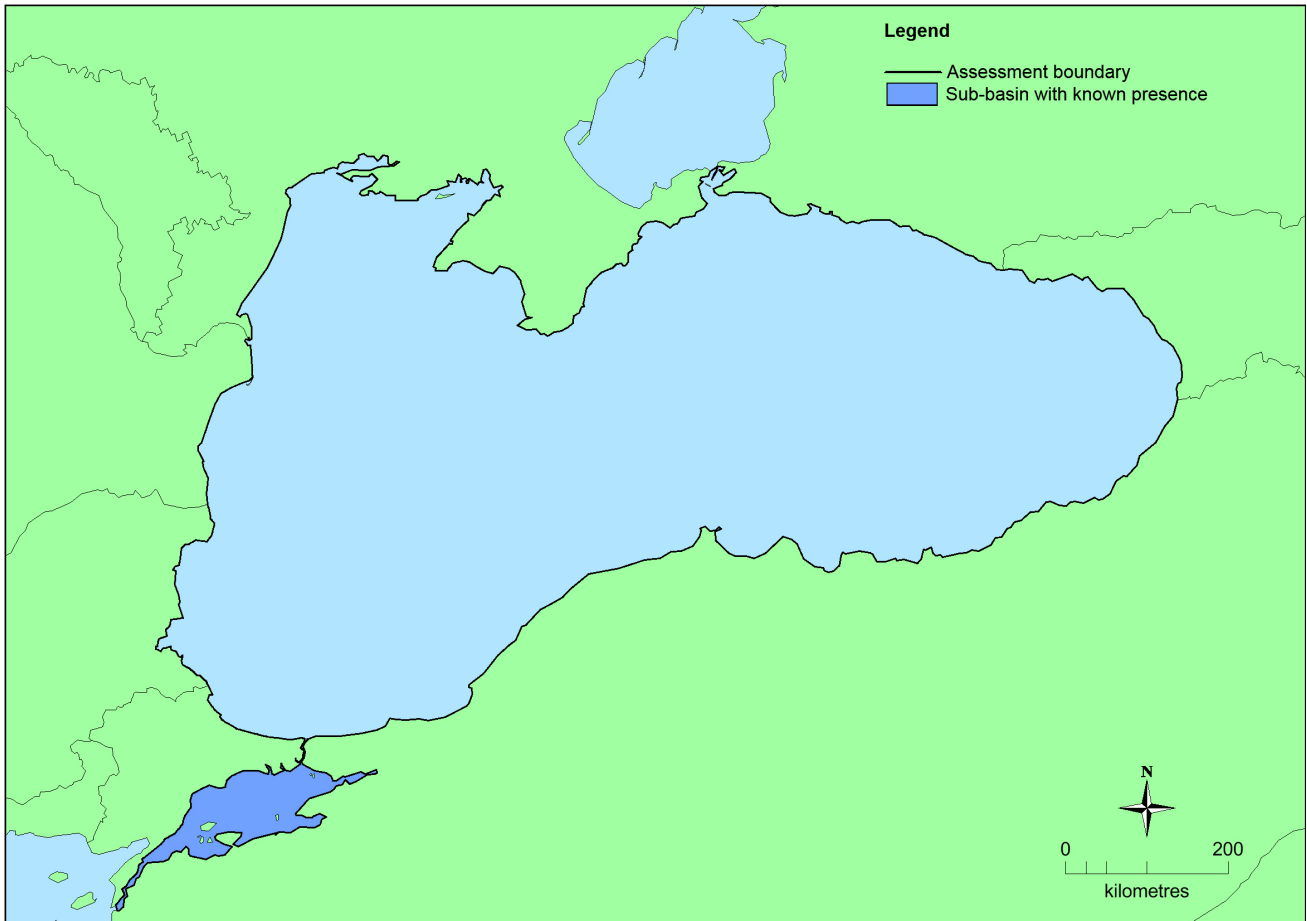
### **Geographic occurrence and trends**

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Black Sea</i>	Sea of Marmara: Present	Unknown Km <sup>2</sup>	Unknown	Unknown

### **Extent of Occurrence, Area of Occupancy and habitat area**

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
<i>EU 28</i>	Km <sup>2</sup>		Km <sup>2</sup>	This habitat is only present in the Sea of Marmara therefore it does not occur in the EU28
<i>EU 28+</i>	Unknown Km <sup>2</sup>	Unknown	Unknown Km <sup>2</sup>	This habitat is only present in the Sea of Marmara therefore it does not occur in the EU28

### **Distribution map**



There is insufficient data to produce a map of the distribution of this habitat. However the sub-basins of which this habitat is likely to occur in have been indicated.

### How much of the current distribution of the habitat type lies within the EU 28?

None of this habitat is hosted by the EU 28 in the Black Sea; it occurs only in the Sea of Marmara.

### Trends in quantity

There is insufficient data to accurately assess changes in quantity of the habitat

- Average current trend in quantity (extent)

EU 28: Unknown

EU 28+: Unknown

- Does the habitat type have a small natural range following regression?

Unknown

*Justification*

The habitat is known to occur in the Sea of Marmara but there is insufficient data to accurately calculate EOO and AOO. There is insufficient data to accurately assess whether the habitat has undergone an important decline in the last 50 years.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

Unknown

*Justification*

There is insufficient data and knowledge on this habitat to state whether it has a small natural range by reason of an intrinsically restricted area.

### Trends in quality

There is insufficient data to accurately assess changes in quality of the habitat

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

## **Pressures and threats**

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The principle threats to this habitat comprise: pollution, high water turbidity, mechanical disturbance and breakage of the bioconstruction, fishing, high sedimentation rates and climate-related water quality changes.

### **List of pressures and threats**

#### **Biological resource use other than agriculture & forestry**

Fishing and harvesting aquatic resources

Professional passive fishing

Professional active fishing

Benthic or demersal trawling

#### **Pollution**

Marine water pollution

#### **Invasive, other problematic species and genes**

Invasive non-native species

#### **Climate change**

Changes in abiotic conditions

Temperature changes (e.g. rise of temperature & extremes)

Changes in biotic conditions

Decline or extinction of species

## **Conservation and management**

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This habitat is not addressed by any legislation or management aimed at its conservation. Direct engagement of scientists and conservationists in the planning of the management process, analysis of social and economic costs and benefits of different management options, and involvement of diverse stakeholders will be essential to successful implementation of conservation actions.

### **List of conservation and management needs**

#### **Measures related to wetland, freshwater and coastal habitats**

Restoring/Improving water quality

Restoring coastal areas

#### **Measures related to marine habitats**

Restoring marine habitats

#### **Measures related to spatial planning**

Establish protected areas/sites

Establishing wilderness areas/allowing succession

Legal protection of habitats and species

## Measures related to urban areas, industry, energy and transport

Urban and industrial waste management  
 Specific management of traffic and energy transport systems  
 Managing marine traffic

## Measures related to special resource use

Regulating/Managing exploitation of natural resources on sea

## Conservation status

Annex 1:

1170: MBLS U1, MMED XX

## When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

There is insufficient data and knowledge of this habitat to assess its capacity to recover

## Effort required

10 years
Unknown

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	n/a %	n/a %	n/a %	n/a %
EU 28+	unknown %	unknown %	unknown %	unknown %

There is insufficient data on changes in quantity of this habitat to undertake an assessment using criterion A.

### Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	n/a Km <sup>2</sup>	-	-	n/a	n/a	-	-	n/a	n/a
EU 28+	unknown Km <sup>2</sup>	Unknown	Unknown	unknown	unknown	Unknown	Unknown	unknown	unknown

The precise extent of the habitat is unknown. Therefore there is insufficient data to produce EOO and AOO figures.

### Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	n/a %	n/a %	n/a %	n/a %	n/a %	n/a %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	n/a %	n/a %	n/a %	n/a %	n/a %	n/a %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	n/a %	n/a%	n/a %	n/a%	n/a %	n/a%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

Experts consider there to be insufficient data to conduct an assessment using criteria C/D.

### Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	n/a
EU 28+	unknown

There is no quantitative analysis available to estimate the probability of collapse of this habitat type.

### Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU28+	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
n/a	-	Data Deficient	-

### Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

### Assessors

S. Beal, G. Komakhidze, D. Micu, V. Mihneva, N. Milchakova, B. Yokes

### Contributors

S. Beal, G. Komakhidze, D. Micu, V. Mihneva, N. Milchakova, B. Yokes

### Reviewers

S. Gubbay

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21/12/2015

## References

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- Augier, H., Boudouresque, C. F., Laborel, J. 1971. Végétation marine de l'île de Port-Cros (Parc National). VII.- Les peuplements sciaphiles profonds sur substrat dur. *Bulletin Muséum d'Histoire Naturelle de Marseille*, 20: 149-168.
- Ballesteros, E. 1992. *Els vegetals i la zonació litoral: espècies, comunitats i factors que influeixen en la seva distribució*. Arxius Secció Ciències, 101. Institut d'Estudis Catalans. Barcelona. 616 pp.
- Ballesteros, E. 2006. Mediterranean coralligenous assemblages: a synthesis of the present knowledge. *Oceanography and Marine Biology: an Annual Review* 44: 123-195.
- Ballesteros, E. 2007. *Proposal of a Work Programme on protecting the coralligenous and other calcareous bioconcretions in the Mediterranean*. United Nations Environmental Programme, Mediterranean Action Plan. UNEP(DEC)/MED WG 308/9: 1-18. Tunis.
- Claudet, J., Fraschetti, S. 2010. Human-driven impacts on marine habitats: A regional meta-analysis in the Mediterranean Sea. *Biological Conservation* 143(9): 2195-2206.
- Curcó, A., Ferré, A., Font, J., Gesti, J., Vilar, L., Ballesteros, E. 2008. *Manual dels Hàbitats de Catalunya. Vol II. 1 Ambients litorals i salins*. (Eds. J. Vigo, J. Carreras & A. Ferré). Departament de Medi Ambient i Habitatge. Generalitat de Catalunya. Barcelona. 312 pp.
- Gamulin-Brida, H. 1965. Contribution aux recherches bionomiques sur les fonds coralligènes au large de l'Adriatique moyenne. *Rapports et Procès-Verbaux des Réunions CIESMM*, 18(2): 69-74.
- Giaccone, G. 2007. Coralligenous assemblage as underwater seascape: distribution off Italian coasts. *Biol. Mar. Medit.* 14(2): 124-141.
- Giaccone, G., Alongi, G., Pizzuto, F., Cossu, A. 1994. La vegetazione marina bentonica sciafila del Mediterraneo: III Infralittorale e Circalittorale. Proposte di aggiornamento. *Boll. Accad. Gioenia Sci. Nat. Catania*, 27: 201-227.
- Gatti, G., Bianchi, C. N., Morri, C., Montefalcone, M., Sartoretto, S. 2015. Coralligenous reefs state along anthropized coasts: Application and validation of the COARSE index, based on a rapid visual assessment (RVA) approach. *Ecological Indicators* 52: 567-576.
- Deter, J., Descamp, P., Ballesta, L., Boissery, P., Holon, F. 2012. A preliminary study toward an index based on coralligenous assemblages for the ecological status assessment of Mediterranean French coastal waters. *Ecological Indicators* 20: 345-352.
- Hong, J. S. 1980. *Étude faunistique d'un fond de concrétionnement de type coralligène soumis à un gradient de pollution en Méditerranée nord-occidentale (Golfe de Fos)*. Thèse de Doctorat . Université d'Aix-Marseille II. 134pp.
- Laborel, J. 1960. Contribution à l'étude directe des peuplements benthiques sciaphiles sur substrat rocheux en Méditerranée. *Recueil Travaux Station Marine Endoume* 33(20): 117-174.
- Laborel, J. 1961. Le concretionnement algal "coralligène" et son importance géomorphologique en Méditerranée. *Recueil Travaux Station Marine d'Endoume*, 23: 37-60.
- Laubier, L. 1966. Le coralligène des Albères: monographie biocénétique. *Annales Institut Océanographique de Monaco*, 43: 139-316.
- Martin, C. S., Giannoulaki, M., De Leo, F., Scardi, M., Salomidi, M., Knitweiss, L., Pace, M. L., Garofalo, G., Gristina, M., Ballesteros, E., Bavestrello, G., Belluscio, A., Cebrian, E., Gerakaris, V., Pergent, E., Pergent-Martini, C., Schembri, P. J., Terribile, K., Rizzo, L., Ben Souissi, J., Bonacorsi, M., Guarnieri, G., Krzejl, M.,



- Macic, V., Punzo, E., Valavanis, V., Frascchetti, S. 2014. Coralligenous and maërl habitats: predictive modelling to identify their spatial distributions across the Mediterranean Sea. *Scientific Reports*, 4: 5073.
- Molinier, R. (1960). Étude des biocoenoses marines du Cap Corse. *Vegetatio*, 9: 120-192.
- Pérès, J. M., Picard, J. 1951. Notes sur les fonds coralligènes de la région de Marseille. *Archives de Zoologie Expérimentale et Générale*, 88: 24-38.
- Pérès, J. M., Picard, J. 1952. Les corniches calcaires d'origine biologique en Méditerranée Occidentale. *Recueil Travaux Station Marine d'Endoume*, 4: 2-33.
- Pérès, J. M., Picard, J. 1958. Recherches sur les peuplements benthiques de la Méditerranée nord-orientale. *Annales Institut Océanographique de Monaco*, 34: 213-291.
- Pérès, J. M., Picard, J. 1964. Nouveau manuel de bionomie benthique de la Mer Méditerranée. *Recueil des Travaux Station Marine d'Endoume*, 31(47): 3-137.
- Sarà, M. 1969. Research on coralligenous formation: problems and perspectives. *Pubblicazione Stazione Zoologica di Napoli*, 37: 124-134.
- Sartoretto, S. 1996. *Vitesse de croissance et bioérosion des concrétionnements "coralligènes" de Méditerranée nord-occidentale. Rapport avec les variations Holocènes du niveau marin*. Thèse Doctorat d'Écologie, Université d'Aix-Marseille, II. 194 pp.
- Sartoretto, S. et al. 2014. *An integrated approach to evaluate and monitor conservation state of coralligenous bottoms: The Inter-cor method*. 2<sup>nd</sup> Mediterranean Symposium on the conservation of coralligenous habitats and other bioconcretions, Portorov, Slovenia.
- Templado, J., Ballesteros, E., Galparsoro, I, Borja, A., Serrano, A., Marín L., Brito, A. 2012. *Guía interpretativa: Inventario español de hábitats marinos. Inventario español de hábitats y especies marinos*. Ministerio de Agricultura, Alimentación y Medio Ambiente. 229 pp.