

## A5.52B Algal dominated communities in the Mediterranean infralittoral sediment

### Summary

This habitat develops on infralittoral sediment covered by algae in sheltered places and where organic matter enhances macroalgal growth. Different sub-habitats t-can be distinguished by the dominant species composition and the environment they colonize.

The habitat is threatened by land reclamation, pollution, sedimentation coming from watersheds, and competition with non-native species. Climate change induced impacts such as changes in temperature, pH and salinity are also threats for the future. Some sub-habitats e.g. those dominated by *Cystoseira barbata* f. *repens* are more vulnerable than others to environmental pressures. Given the current and forecast impacts, there is a strong need to design management policies to mitigate climate change impacts. Recovery through intervention to improve water quality would also be beneficial. However, more efforts are needed to know the distribution of this habitat in these environments and its conservation status in the Mediterranean.

### Synthesis

In spite of the widespread nature and importance of this habitat, very little is known about it. The habitat is known to have suffered substantial habitat loss and also degradation in quality over the last 50 years and this is expected to continue. The scale of habitat loss has been estimated as over 50%. Declines in quality cannot be quantified. This habitat has therefore been assessed as Endangered at the EU 28 and at the EU 28+ .

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	A1	Endangered	A1

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

None.

### Habitat Type

#### Code and name

A5.52B Algal dominated communities in the Mediterranean infralittoral sediment



## Habitat description

This habitat develops on infralittoral sediment covered by algae in sheltered places and where organic matter enhances macroalgal growth. Different sub-habitats that can be distinguished by the dominant species composition and the environment they colonize. These include *Caulerpa prolifera*, *Acetabularia calyculus*, growing on dead shells of cockles and other clams; *Penicillus capitatus*, usually on sediments covering dead rhizomes of *Posidonia oceanica* as well as *Valonia aegagropila*, *Rytiphlaea tinctoria* or *Alsidium corallinum*, *Ulva* spp., *Cladophora* spp. and *Gracilaria* spp. The habitat is also very variable depending on nutrients, sedimentation, temperature, salinity, and hydrodynamism.

Indicators of quality:

The habitat is able to withstand severe disturbances as the environment they live in is prone to a high frequency of these events. Moreover, in some cases they are naturally adapted to high nutrient levels as they are situated on estuarine environments. In general, the subhabitat of *Cystoseira barbata* f. *repens* is more vulnerable than other subhabitats to environmental pressures. Dominance by species of *Ulva*, *Cladophora* and *Gayralia* usually indicate high quantities of nutrients. The presence of Syngnathidae (*Hippocampus*, *Syngnathus*) usually indicates good environmental quality.

Characteristic species:

Only species living above the sediment are included.

Rhodophyta (red algae)- *Rytiphlaea tinctoria*, *Alsidium corallinum*, *Osmundaria volubilis*, *Lithothamnion corallioides*, *Gracilaria gracilis*, *Gracilaria dura*, *Palisada patentiramea*, *Radicilingua thysanorhizans*, *Gracilariopsis longissima*.

Phaeophyta-*Cystoseira barbata* f. *repens*, *Dictyota mediterranea*, *Sargassum muticum*, *Undaria pinnatifida*.

Chlorophyta (green algae)-*Acetabularia calyculus*, *Caulerpa prolifera*, *Caulerpa cylindracea*, *Caulerpa taxifolia*, *Valonia aegagropila*, *Gayralia oxysperma*, *Ulva intestinalis*, *Ulva curvata*, *Ulva rigida*, *Ulva prolifera*, *Cladophora vagabunda*, *Cladophora echinus*, *Chaetomorpha linum*, *Chaetomorpha crassa*.

Bryozoans-*Zoobotryon verticillatum*.

Crustaceans-*Crangon crangon*, *Palaemon adspersus*, *Palaemon xiphias*, *Carcinus aestuarii*, *Gnatophyllum elegans*, *Ilia nucleus*.

Fish-*Gobius niger*, *Syngnathus abaster*, *Hippocampus guttulatus*, *Hippocampus hippocampus*, *Chelon labrosus*, *Liza ramada*, *Atherina boyeri*, *Atherina presbyter*, *Mugil cephalus*.

## Classification

EUNIS (v1405):

Level 4. A sub-habitat of A5.5 Shallow sublittoral/infralittoral mixed sediments.

Annex 1:

1160 Shallow inlets and bay

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral sand

Shallow sublittoral coarse sediment

Shallow sublittoral mixed sediment

EUSeaMap:

Shallow sands

Shallow coarse or mixed sediments

Barcelona Convention (RAC/SPA):

III.2.3. Biocenosis of superficial muddy sands in sheltered waters

III.2.3.6. Association with *Caulerpa prolifera* on superficial muddy sands in sheltered waters

III.1.1. Euryhaline and eurythermal biocenosis

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

Unknown

Justification

### **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>	Decreasing	Decreasing

### **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>	2,180,533 Km <sup>2</sup>	140	1805 Km <sup>2</sup>	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28+	2,195,632 Km <sup>2</sup>	207	>1805 Km <sup>2</sup>	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.

### Distribution map



This map has been generated using data from the Global Lakes and Wetlands Data Base and the Mediterranean Wetlands Observatory and supplemented with expert opinion. 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 but this habitat is known to occur in both the EU 28 and EU 28+.

### Trends in quantity

This habitat develops in sheltered locations such as enclosed bays and coastal lagoons. These areas have been subject to loss, for example from the drainage of wetlands and reclamation for agriculture. This has taken place historically but is also ongoing. In Albania, more than 50 percent of the coastal wetlands have been lost after the 1950s. Similarly, In Greece, the wetland surface of the Amvrakikos Gulf has decreased from 65 percent in 1945 to 41 percent in 1999 as well as outside EU 28+ Moreover, there are also local studies that reported the disappearance of the sub-habitat with *Cystoseira barbata* f. *repens* close or adjacent to harbours in enclosed bays due to pollution (e.g.in the Balears Islands, Spain).

- Average current trend in quantity (extent)  
EU 28: Decreasing  
EU 28+: Decreasing
- Does the habitat type have a small natural range following regression?  
No  
*Justification*  
The habitat has an EOO larger than 50,000 km<sup>2</sup>.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?  
No  
*Justification*  
The habitat is widespread along the Mediterranean coast.

## Trends in quality

Although this habitat is known to develop in areas subject to nutrient enrichment changes in the performance and production of fauna has also been reported as a consequence of heavy metal pollution, PCBs, PHBs and other contaminants for example at Mar Menor in Spain due to former mining activities. In the long term, climate change present scenarios where a temperature increase would expect to also affect the photosynthesis capacity of the subhabitat of *Caulerpa prolifera* and cause an increase of eutrophication. Future climate change will also affect and contribute to the loss of habitats due to the increase sea level rise

- Average current trend in quality  
EU 28: Decreasing  
EU 28+: Decreasing

## Pressures and threats

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The habitat is threatened by land reclamations, pollution sedimentation coming from watersheds, competition with non-native species and sedimentation coming from the basins slopes. When the habitat is enhanced by polluted and nutrient-rich waters a succession of habitats occur and drives to a dominance by species of *Ulva*, *Cladophora* and *Gayralia* and environments dominated by temperate introduced macroalgae (*Sargassum muticum*, *Undaria pinnatifida* and others). Climate change induced impacts such as changes in temperature, pH and salinity are also threats for the future.

## List of pressures and threats

### Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)  
Nutrient enrichment (N, P, organic matter)

### Invasive, other problematic species and genes

Invasive non-native species

### Natural System modifications

Canalisation & water deviation  
Flooding modifications  
Modification of hydrographic functioning, general  
Altered water quality due anthropogenic changes in salinity

### Natural biotic and abiotic processes (without catastrophes)

Species composition change (succession)  
Accumulation of organic material

Eutrophication (natural)

### Climate change

Temperature changes (e.g. rise of temperature & extremes)  
Droughts and less precipitations  
pH-changes

## Conservation and management

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The protection of coastal wetlands has become a priority objective in resource conservation policies of the Mediterranean region. The lack of an adequate management of these areas has been recognized in several forums as the main cause leading to an ecological degradation and as a consequence, to the different associated habitats. Different management strategies have been applied in different countries, however there is limited information on their effectiveness. Given the current and forecast impacts, there is also a strong need to design management policies to mitigate climate change impacts. Recovery through intervention to improve water quality would also be beneficial.

### List of conservation and management needs

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

Restoring/Improving water quality  
Restoring/Improving the hydrological regime  
Restoring coastal areas

#### Measures related to spatial planning

Establish protected areas/sites

### Conservation status

Annex 1:

1160 MMED XX

*Cystoseira barbata* is included in the Annex II of the Barcelona Convention. Some areas where this habitat occurs may be protected sites under the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat and are part of the Natura 2000 network.

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

Recovery through intervention to improve water quality and transplantation of *Cystoseira* specimens has been suggested as a tool to be explored in order to restore extinct populations.

### Effort required

10 years
Through intervention

## Red List Assessment

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### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	>50 %	Unknown %	Unknown %	Unknown %
EU 28+	>50 %	Unknown %	Unknown %	Unknown %

Much of this habitat develops in sheltered locations such as the inner most parts of sheltered bay and historical data show that such areas have been subject to serious loss expert opinion is that this habitat has decline in quantity by at least 50% over the last 50 years. Estimates for its future are unprecise, but climate change and the current pressures, will affect and reduce this habitat. This habitat is therefore been assessed as Endangered under Criteria A1 for both 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>	Yes	Yes	No	>50	Yes	Yes	No	No
EU 28+	>50,000 Km <sup>2</sup>	Yes	Yes	No	>50	Yes	Yes	No	No

This habitat has a large natural range in the Mediterranean. The precise extent is unknown however as EOO >50,000km<sup>2</sup> and AOO >50, this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. Trends are declining although the distribution of the habitat is such that the identified threats are unlikely to affect all localities at once. This habitat has therefore been assessed as Least Concern under all criteria for both 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 %	intermediate %	Unknown %	intermediate %	Unknown %	Unknown %
EU 28+	Unknown %	intermediate %	Unknown %	intermediate %	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%

The ecosystem where this habitat develops is characterized by a great variability in its ambient conditions that makes difficult to obtain estimations of degradation in the biotic and abiotic quality. Nonetheless, many scientific and monitoring works highlight a strong decrease in quality due to widespread contamination, sewage discharge, eutrophication and others local threats along the coastline of Mediterranean countries. Direct and indirect impacts drive by climate change will affect the habitat in the near future according to the geographical and environmental conditions of each site.

It is not possible to calculate the reductions in abiotic and/or biotic quality, although changes have been reported in the abiotic conditions of this habitat at several sites. The habitat type has therefore been assessed as Data Deficient under Criterion C/D.

## 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	EN	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	EN	DD	DD	DD	LC	LC	LC	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
Endangered	A1	Endangered	A1

## Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

## Assessors

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## Contributors

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## Reviewers

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15/12/2015

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21/04/2016

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