

## A5.6y Circalittoral biogenic habitats in the Mediterranean - coralligenous bioconcretions

### Summary

This habitat sometimes referred to as 'coral gardens' can be found on a variety of substrates and at depths ranging from 20 to 200 meters. The main characteristic is a relatively dense aggregation of colonies or individuals of one or more coral species or coralline algae. It is recognised one of the most important habitats in the Mediterranean providing refuge and subsistence for many organisms, including commercially important species.

Demersal fishing and discarded/lost fishing gears entangled around corals are a major pressure on circalittoral coral habitats. Mechanical disturbance and re-suspension of nearby sediments, particularly by bottom trawling, can also have a severe impact by smothering coral colonies. Other threats are chemical pollution, collection, the spread of invasive species and offshore construction activities. Ocean acidification as a response to climate change is a potential threat to this habitat as the pH levels expected at the end of the century might entail major shifts in the distribution and dominance of coralligenous outcrops.

The designation of Marine Protected Areas and fisheries reserves are needed conservation of this habitat. Specific measures aimed at protecting the coralligenous environment include the prohibition of trawling in areas with coralligenous outcrops and their vicinity and management of traditional and recreational fisheries to prevent stock depletion of target fish and crustaceans. These may be established within Marine Protected Areas or fisheries reserves. Quotas, closed areas and minimum sizes for red coral or any other commercialized anthozoan would also benefit this habitat.

### Synthesis

This habitat is present in all the Mediterranean sub-basins therefore the EOO exceeds the threshold for threatened status. The AOO suggest this habitat could be Vulnerable if there was evidence of continuing declines however this figure is believed to be an underestimate.

Infralittoral coralligenous habitats are known to be decreasing in quality and quantity but there is a lack of quantitative data on trends for circalittoral coralligenous concretions. This habitat has therefore been assessed as Data Deficient for both the EU 28 and EU 28+.

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

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

Red coral (*Corallium rubrum*) and Black coral (*Savaglia savalia*, *Antipathella subpinnata*) associations due to the commercial interest that have and the pressures of fisheries.

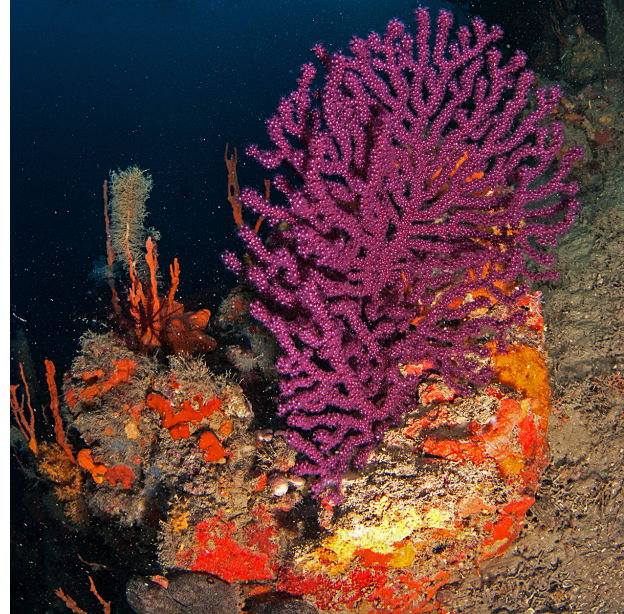
### Habitat Type

#### Code and name

A5.6y Circalittoral biogenic habitats in the Mediterranean - coralligenous bioconcretions



Gorgonian (*Eunicella cavolini*) at 35m depth, Korinthiakos Gulf, Greece (© K.Milonakis).



Gorgonian (*Paramuricea clavata*) at 60m depth, Patraikos Gulf, Greece (© K.Milonakis).

## Habitat description

This habitat sometimes referred to as 'coral gardens' can be found on a variety of substrates and at depths ranging from 20 to 200 meters. The main characteristic is a relatively dense aggregation of colonies or individuals of one or more coral species but also coralline algae. For example, soft-bottom coral gardens may be dominated by solitary scleractinians and sea pens, whereas hard-bottom coral gardens are often dominated by gorgonians, and red or black corals. Red corals rarely occurs about 30m as they require reduced light levels.

Reef forming hard corals (e.g. *Lophelia*, *Madrepora* and *Caryophylliidae*), if present, occur only as small or scattered colonies and not as a dominating habitat component. The habitat can also include relatively large numbers of sponge species. Other commonly associated fauna include basket stars, brittle stars, crinoids, ascidians, molluscs, crustaceans and fish.

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), 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.

Characteristic species:

The biological diversity of coral garden communities is typically high and often contains several species of coral belonging to different taxonomic groups, such as leather corals (Alcyonacea), gorgonians (Gorgonacea like *Paramuricea clavata*, *Eunicella verrucosa*, *Eunicella cavolini*, *Eunicella singularis*), sea pens (Pennatulacea), black corals (Antipatharia like *Antipathella subpinnata*) and hard corals (Scleractinia like the precious *Corallium rubrum*).

## Classification

EUNIS (v1405):

Level 4- A sub-habitat of Circalittoral biogenic habitats (A5.6).

Annex 1:

1170 Reefs

MAES:

Marine - Coastal

Marine - Shelf

MSFD:

Shallow sublittoral rock and biogenic reef

Shelf sublittoral rock and biogenic reef

EUSeaMap:

Shallow apotic rock or biogenic reef

Shelf rock or biogenic reefs

IUCN:

9.8 Coral reef

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

Yes

Regions

Mediterranean

Justification

Coralligenous habitat is a typical Mediterranean underwater seascape.

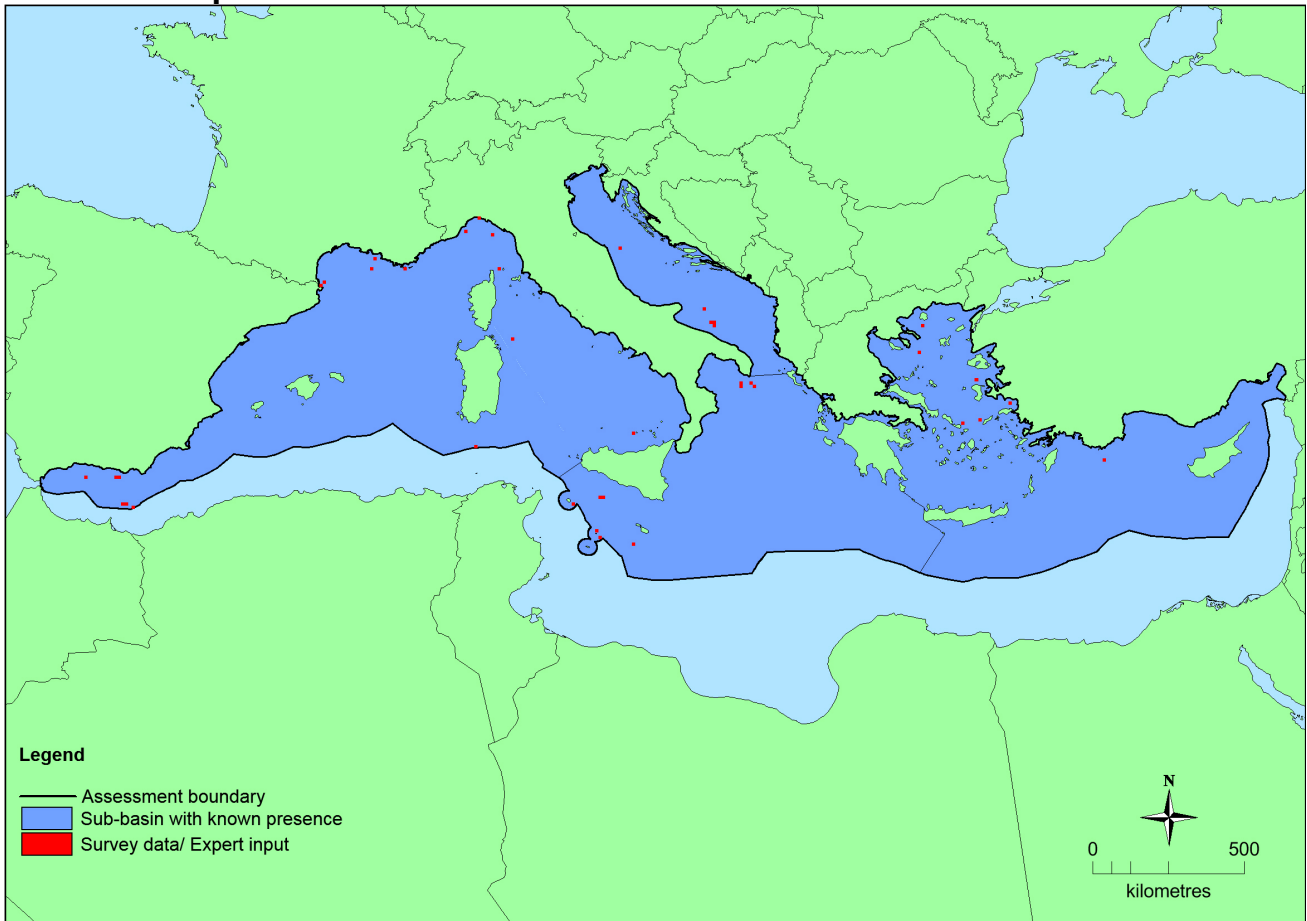
### **Geographic occurrence and trends**

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Mediterranean Sea</i>	Adriatic Sea: Present Aegian-Levantine Sea: Present Ionian Sea and the Central Mediterranean Sea: Present Western Mediterranean Sea: 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
EU 28	>50,000 Km <sup>2</sup>	>38	163 Km <sup>2</sup>	This habitat is present in all the Mediterranean sub-basins. AOO figures recognised as an underestimate.
EU 28+	>50,000 Km <sup>2</sup>	>43	178 Km <sup>2</sup>	This habitat is present in all the Mediterranean sub-basins. AOO figures are known to be an underestimate.

### Distribution map



This map has been generated using data from IUCN and the European Environment Agency (EEA). EOO and AOO have been calculated on the available data presented in this map however these should be treated with caution as expert opinion is that this may not indicate the full distribution of the habitat.

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

Unknown.

### Trends in quantity

The overall trend is unknown although shallow water coralligenous habitats are known to be decreasing in quantity.

- Average current trend in quantity (extent)  
EU 28: Unknown  
EU 28+: Unknown
- Does the habitat type have a small natural range following regression?

No

*Justification*

This habitat occurs in all the Mediterranean sub-basins therefore does not have a small geographical range.

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

No

*Justification*

This habitat occurs in all the Mediterranean sub-basins therefore does not have a small geographical range.

## **Trends in quality**

The overall trend is unknown although shallow water coralligenous habitats are known to be decreasing in quality.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

## **Pressures and threats**

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Demersal fishing and discarded/lost fishing gears entangled around corals are a major pressure on circalittoral coralligenous concretions resulting in direct loss as well as degradation. Mechanical disturbance and re-suspension of nearby sediments, particularly by bottom trawling, can also have a severe impact by smothering coral colonies. Other threats are the spread of invasive species (e.c. mucilaginous algae) which can cause necrosis to the colonies and offshore construction activities such as the laying of submarine cables. Some episodes of gorgonian and red coral mortality have been traced to chemical pollution. For example, in deep waters of the Mediterranean (80-160 meters) in 1987, mortality trends were linked to high rates of organochlorides such as PCB at the mouth of the Rodan Estuary.

Ocean acidification as a response to climate change is a potential threat to this habitat. This is supported by recent evidence of drastic species composition shifts in areas with naturally lower pH (CO<sub>2</sub> vents) that have pH levels similar to those projected for the end of the century.

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

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

- Professional passive fishing
- Demersal longlining
- Professional active fishing
- Benthic or demersal trawling
- Benthic dredging
- Removal for collection purposes

#### **Pollution**

- Marine water pollution

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

- Invasive non-native species

#### **Natural System modifications**

- Reduction or loss of specific habitat features
- Applied (industrial) destructive research

## Climate change

- Changes in abiotic conditions
- Changes in biotic conditions

## Conservation and management

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The designation of Marine Protected Areas and fisheries reserves are needed conservation of this habitat. Specific measures aimed at protecting the coralligenous environment include the prohibition of trawling in areas with coralligenous outcrops and their vicinity and management of traditional and recreational fisheries to prevent stock depletion of target fish and crustaceans. Quotas, closed areas and minimum sizes for red coral or any other commercialized anthozoan. Where this habitat occurs at diving depths, the regulation on the number of visitors per site/day as well as a detailed training on the diving behavior is needed to avoid incidental damage to this habitat.

### List of conservation and management needs

#### Measures related to marine habitats

- Other marine-related measures

#### Measures related to spatial planning

- Establish protected areas/sites
- Establishing wilderness areas/allowing succession
- Legal protection of habitats and species

#### Measures related to hunting, taking and fishing and species management

- Regulation/Management of fishery in marine and brackish systems

#### Measures related to special resource use

- Regulating/Managing exploitation of natural resources on sea

### Conservation status

Annex 1:

1170: MMED XX

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

As the most abundant and structuring species of coralligenous habitats are long-lived and slow growing species with limited recruitment rates, and native and non-native species can rapidly colonise the structures, local recovery can be difficult and extremely slow.

Some site specific studies for selected species (*Corallium rubrum*, Gorgonacea) have provide insights on the potential to recover after fishing activities or due to natural disasters (storms) and invasion of non-native species but these results cannot be generalized to other sites or to other species.

### Effort required

10 years	20 years	50+ years
Unknown	Naturally	Naturally

## Red List Assessment

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### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %

There is a lack of information on the extent of circalittoral coralligenous habitats and any trends in quantity. Declines are considered likely but this cannot be quantified at the present time. This habitat has therefore been assessed as Data Deficient under criterion A for both the EU 28 and EU 28+.

### Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km <sup>2</sup>	Unknown	Unknown	unknown	38	Unknown	Unknown	unknown	unknown
EU 28+	>50,000 Km <sup>2</sup>	Unknown	Unknown	unknown	43	Unknown	Unknown	unknown	unknown

This habitat is present in all the Mediterranean sub-basins therefore the EOO exceeds the threshold for threatened status. The AOO suggest this habitat could be Vulnerable if there was evidence of continuing declines however this figure is believed to be an underestimate and there is a lack of information on trends. This habitat has therefore been assessed as Data Deficient under criterion B.

### 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	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
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	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
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	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

This habitat is believed to have suffered a decline in quality over the last 50 years however there is a lack of quantitative data. It has therefore been assessed as Data Deficient under criteria C/D1.

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

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

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

therefore, it is assessed as Data Deficient under Criterion E.

### 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	DD	DD	DD	DD	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	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
Data Deficient	-	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

D. Poursanidis.

### Contributors

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### Reviewers

S.Gubbay and N.Sanders

### Date of assessment

08/01/2016

### Date of review

20/04/2016

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