

A5.52A Algal dominated communities in the Mediterranean circalittoral sediment

Summary

Habitats formed in circalittoral sediments that usually have detritic components that allow erect macroalgae to grow over the seabed. The algal cover can be very variable, not always growing necessarily together with the maërl, and with a number of dominant species. Some of the sub-habitats such as those of kelp forest are linked to particular oceanographic conditions such as those singular kelp forest communities inhabiting deep waters (20–100 m depth) in some localities at the Strait of Gibraltar and in the Mediterranean Sea (ej. Alboran Sea and Strait of Messina). The Mediterranean endemic *Laminaria rodriguezii* also inhabits very deep waters (50–120 m depths) in the Western Mediterranean Sea and in the Adriatic Sea.

The main threats to this habitat are illegal trawling, excess sedimentation due to construction and developments in the coastal and marine areas that can also decrease light penetration, limiting algae growth, non-native species, particularly by two invasive species, *Caulerpa cylindracea* and *C. taxifolia* and climate change, particularly the warming of seawater which is considered likely to affect the distribution of some of the main structural species of this habitat such as the endemic *L. rodriguezii*. This habitat might be included within the limits of some marine protected areas. Additional beneficial actions include the monitoring of the extension, abundance distribution and local species richness over time to examine trends and better regulation in certain areas of fishing activities, particularly trawling.

Synthesis

This is a very poorly studied habitat type and few reports exist regarding its distribution at a handful of locations. Moreover, data on quality or quantity is lacking and the territorial data does not provide information for most Mediterranean countries.

The habitat has a large EOO and AOO. There are some cases of reported declines but overall trends are unknown and cannot be quantified. 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

Gravel beds with *Cystoseira* spp

Kelp forests with *Laminaria ochroleuca* and *Saccorhiza polyschides*

Kelp forests with *Laminaria rodriguezii*

Habitat Type

Code and name

A5.52A Algal dominated communities in the Mediterranean circalittoral sediment



Sedimentary bottom covered by a kelp forest of *Laminaria rodriguezii*. Columbretes, Spain (© E. Ballesteros).



Macroalgae developing in a deep sedimentary bottom. Scandola, Corsica, France (© E. Ballesteros).

Habitat description

Habitats formed in circalittoral sediments that usually have detritic components that allow erect macroalgae to grow over the seabed. The algal cover can be very variable, not always growing necessarily together with the maërl, and with a number of dominant species. They develop at low irradiances, usually between 5% and 0.5% of subsurface irradiance, at moderate to low hydrodynamism levels.

Several sub-habitats can be distinguished:

- Meadows of *Osmundaria volubilis* and *Phyllophora crispa* growing over detritic and gravel bottoms, between 50 and 90 meters depth. They can be very common in the central and North Western Mediterranean
- Kelp forests with *Laminaria rodriguezii*, below 70 meters depth and down to almost 100 meters depth from all the Mediterranean. This subhabitat can also grow shallower in special environmental conditions
- Kelp forests with *Laminaria ochroleuca* and *Saccorhiza polyschides*, only in the Alboran Sea, northwestern coasts of Africa and the Strait of Messina, in places subjected to very strong currents.
- Beds of *Halopteris filicina*, between 55 and 100 meters depth.
- Gravel beds with *Arthrocladia villosa* and *Sporochnus pedunculatus*, between 30 and 50 meters depth.
- Gravel beds with *Cystoseira* spp.

Indicators of quality:

Habitat very variable according to several factors (nutrients, sedimentation, temperature, salinity, hydrodynamism) and to the main species dominating the assemblages. Some sub-habitats are rather constant through time (kelp habitats, *Osmundaria volubilis*) but others, like the subhabitat of *Arthrocladia villosa* and *Sporochnus*, are subjected to huge interannual variation in species composition and biomass.

Trends in abundance distribution and local species richness could be used as a proxy to examine quality overtime. The habitat can also change to non-native habitats dominated by two invasive species, *Caulerpa cylindracea* and *C. taxifolia*.

Characteristic species:

Rhodophyta (red algae)- *Phyllophora crispa*, *Osmundaria volubilis*, *Rytiphlaea tinctoria*, *Alsidium*

corallinum, *Scinaia complanata*, *Lithophyllum racemus*, *Spongites fruticosus*, *Lithothamnion corallioides*, *Mesophyllum sphaericum*, *Phymatolithon calcareum*, *Acrothamnion preissii*, *Dasya baillouviana*, *Erythroglossum balearicum*, *Myriogramme tristromatica*, *Brongniartella byssoides*, *Osmundea pelagosae*, *Peyssonnelia rosa-marina*, *Peyssonnelia harveyana*, *Peyssonnelia crispata*, *Chylocladia verticillata*, *Gloiocladia repens*, *Sebdenia dichotoma*, *Cryptonemia tuniformis*, *Halymenia elongata*, *Halymenia latifolia*, *Nemastoma dumontioides*, *Rhodophyllis divaricata*, *Kallymenia requienii*, *Kallymenia spathulata*, *Phyllophora heredia*, *Sphaerococcus rhizophylloides*.

Phaeophyta (brown algae)- *Laminaria rodriguezii*, *Laminaria ochroleuca*, *Saccorhiza polyschides*, *Phyllariopsis purpurascens*, *Phyllariopsis brevipes*, *Dictyopteris lucida*, *Dictyopteris polypodioides*, *Arthrocladia villosa*, *Sporochnus pedunculatus*, *Halopteris filicina*, *Carpomitra costata*, *Asperococcus bullosus*, *Spermatochnus paradoxus*, *Stictyosiphon adriaticus*, *Stictyosiphon soriferus*, *Cutleria chilosa*, *Zanardinia typus*, *Cystoseira abies marina*, *Cystoseira foeniculacea f. latiramosa*, *Cystoseira spinosa var. compressa*, *Cystoseira zosteroides*.

Chlorophyta (green algae)- *Umbraulva dangeardii*, *Caulerpa taxifolia*, *Caulerpa cylindracea*.

Tunicates- *Aplidium conicum*, *Rhopalaea neapolitana*.

Echinoderms- *Chaetaster longipes*, *Ophiomyxa pentagona*, *Ophiopsila aranea*, *Spatangus purpureus*.

Crustaceans- *Dardanus callidus*, *Dardanus arrossor*, *Pagurus prideaux*, *Lissa chiragra*.

Cnidarians- *Eunicella singularis*, *Eunicella verrucosa*.

Fish- *Dasyatis pastinaca*, *Zeus faber*, *Mullus surmuletus*, *Pagellus acarne*, *Pagellus erythrinus*, *Pagrus pagrus*, *Spicara maena*, *Blennius ocellaris*.

Classification

EUNIS (v1405):

Level 4. A sub-habitat of A5.52 Kelp and seaweed communities on sublittoral sediment.

Annex 1:

1160 Large shallow inlets and bays

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral sediment (coarse, sand, mud, mixed)

EUSeaMap:

Shallow coarse or mixed sediments

Barcelona Convention (RAC/SPA)

IV.2.2. Biocenosis of the coastal detritic bottom

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

No

Justification

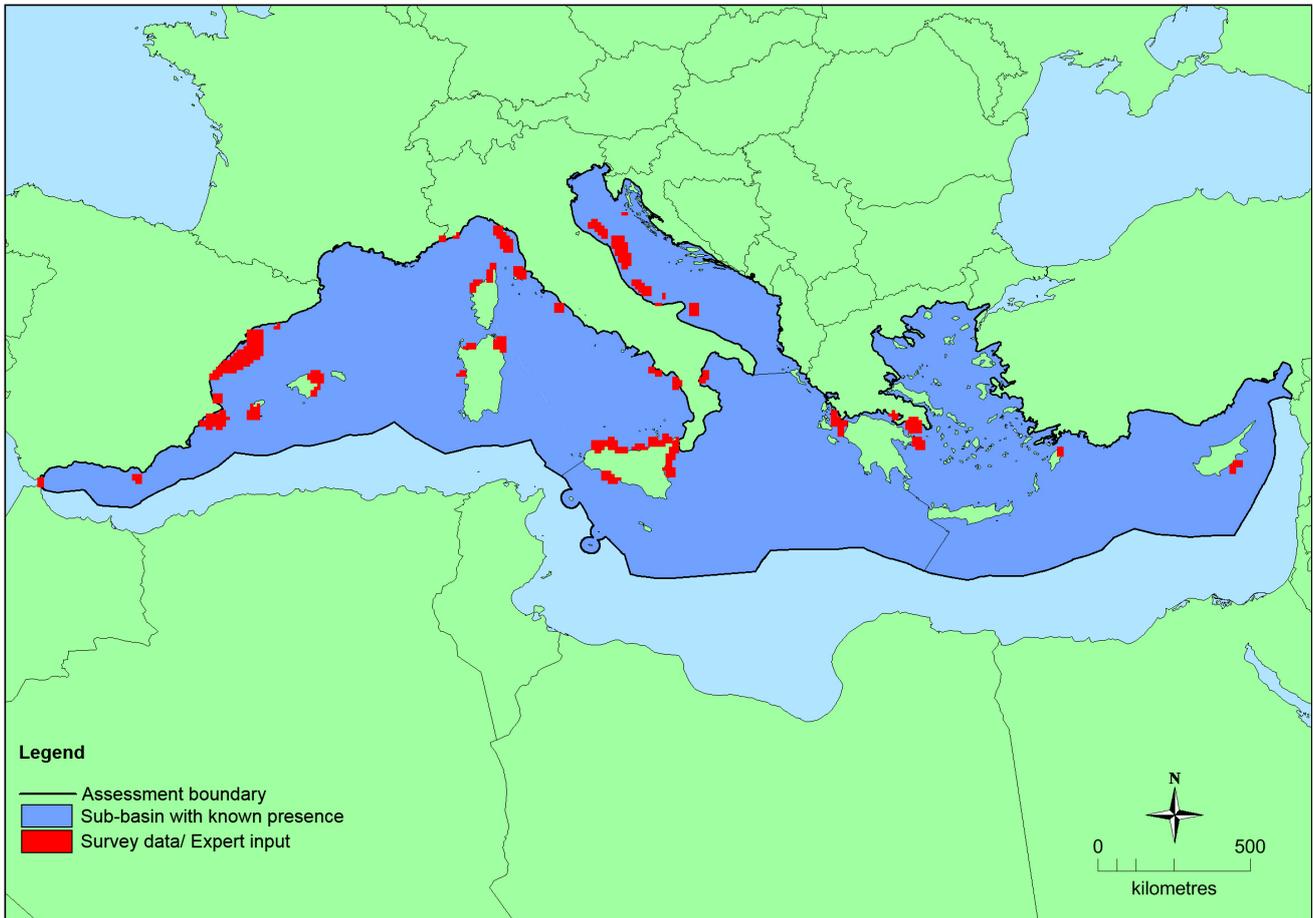
Geographic occurrence and trends

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 ²	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>	1,658,911 Km ²	279	49,637 Km ²	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.
<i>EU 28+</i>	1,727,385 Km ²	624	61,180 Km ²	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 IUCN and the European Environment Agency (EEA), 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?

It is unknown how much of this habitat is hosted by the EU 28 in the Mediterranean.

Trends in quantity

No studies seems to have been conducted to examine trends in quantity of this type of detritic habitat. Expert opinion considers that the habitat is most probably decreasing since the middle of the 20th century at least in some part of the French coast as the Bay of Marseilles.

Moreover, some of the most representative species of the sub-habitat are stenothermic species and depend on the presence of cold waters. The warming of water bodies due to climate change therefore could be one of the main pressures affecting this habitat, especially in the communities of the Strait of Messina. Unfortunately, little information is available.

- 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
 The habitat has a EOO larger than 50,000 km²
- 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

Overall, there is no information regarding trend in quality of the habitat (or decline in habitat quality) throughout its distribution range.

In France, it is considered that the quality of this habitat has decreased because of the increase of sedimentation that changed the species composition and reduced the size of habitat. More the development of trawling in some parts in Provence has impacted the species composition.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

The main threats to this habitat are illegal trawling, excess sedimentation due to construction and developments in the coastal and marine areas that can also decrease light penetration, limiting algae growth. Moreover, the habitat can also change and reduce in quality due to non-native species, particularly by two invasive species, *Caulerpa cylindracea* and *C. taxifolia*.

Climate change, particularly the warming of seawater can affect the distribution of some of the main structural species of this habitat such as *L. rodriguezii* since it is an endemic species.

List of pressures and threats

Urbanisation, residential and commercial development

Urbanised areas, human habitation

Biological resource use other than agriculture & forestry

Intensive fish farming, intensification

Suspension culture

Benthic or demersal trawling

Benthic dredging

Invasive, other problematic species and genes

Invasive non-native species

Climate change

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

Conservation and management

This habitat might be included within the limits of some marine protected areas (e.g. Alboran Island). Additional actions needed, might include the monitoring of the extension, abundance distribution and local species richness over time to examine trends and better regulation in certain areas of fishing activities, particularly trawling.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to marine habitats

Other marine-related measures

Measures related to spatial planning

Establish protected areas/sites

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

Conservation status

Annex 1:

1160 MMED XX

Laminaria rodriguezii is listed in the Annex 2 of the Barcelona Convention as well as *Cystoseira* genus (except *Cystoseira compressa*) and *Kallymenia spathulata* or *Sphaerococcus rhizophylloides*. *Laminaria rodriguezii* and *L. ochroleuca* are also strictly protected by the Bern Convention.

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

Unknown. There is no information regarding the capacity of these major macroalgal-dominated assemblages on coastal detritic bottoms to recover from certain impacts. Some parts of the life cycle are more sensitive to impacts and potential intraspecific competition.

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 a lack of information on the quantity of this habitat and trends. It has therefore been assessed as Data Deficient under Criterion A for both the EU 28 and E 28+.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km ²	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown
EU 28+	>50,000 Km ²	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown

The habitat has a patchy distribution in the Mediterranean but it is believed that the EOO is larger than 50,000km² and the AOO is larger than 50, exceeding the thresholds for a threatened category. There is a lack of information on trends. This habitat has therefore been assessed as Data Deficient under criteria B for 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%

The assessment of reduction in abiotic and/or biotic quality is difficult due to the lack of studies and data on past and present state conditions. Therefore, 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. Therefore, the habitat type is 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	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	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)

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Reviewers

S. Gubbay and N. Sanders.

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Date of review

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