

A5.13: Faunal communities in Mediterranean infralittoral coarse sediment

Summary

Infralittoral coarse sediments have a widespread but fragmentary distribution around the Mediterranean Sea, predominantly on exposed coasts and the mouths of big rivers and streams. The habitat is subject to disturbance by wave action, the catchment area and complexity of rivers and rivers input, which determine species composition and abundance according to the different range of environmental conditions. It is characterised by a robust fauna (i.e. species that tolerate a certain change of environmental conditions) of infaunal polychaetes, amphipods, nematodes and bivalves.

Different pressures such as nutrient enrichment from untreated waters and pollution can affect this habitat. A better understanding of the effects of different pressures on the communities that live in this habitat, establishment of protected areas where this habitat occurs and better regulation of exploitation of natural and non-natural resources are also required.

Synthesis

This is a very poorly studied habitat type and only a few reports exist regarding its distribution at few localities. Moreover, data on trends in quality and quantity are lacking and there is almost no territorial data for most countries. Therefore, this habitat has 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

Habitat with presence of the “*Amphioxus sand*” community.

Habitat Type

Code and name

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Infralittoral coarse sediments. Cap de Cavalleria, Menorca, Spain (© E. Ballesteros).



Infralittoral coarse sediments, Cataluña, Spain (© S. Pinedo).

Habitat description

This habitat is usually associated with the mouths of big rivers and streams, but it is also found as a fringe

close to the rocky margins in bays and adjacent to coarse sandy beaches (4-25 m depth) in exposed areas subjected to strong unidirectional bottom currents and/or wave action. The high exposure that this habitat experiences prevents the accumulation of organic matter and fine sediments. Coarse sediments provide a wide range of interstitial spaces that constitute a suitable habitat for many invertebrates, mainly carnivores, omnivores and filter feeders.

Bivalves (*Spisula subtruncata*, *Lucinella divaricata*, and in some cases *Loripes lucinalis*) are the most representative group of this habitat type, but infaunal polychaetes are also very abundant (*Aonides paucibranchiata*, *Spio decoratus*, *Protodorvillea kefersteini*, *Glycera tessellata*, *Lumbrinerides acuta*, *Aponuphis* spp., *Paradoneis armata* and *Mediomastus fragilis*). The amphipod *Siphonoecetes dellavallei* is the most frequent crustacean, together with *Apseudopsis latreilli*, in areas close to *Posidonia oceanica* meadows. Nematodes are common and abundant mainly in bottoms shallower than 20 m depth. The polychaete *Ditrupea arietina* is rare at less than 10 m but it can be found within a wide variety of sediments, being more abundant at increasing proportions of coarse material. The bivalves *Acanthocardia tuberculata* and *Callista chione* are also characteristic species of this habitat, and constitute an important contribution to the total biomass. Fishes such as the Greater Weever (*Trachinus draco*), the Spanish Bream (*Pagellus acarne*), the Striped Seabream (*Lithognathus mormyrus*) and the Mediterranean Sand Eel (*Gymnammodytes cicerelus*) are also common in this habitat. A particular fauna assemblage of this habitat is composed by the Amphioxus or Lancelets (*Branchiostoma lanceolatum*). This "Amphioxus sands" normally extends on gravel and coarse sand with shell fragments.

Indicators of quality:

Most of the species included in the habitat description are indicators of good environmental quality. The majority of bivalves are very sensitive to environmental disturbances and changes in the density and structure of these communities might indicate a change on habitat quality.

In general, *Branchiostoma lanceolatum* communities show a negative correlation between the amphioxus presence and the organic matter content of the habitat, changing also the dominant species with the enrichment in the sediment.

Characteristic species:

Molluscs: *Spisula subtruncata*, *Lucinella divaricata*, *Ruditapes decussatus*, *Acanthocardia tuberculata*, *Callista chione*, *Thracia papyracea*, *Caecum trachea*, *Chamelea gallina*, *Dosinia lupinus*, *Ensis minor*, *Tellina fabula*, *Loripes lucinalis*.

Crustacea: *Siphonoecetes dellavallei*, *Bathyporeia phaiophthalma*, *Apseudopsis latreilli*, *Lembos* sp., *Diogenes pugilator*, *Megaluropus massiliensis*.

Nematoda: *Aspidosiphon muelleri*.

Annelida: *Oligochaeta*, *Aonides paucibranchiata*, *Spio decoratus*, *Protodorvillea kefersteini*, *Goniadella galaica*, *Glycera tessellata*, *Paradoneis ilvana*, *Mediomastus fragilis*, *Lumbrinerides acuta*, *Ditrupea arietina*, *Chone dunerii*, *Paradoneis armata*, *Syllis* sp., *Aponuphis bilineata*, *Marphysa bellii*, *Owenia fusiformis*.

Cordata: *Branchiostoma lanceolatum*.

Fish: *Trachinus draco*, *Pagellus acarne*, *Lithognathus mormyrus*, *Gymnammodytes cicerelus*.

Classification

EUNIS (v1405):

Level 4. A sub-habitat of Infralittoral coarse sediment (A5.1).

Annex 1:

1110 Sandbanks slightly covered with seawater all the time

1160 Large shallow inlets and bays

MAES:

Marine - Coastal:

Marine - inlets and transitional waters

MSFD:

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

EUSeaMap:

Shallow coarse or mixed sediments.

IUCN:

9.3. Subtidal loose Rock/Pebbles/Gravel

Barcelona Convention:

III.3.1 Biocenosis of coarse sands and fine gravels mixed by the waves

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

Unknown

Justification

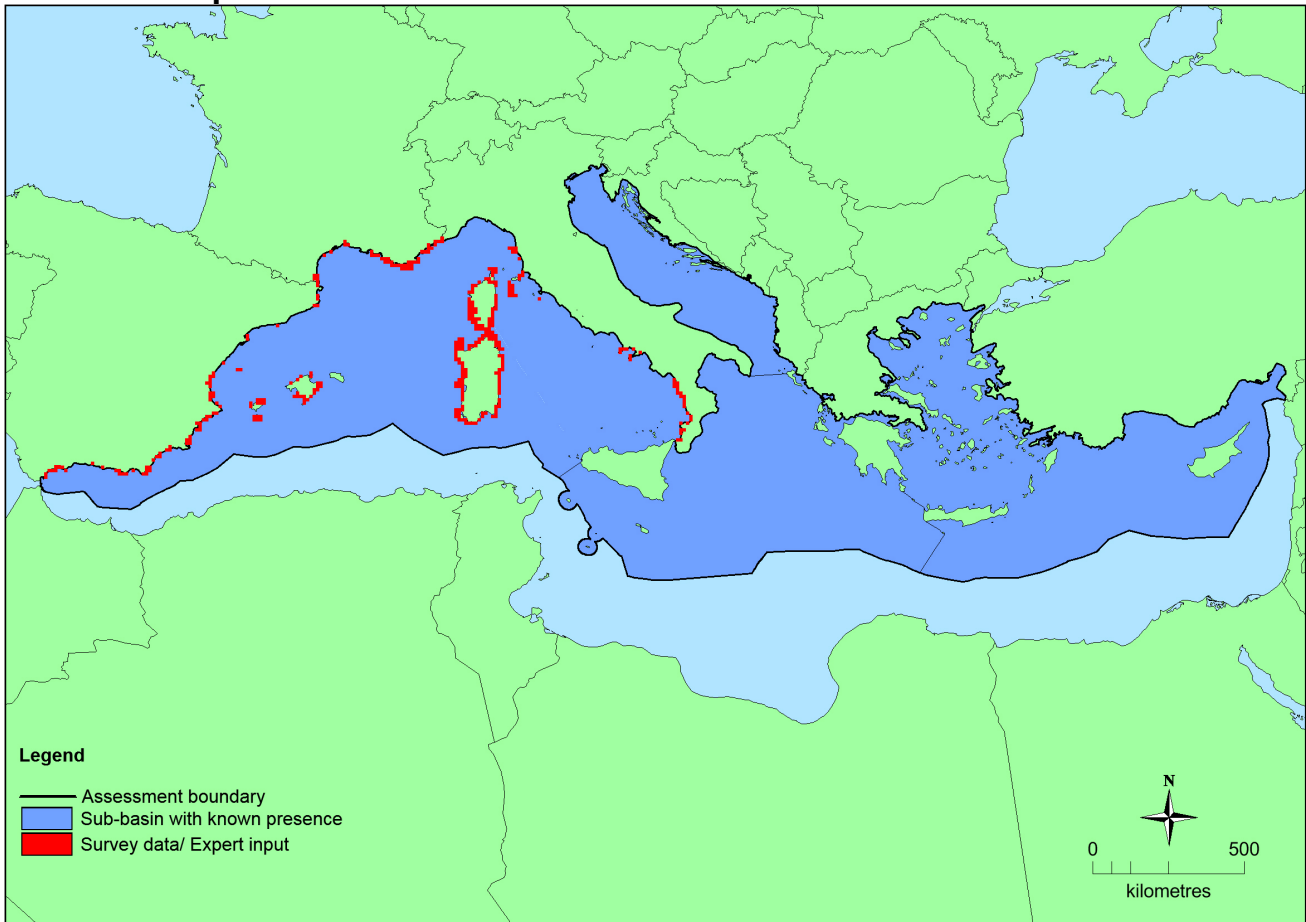
Geographic occurrence and trends

| 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 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 |
|--------|----------------------------|-------------------------|------------------------------|---|
| EU 28 | 817,044 Km ² | 312 | Unknown 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. |
| EU 28+ | >817,044 Km ² | >312 | Unknown 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 based on EMODNet database and other publications for the western Mediterranean. 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. Distribution information is available only from western Mediterranean.

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

This is a common habitat in the EU 28 and in the EU 28+, however the full extent of its distribution within EU waters is not fully known.

Trends in quantity

Fluctuations in the number and biomass of the main fauna components of this habitat have been reported due to changes in the abiotic environment and the proximity of harbours such as those close to the Po River (Italy, North Adriatic) and to river flows from the Spanish Catalan coast (NW Mediterranean)

Sea), among others. At the French coast, the influence of the Rhone river during the 1980s also resulted in a dramatic change in the number and biomass of the communities of this habitat in the Gulf of Lions. However, there is currently no direct information on the geographic extent and the magnitude of these fluctuations.

- 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 natural range that exceeds 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 and the EOO > 50,000 km².

Trends in quality

Changes in the abiotic environment (e.g. granulometry, flow rate and input of organic matter from rivers, siltation) have been reported to influence and change the composition of soft bottom communities from this habitat in the Gulf of Lion, as in other Mediterranean sites. Given the high environmental variability of the habitat, more information is needed on the causes of the observed changes and information on trends in quality.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

The release into the coastal zone of untreated domestic, urban and industrial waters, together with fishing and dredging activities, can impact this habitat by changing the spatial composition of the populations inhabiting those areas. This habitat could also be affected by beach replenishment activities.

List of pressures and threats

Biological resource use other than agriculture & forestry

Benthic or demersal trawling

Pollution

Pollution to surface waters by industrial plants

Pollution to surface waters by storm overflows

Diffuse pollution to surface waters due to household sewage and waste waters

Nutrient enrichment (N, P, organic matter)

Natural System modifications

Dredging/ Removal of limnic sediments

Estuarine and coastal dredging

Conservation and management

There is a lack of information on this habitat type, therefore multiple biodiversity surveys on the

distribution and trends (in different seasons and years) of this habitat in the Mediterranean are needed. In addition, monitoring data from different geographical regions will also assist in capturing differences that might occur within the same habitat. A better understanding of the effects of different pressures on the communities that live in this habitat, establishment of protected areas where this habitat occurs and better regulation of exploitation of natural and non-natural resources are also required.

List of conservation and management needs

Measures related to marine habitats

Other marine-related measures

Measures related to spatial planning

Establish protected areas/sites

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:

1110: MMED XX

1160: MMED XX

Listed as endangered natural habitat type in the Resolution no. 4 (Council of Bern Convention, 1996): Sublittoral soft seabeds (code 11.22).

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 % |

Currently, there is no information available on the historical, present or future reduction of this habitat in the Mediterranean, as there are no inventories per country available. Therefore the habitat type is assessed as Data Deficient under Criterion A.

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 Sea, but it is estimated that both the EOO and the AOO largely exceed the thresholds for a threatened Category. Moreover, there is no information available on whether there is a continuing decline in the spatial extent or the biotic and abiotic quality, on whether a threatening process will likely cause continuing declines and on whether the habitat exists at very few locations. Therefore, the habitat type is 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% |

Since there are no studies available on the past and current conditions of this habitat type, 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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