A5.27 Communities of Mediterranean lower circalittoral sand

Summary

A habitat in the deepest part of the circalittoral zone extending down to 200 m of depth. The sediment comprises fine sands or non-cohesive muddy sands. Animal communities dominate characterised by a diverse range of polychaetes, cnidarians, amphipods, bivalves and echinoderms.

The major negative effect on this habitat is the result of demersal fishing activities, mainly trawl fishing which alter seabed structure and biodiversity. The continental shelf area in the EU Mediterranean countries is almost all subject to a high intensity of trawled gear fishing increasing on an east to west gradient with the highest intensity and extent in the Adriatic Sea. Nutrient enrichment from land based sources may also affect deep circalittoral areas by leading to hypoxic conditions. The regulation of fishing activities is key to conservation of this habitat. This may include gear modifications, spatial and season restrictions as well as bycatch limits. Controls on land based sources of pollution will also benefit this habitat.

Synthesis

This habitat is widespread and common in the Eastern and Western Mediterranean. The precise extent is unknown but estimated as EOO >50,000km^2 and AOO >50 which exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. It is affected by demersal fishing activities, as well as natural changes in sedimentation rates but it difficult to determine whether there have been any trends in quantity as a result.

The continental shelf area in the EU Mediterranean countries is almost all subject to a high intensity of trawled gear fishing increasing on an east to west gradient with the highest intensity and extent in the Adriatic Sea. All available data are indicating that a majority of the circalittoral zone (more than 80%) has suffered a decline in abiotic and biotic quality predominantly due to the effects of fishing and the aquaculture industry. This specific habitat has been affected by the use of demersal fishing gears with reports of decline in quality from many areas. Expert opinion is that this is likely to amount to a substantial reduction represented by an intermediate decline affecting more than 50% of the extent in both the EU 28 and EU 28+. This habitat has therefore been assessed as Vulnerable under criteria C/D1.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	C/D1	Vulnerable	C/D1

Sub-habitat types that may require further examination

None.

Habitat Type

Code and name

A5.27 Communities of Mediterranean lower circalittoral sand

No characteristic photographs of this habitat currently available.

Habitat description

A habitat in the deepest part of the circalittoral zone extending down to 200 m of depth. The sediment

comprises fine sands or non-cohesive muddy sands. Whilst the process of sedimentation is constant, the movement of water masses is reduced compared to shallower areas making it a more stable environment. Animal communities dominate characterised by a diverse range of polychaetes, cnidarians, amphipods, bivalves and echinoderms. The lower circalittoral zone marks the survival boundary of autotrophic pluricellular algae.

Indicators of quality:

There are no commonly agreed indicators of quality for this habitat, thus both standard biotic and abiotic indicators have been used to describe marine habitat quality. As this habitat can be impacted by fisheries activities, particularly trawling, the presence or absence of characteristic commercially exploited species are a potential quality indicator.

Characteristic species:

The sea pen: *Penatula phosphorea;* polychaetes: *Aphrodite aculeata*, Bivalves: *Acanthocardia paucicostata, Pecten jacobeus, Parvicardium roseum*; sea cucumber*: Oerstergrenia digitata, Holothuria forskali*; starfish: *Anseropoda placenta.*

Classification

EUNIS (v1405):

Level 4. A sub-habitat of Circalittoral Sand (A5.2).

Annex 1:

No relationships

MAES:

Marine - Coastal

Marine - Shelf

MSFD:

Shelf sublittoral sand

Shelf sublittoral mixed sediment

EUSeaMap:

Shelf sands

IUCN:

9.4 Subtidal sandy

9.5 Subtidal sandy-mud

Does the habitat type present an outstanding example of typical characteristics of one

or more biogeographic regions?
Yes

Regions
Mediterranean

Justification
Sandy seabeds are widespread and common the deep circalittoral zone of the Mediterranean.

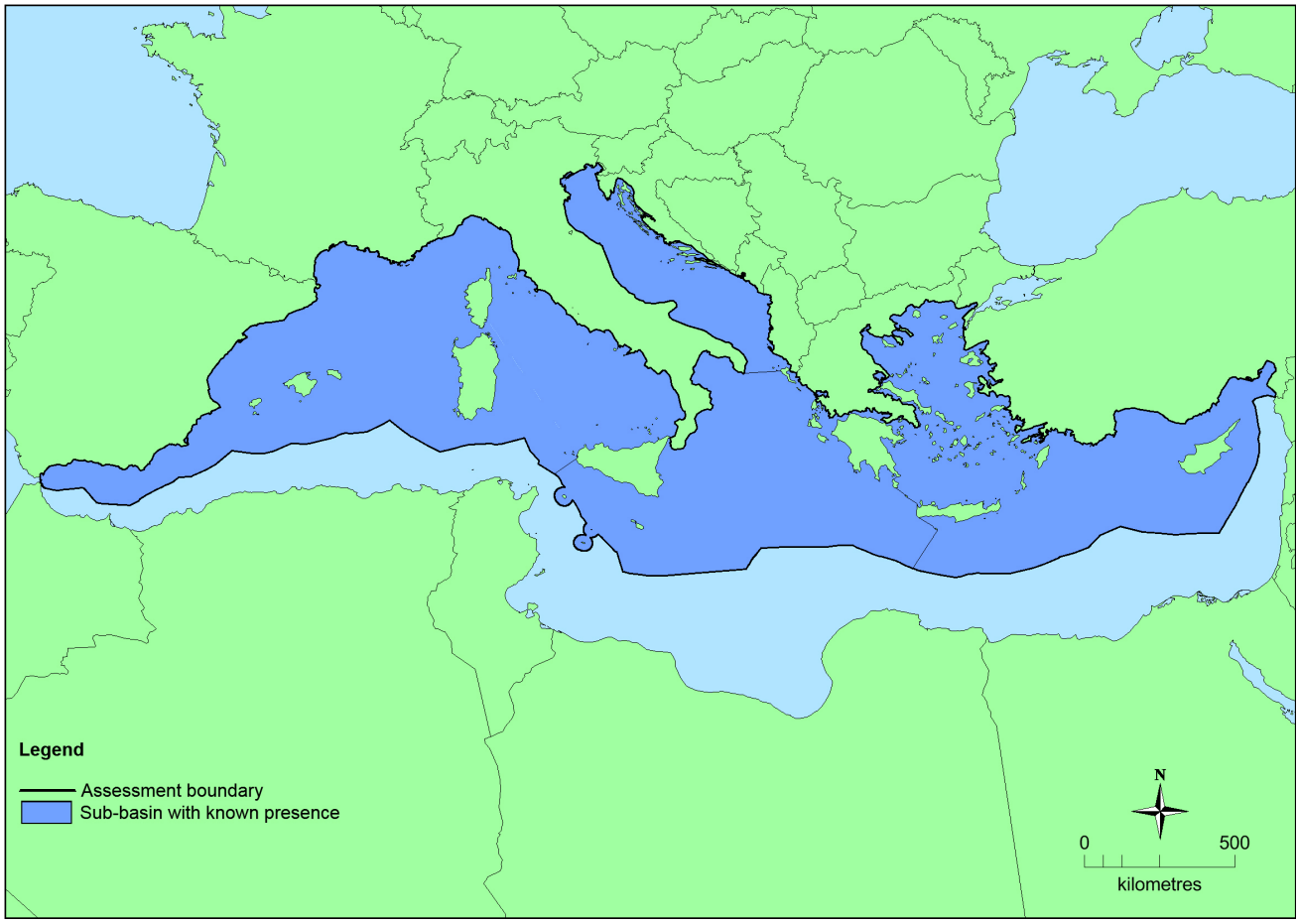
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Mediterranean Sea	Adriatic Sea: Present Aegian-Levantine Sea: Present Ionian Sea and the Central Mediterranean Sea: Present Western Mediterranean Sea: Present	Unknown Km^2	Decreasing	Stable

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^2	>50	Unknown Km^2	This habitat is present in all the Mediterranean sub-basins.
EU 28+	>50,000 Km^2	>50	Unknown Km^2	This habitat is present in all the Mediterranean sub-basins.

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 its distribution.

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 although it does occur in the EU 28+.

Trends in quantity

This habitat is affected by demersal fishing activities, as well as natural changes in sedimentation rates. It is difficult to determine whether there have been any trends in quanity as a result.

- 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 an EOO larger than 50,000 km^2.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The habitat has an EOO larger than 50,000 km^2.

Trends in quality

A major threat in circalittoral zone, including for this habitat is bottom fishing (trawling, dredging). Heavy fishing disturbs muddy and sandy bottoms, causing dramatic changes in the structure of both the physical

support system and the related biological assemblages. It has been noted that trawls and dredges scrape or plough the seabed, resuspend sediment, change grain size and sediment texture, destroy bedforms, and remove or scatter non-target species. To these effects can be added the increase in the amount of suspended nutrients and organic matter. Apart of direct effects related to the use of bottom gears indirect effects on the ecosystem may extend far beyond the direct. Eutrophic processes may be enhanced leading to hypoxia in sensitive soft bottom areas (as in the northern Adriatic) and the quantity of hydrogen sulphide released from sediments may increase. The anthropic re-suspension of sediment enriched in organic matter can eliminate macrophyte, benthos and demersal fish approaching their hypoxia tolerance limit; the changed ecosystem structure favours species adapted or tolerant to hypoxic conditions. Trawling and dredging can also play a role affecting the intensity and duration of naturally occurring seasonal hypoxic crises in some places. In the north Adriatic Sea the first signs of hypoxia started around 1960 and developed into severe anoxic events over the past decades. These threats are both current and are likely to continue to cause declines in quality of this habitat.

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

Pressures and threats

The major negative effect on this habitat is the impact of demersal fishing gear, mainly trawl fishing. Heavy fishing gears scrape or plough the seabed, resuspend sediment, change grain size and sediment texture, destroy bedforms, and remove or scatter non-target species. To these effects can be added the increase in the amount of suspended nutrients and organic matter. Nurtrient enrichment from land based sources may also affect deep circalittoral areas by leading to hypoxic conditions.

List of pressures and threats

Biological resource use other than agriculture & forestry

Fishing and harvesting aquatic resources
Benthic or demersal trawling
Benthic dredging

Pollution

Nutrient enrichment (N, P, organic matter)
Marine water pollution
Soil pollution and solid waste (excluding discharges)

Conservation and management

The regulation of fishing activities is key to conservation of this habitat. This may include gear modifications, spatial and season restrictions as well as bycatch limits. Controls on land based sources of pollution will also benefit this habitat.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

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

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

Conservation status

No relationship to Annex 1.

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

Unknown. Large bodied, slow growing fauna such as bivalves which are associated with this habitat are sensitive to fishing disturbances and their populations may be slow to recover. Areas that are heavily fished may never fully recover because the seabed is re-disturbed before recovery has taken place. The timescales for recovery will depend on the individual area and the community present,

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 %

The whole circalittoral zone is under heavy fishing impact that can cause a severe changes of the habitat. It is likely but unknown whether this has resulted in any habitat loss. This habitat has therefore been assessed as Data Deficient under Criteria 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^2	Yes	Yes	No	>50	Yes	Yes	No	No
EU 28+	>50,000 Km^2	Yes	Yes	No	>50	Yes	Yes	No	No

This habitat is present in the Eastern and Western Mediterranean basins. The precise extent is unknown but estimated as EOO >50,000 km^2 and AOO >50 which exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. The habitat is known to have declined in quality. The nature and size of threats to this habitat and the distribution data which are available suggest that no known threats are likely to affect all localities at once. This habitat has therefore been assessed as Least Concern under criteria 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	>50 %	intermediate %	unknown %	unknown %	unknown %	unknown %
EU 28+	>50 %	intermediate %	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%

All available data are indicating that a majority of the circalittoral zone (more than 80%) has suffered a decline in abiotic and biotic quality predominantly due to the effects of fishing and the aquaculture industry. This specific habitat has been affected by the use of demersal fishing gears with reports of decline in quality from many areas. Expert opinion is that this is likely to amount to a substantial reduction represented by an intermediate decline affecting more than 50% of the extent in both the EU 28 and EU 28+. This habitat has therefore been assessed as Vulnerable 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	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	LC	LC	VU	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
Vulnerable	C/D1	Vulnerable	C/D1

Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

Assessors

A. Soldo.

Contributors

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Reviewers

S.Gubbay and N.Sanders.

Date of assessment
14/01/2016

Date of review
21/04/2016

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