

## A4.2x Circalittoral biogenic habitats in the Mediterranean - worm reefs

### Summary

This is one of the least studied habitat in the Mediterranean. Observations from scientists through visual census (scientific diving, ROV) and forums/portals relevant to underwater photography and diving have provide some few insights to the species that form this associations. Demersal fishing gears can damage and remove formations of worm reefs. Pollution, climate change and invasive non -native species are other threats. Spatial protection of areas where this habitat occurs, for example through the designation of MPAs can be beneficial along with the regulation and prohibition of activities which impact the sea bed.

### Synthesis

The circalittoral biogenic habitats in the Mediterranean including worm reefs are poorly studied with little known about their spatial extent, biotic/abiotic characteristics and associated biodiversity. What is know is only the existence of the keystone species that form these beds. This habitat has therefore been assessed as Data Deficient for the EU 28 and the 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    | -                 |

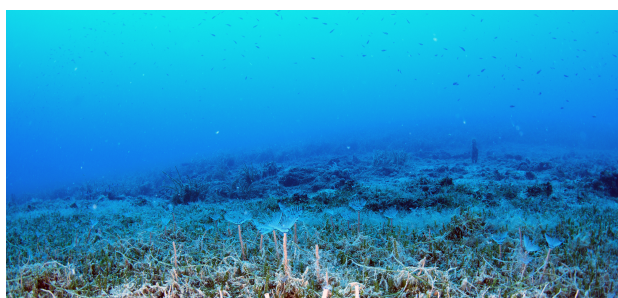
### Sub-habitat types that may require further examination

None.

### Habitat Type

#### Code and name

A4.2x Circalittoral biogenic habitats in the Mediterranean - worm reefs



*Sabella pavonina* association in Inner Ionian Archipelagos, 38 meters depth (© D.Poursanidis).

#### Habitat description

Worm reefs (formations) in the circalittoral zone in Mediterranean are formed by several species depending the bottom composition. The most common are the *Sabellaria spinulosa*, *Sabella pavonina* and to a lesser extent the *Filograna* spp./*Salmacina* spp. complex and *Sabella spallanzanii*. Worms grow in both soft/mud and hard substrates. *Sabellaria spinulosa* constructs unbranched dwelling tubes using mucus to bind together sand grains and broken shell to form a dense carpet on the bottom. *Filograna/Salmacina* build carbonate tubes and can occur in high densities attached to rock surfaces or algae like *Cystoseira* spp. and/or *Sargassum* spp. *Sabella pavonina* and *Sabella spallanzani* can form dense populations in areas

of soft sediment not overgrown by algae.

Indicators of quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include the presence of particular species, water quality parameters, levels of exposure to a particular exposure as well as more integrated indices which describe habitat function and structure, such as trophic index, or successful stages of development in habitats that have a natural cycle of change over time.

There are no known commonly agreed indicators of quality for this habitat, although particular parameters may be set in certain situations, e.g. protected features with Natura 2000 sites, where reference values may have been determined and applied on a location-specific basis.

Characteristic species:

Porifera like *Tethya aurantia* and *Ircinia* sp., bryozoans like *Pentapora fasciata*, *Myriapora truncata* and *Smittina* sp., Crustacean like *Balanus* sp. and Cnidarian like *Parazoanthus axinellae*, *Astroides calycularis* and *Dendrophyllia ramea* are some of the characteristic species that can be found in this formations. Molluscs and Decapods also occur.

## **Classification**

EUNIS (v1405):

Level 4. A sub-habitat of A4.2 Circalittoral rock and other hard substrata

Annex 1:

1170 Reefs

MAES:

Marine - Coastal

Marine - Shelf

MSFD:

Shallow sublittoral rock and biogenic reef

Shelf sublittoral rock and biogenic reef

EUSeaMap:

Shallow apghotic rock or biogenic reef

Shelf rock or biogenic reefs

IUCN:

9.2 Subtidal rock and rocky reefs

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

Unknown

Justification

It is unknown whether this habitat presents an outstanding example of typical characteristics of one or more biogeographic regions.

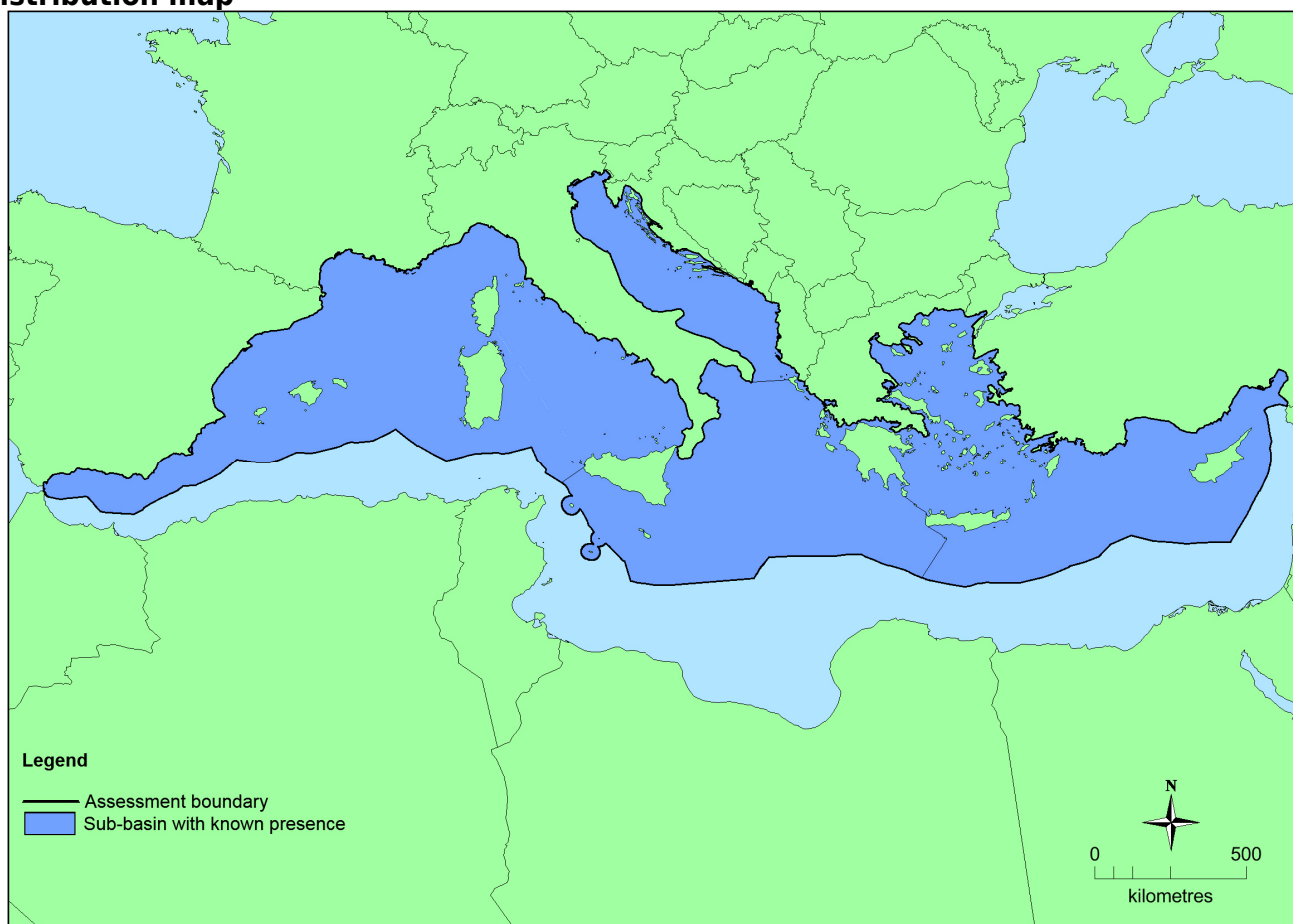
**Geographic occurrence and trends**

| 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<br>Aegian-Levantine Sea: Present<br>Ionian Sea and the Central Mediterranean Sea: Present<br>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 |
|---------------|----------------------------|-------------------------|------------------------------|---------|
| <i>EU 28</i>  | Unknown Km <sup>2</sup>    | Unknown                 | Unknown Km <sup>2</sup>      |         |
| <i>EU 28+</i> | Unknown Km <sup>2</sup>    | Unknown                 | Unknown Km <sup>2</sup>      |         |

**Distribution map**



This habitat is known to occur in all sub-basins in the Eastern and Western Mediterranean but there is insufficient data to produce a map of the distribution of this habitat.

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

It is unknown how much of this habitat is hosted by the EU28 in the Mediterranean.

### Trends in quantity

The trends in quantity of this habitat is unknown.

- 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*

It is unknown whether this habitat has a small range following regression.

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

Unknown

*Justification*

It is unknown whether this habitat has a small natural range due to its intrinsically restricted area.

### Trends in quality

The trends in quality of this habitat are unknown.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

## **Pressures and threats**

---

Demersal fishing gears can damage and remove formations of worm reefs. Pollution is another threat as it can alter the physicochemical composition of the sea water and thus to affect the structure and function of the habitat. Changes in seawater temperature and other type of changes due to climate change (pH, etc) can affect the ability of worms to build reefs structures. Invasive non-native species can compete the worm reef formers in terms of space and also can alter the physiognomy of the reefs. This is well known in the case of the algae *Caulerpa racemosa* which can cover the reefs and cause degradation.

### 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)

Sea-level changes

Decline or extinction of species

## Conservation and management

---

Spatial protection of areas where this habitat occurs, for example through the designation of MPAs can be beneficial along with the regulation and prohibition of activities which impact the sea bed such as the use of demersal fishing gears.

### List of conservation and management needs

#### 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  
Specific single species or species group management measures

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

Urban and industrial waste management

#### 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?

Unknown.

### Effort required

## Red List Assessment

---

### 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 no information on any past trends for this habitat type and insufficient data to predict future trends in quantity. 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       | unknown Km <sup>2</sup> | Unknown | Unknown | unknown | unknown | Unknown | Unknown | unknown | unknown |
| EU 28+      | unknown Km <sup>2</sup> | Unknown | Unknown | unknown | unknown | Unknown | Unknown | unknown | unknown |

There is no information on geographical range of this habitat so EOO and AOO cannot be estimated. Data are also lacking on past trends and future trends have not been estimated. This habitat has therefore been assessed as Data Deficient under criteria B for both the EU 28 and EU 28+.

### 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%          |

There is insufficient data from many Mediterranean regions to ascertain trends in the abiotic and/or biotic quality of the habitat. This habitat 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 the habitat type 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 | DD | DD | DD | DD   | DD   | DD   | DD | DD | DD | DD | DD | DD | DD |
| EU28+ | DD | DD  | DD  | DD | DD | DD | DD | DD   | DD   | DD   | DD | DD | DD | DD | LC | 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

-

### Reviewers

S.Gubbay and N.Sanders.

### Date of assessment

08/01/2016

### Date of review

18/04/2016

## References

---

There is no literature related to the circalittoral worm reefs of the Mediterranean. Available information about the faunal composition and structure is only from the infralittoral zone and mainly from the Western Mediterranean. Questionable is the use of term 'reef' in the Mediterranean as what is formed by the worms is more a 'facies', a 'formation' as part of the larger habitat (Coralligenous, Soft bottom).