

A5.24 Pontic infralittoral muddy sand

Summary

The habitat is present in the Black Sea on areas of infralittoral muddy sand substrate. It is also present in the Sea of Marmara. Eutrophication is the main historic pressure on this habitat. Additional pressures include: coastal development, trawling, sand extraction and disturbance from anthropogenic activities. Conservation and management measures relevant to this habitat include: measures to maintain physical and biological integrity, improvement of water quality, pollution event response strategies, survey and monitoring programmes and raised public awareness.

Synthesis

Detailed information on the abundance and extent of this habitat is lacking. Information on the quantity and quality of this habitat including historical or recent trends is unknown. For the purposes of Red List assessment this habitat is considered to be Data Deficient.

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

A5.24 Pontic infralittoral muddy sand

No characteristic photograph of this habitat currently available.

Habitat description

Non-cohesive muddy sand (with 5% to 20% silt/clay) in the lower infralittoral zone. The habitat is dominated by faunal species including ghost shrimps and bivalves.

Indicators of quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include; the presence of characteristic species and those which are sensitive to the pressures the habitat may face, water quality parameters, levels of exposure to particular pressure as well as and more integrated indices which describe habitat structure and function, such as trophic index, or successional stages of development in habitats that have a natural cycle of change over time. There are no commonly agreed indicators of quality for this habitat, although particular parameters may have been set in certain situations e.g. protected features within Natura 2000 sites, where reference values have been determined and applied on a location-specific basis.

Characteristic species:

Upogebia pusilla, Mya arenaria, Anadara inaequalis, Abra alba, Spisula subtruncata and Pitar rudis.

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS (2004):

Level 4. A sub-habitat of 'Shallow sublittoral/ infralittoral sand' (A5.52)

Annex 1:

1110 Sandbanks slightly covered all the time

1120 *Posidonia* beds

1130 Estuaries

1150 Coastal lagoons

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 sands

Shallow muds

IUCN:

9.5 Subtidal sandy mud

Other relationships:

No relationships

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

Unknown

Justification

There is insufficient knowledge and information on this habitat to state whether it is an outstanding example of this biogeographic region.

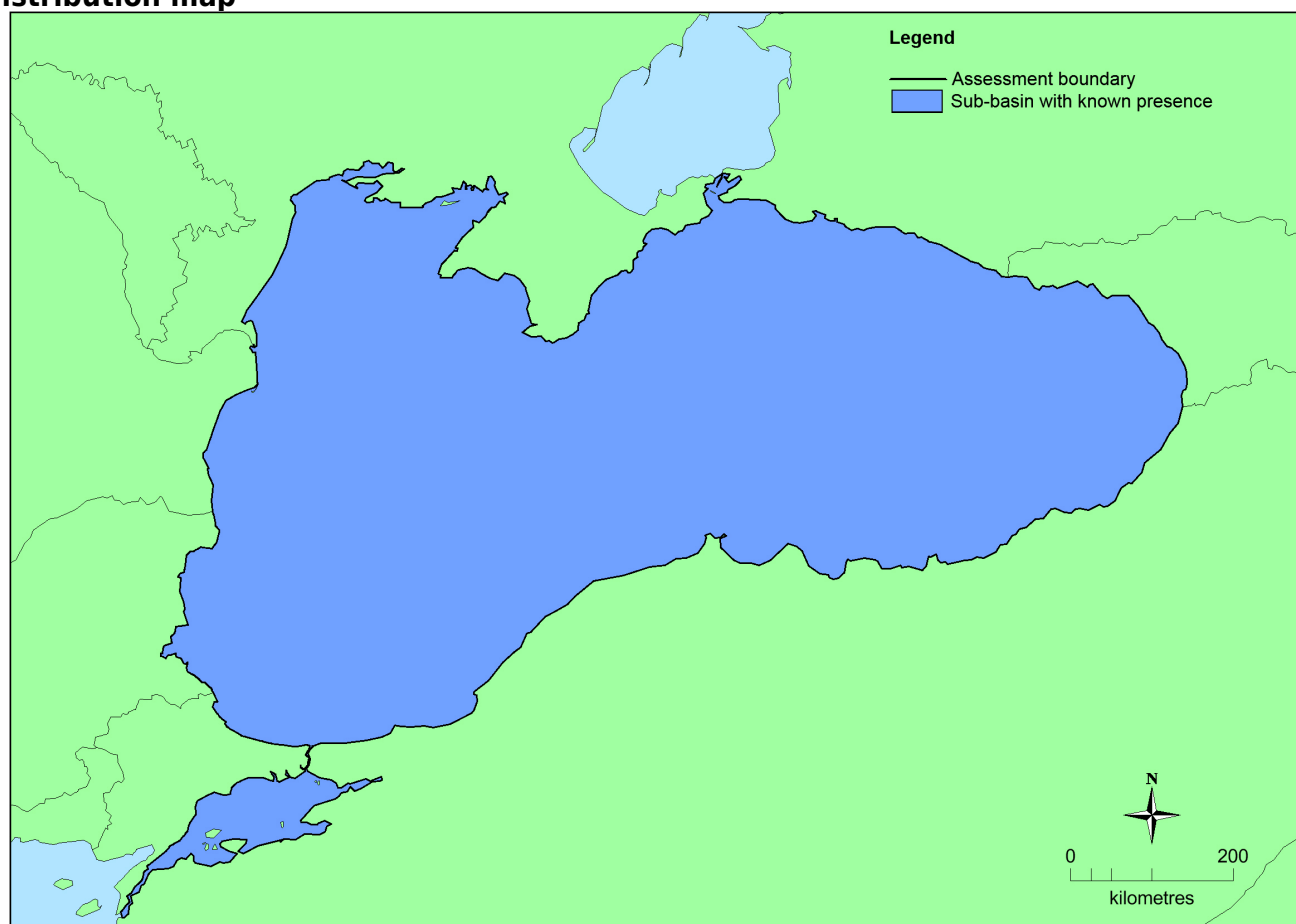
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Black Sea</i>	Black Sea: Present Sea of Marmara: 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>	Unknown Km ²	Unknown	Unknown Km ²	The habitat is known to occur in the Black Sea but there is insufficient data to accurately calculate EOO and AOO.
<i>EU 28+</i>	Unknown Km ²	Unknown	Unknown Km ²	The habitat is known to occur in the Black Sea but there is insufficient data to accurately calculate EOO and AOO.

Distribution map



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 Black Sea.

Trends in quantity

There is insufficient data to accurately assess changes in quantity of the habitat

- 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

The habitat is known to occur in the Black Sea but there is insufficient data to accurately calculate EOO and AOO. There is insufficient data to accurately assess whether the habitat has undergone a significant decline (>25% of extent) in the last 50 years.

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

Unknown

Justification

There is insufficient data and knowledge on this habitat to state whether it has a small natural range by reason of an intrinsically restricted area.

Trends in quality

There is insufficient data to accurately assess changes in quality of the habitat

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

Eutrophication as a result of nutrient enrichment (N, P and organic matter) is the most significant historic pressure on the habitat. Anoxic and hypoxic conditions due to eutrophication caused mass mortalities in benthic communities. Since the 1990s this pressure has reduced due to tighter controls on pollution in the catchment of the Danube and other rivers which enter the north-west Black Sea. Whilst this pressure is now reduced it is still a continuing threat in the current and future periods. This is especially true for non EU countries surrounding the Black Sea which are not bound by the agreements such as the Water Framework Directive (WFD).

The habitat is likely to be sensitive to:

Coastal developments including the construction of marinas and slipways, sediment extraction, the widening and dredging of channels, creation of artificial beaches, road developments and sea defences. These activities may alter the hydrological regime which will in turn affect the character and viability of the habitat.

Trawling. This is a current and future threat to the habitat causing deterioration and habitat destruction by damaging benthic communities both directly and indirectly through effects such as smothering and altering the sediment characteristics. Demersal trawling is prohibited in some states. However, illegal trawling is still an issue in these areas.

Sand extraction. This is a threat of current and future importance which can lead to habitat destruction. Marine sand is an important building material in the Black Sea therefore sand extraction is considered likely to increase in tandem with other development pressures in the region.

Mobile demersal dredging and trawling. This is a threat of current and future importance. This causes habitat destruction leading to in a reduction in extent and quality.

List of pressures and threats

Urbanisation, residential and commercial development

Other urbanisation, industrial and similar activities

Biological resource use other than agriculture & forestry

Fishing and harvesting aquatic resources

Professional active fishing

Pollution

Nutrient enrichment (N, P, organic matter)

Natural System modifications

Removal of sediments (mud...)

Extraction of sea-floor and subsoil minerals (e.g. sand, gravel, rock, oil, gas)

Conservation and management

Conservation and management measures which would benefit this habitat include:

- Measures to maintain physical and biological integrity, including pollution control and regulation
- Improvement of water quality management outside EU member states
- Coastal development controls
- Contingency plans to be followed in the event of a major pollution incident
- Survey and monitoring programmes
- Raised public awareness of ecological value and vulnerability

List of conservation and management needs

Measures related to marine habitats

Other marine-related measures

Measures related to spatial planning

Establish protected areas/sites

Conservation status

Annex 1-type:

1160: MBAL U2, MMED XX

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

There is insufficient data and knowledge of this habitat to assess its capacity to recover

Effort required

10 years
Unknown

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 insufficient data on changes in quantity of this habitat to undertake an assessment using criterion A.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	unknown Km ²	Unknown	Unknown	unknown	unknown	Unknown	Unknown	unknown	unknown
EU 28+	unknown Km ²	Unknown	Unknown	unknown	unknown	Unknown	-	unknown	unknown

The precise extent of the habitat is unknown. Therefore there is insufficient data to produce EOO and AOO figures.

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%

Experts consider there to be insufficient data to conduct an assessment using criteria 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 that estimates the probability of collapse of this habitat type.

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+	
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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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References

Afanasiev D. F., Korpakova I. G. 2008. *Macrophytobenthos Russian Azov-Black Sea.*, Rostov-on-Don: FGUP AzNIIRH.

Anon. 2006. *The northwestern part of the Black Sea: biology and ecology.* Kiev: Naukova Dumka. 701pp.

Arnoldi, L. V. 1949. Materials on the quantitative study of the Black Sea zoobenthos. II Karkinitzky Bay (in Russian). *Proceedings of the Sevastopol Biological Station*: 8.

Bacescu, M. C., Muller G. I., Gomoiu, M-T. 1971. Cercetari de ecologie bentina in Marea Neagra (analiza cantitativa, calitativa si comparata a faunei bentiche pontice). *Ecologie Marina* vol. IV. Editura Academiei R.S.R., Bucuresti, 357 pp..

Bacescu M., 1977. Les biocenoses benthiques de la Mer Noire. *Biologie des eaux saumâtres de la Mer Noire, Première partie*: 128-134.

Bezuglova M.A. 2012. Seasonal changes in shellfish species of the storm emission of Odessa Bay. *Scientific notes of the Ternopil National Pedagogical University. Series Biology* 2(51): 33-36.

Borisenko A. M. 1946. *Quantitative accounting of benthic fauna of the Tendra Bay, Kara Dag.* 201p

Chernyakov D. A. 1995. *Natural-aquatic landscape complexes of the Tendra and Egorlyk bays and monitoring of their state in Black Sea Biosphere Reserve*

Culha, M. & Bat, L. 2010. Visible decline of limpet *Patella caerulea* Linnaeus, 1758, a biomonitor species, at the sinop peninsula and vicinity (the southern Black sea, Turkey). *Journal of Environmental Protection and*

Ecology 11(3): 1024-1029.

Çulha, M., Bat, L., Türk Çulha, S. & Çelik, M. Y. 2010. Benthic mollusk composition of some facies in the upper-infralittoral zone of the southern Black Sea, Turkey. *Turkish Journal of Zoology* 34: 523-532.

Dimitrova-Konaklieva, S. 2000. *Flora of the Marine Algae of Bulgaria (Rhodophyta, Phaeophyta, Chlorophyta)*. Pensoft, Sofia, Bulgaria.

Gönlügür Demirci, G. 2005. Sinop Yarımadasının (Orta Karadeniz) Mollusca Faunası. *Science and Engineering Journal of Firat University* 17(3): 565-572.

Kalugina-Gutnik A. A. 1970. *The composition and distribution of benthic vegetation in the south-eastern part of the Black Sea. Ecological and morphological studies of benthic organisms*. Kiev: Naukova Dumka, p. 185- 202.

Kalugina-Gutnik A. A. 1975. *Phytobenthos of Black Sea*, Kiev: Naukova Dumka, 275 p.

Kiseleva, M. I. 1981. *Benthos of Black Sea mobile substrates*. Naukova dumka, Kiev, pp 165.

Konsulov, A. 1998. *Black Sea Biological Diversity: Bulgaria. Volume 5 of Black Sea environmental series*. United Nations Publications, New York, USA.

Kopiy, V. G, Bondarenko, L.V. 2009. Benthos of sand habitat near splash zone of Karadag. *Proc. of the V Intern. scient-pract. conf. (Simferopol)*: 294-298.

Kopiy, V. G. Bondarenko, L. V. 2012. The community of the macrozoobenthos of mediolittoral zone of Western Crimea. Biodiversity and sustainable development: Abstracts of the II Intern. *scientific and practic Conf., Simferopol*: 189-192.

Kostenko, N. S. 2003. Some trends of the succsecion of bottom vegetation in the Karadag area. *Proc. Sciences. Rec. NaUKMA, Ser. "Biologiya and ekologiya"*: 429-432.

Lisovskaya O. A., Stepanyan O. V. 2009. *A variety of coastal macroalgae Taman Peninsula (Russia) in summer.*, *Algology* V.19, N4, p. 341-348.

Marinov, T. 1990. *The zoobenthos from the Bulgarian Sector of the Black Sea*. Publishing house of the Bulgarian Academy of Sciences, Sofia, pp 195 (in Bulgarian).

Micu, D., Micu, S. 2006. *Recent records and proposed IUCN status of Donacilla cornea (Poli, 1795) (Bivalvia: Veneroidea: Mesodesmatidae) in the Romanian Black Sea*. *Cercet Mar* 36: 117-132.

Micu D, Todorova V., 2007. *A fresh look at the western Black Sea biodiversity*. *MarBEF Newsletter* No 7, pp 26-28.

Micu, D., Zaharia, T., Todorova, V., Niță, V. 2007. *Romanian Marine Habitats of European Interest*. Punct Ochit Publishers, Constanța, Romania.

Micu, D. 2008. Open Sea and Tidal Areas. In: Gafta D. and Mountford J.O. (eds.) *Natura 2000 Habitat Interpretation Manual for Romania*. EU publication no. EuropeAid/121260/D/SV/RO, 101pp. ISBN 978-973-751-697-8.

Micu, D., Zaharia, T., Todorova, V. 2008. Natura 2000 habitat types from the Romanian Black Sea. In: Zaharia T, Micu D, Todorova V, Maximov V, Niță V. *The development of an indicative ecologically coherent network of marine protected areas in Romania*. Romart Design Publishing, Constanta, Romania.

Mokievskiy, O. B. 1949. Flora of the soil littoral substrate of the west coast of Crimea. *Proceedings of the Institute of Oceanology*: 124-159.

Moncheva. S., Todorova, V., (eds). 2013. *Initial assessment of the marine environment*. Article 8, MSFD

2008/56/EC and NOOSMV (2010). 500p

Morozova-Vodyanitskaya N. V., 1959. Bottom vegetation of the Black Sea, *Proceedings of the Sevastopol Biological Station*, 11, p. 3 - 28.

Pereladov M. V., 2005. Modern status of the Black Sea Oyster population. Coastal hydrobiological investigations. *VNIRO Proceedings*, 144: 254-273.

Petranu, A. 1997. *Black Sea Biological Diversity: Romania. Volume 4 of the Black Sea Environmental Series*. United Nations Publications, New York, USA.

Prodanov, B., Kotsev, I., Keremedichiev, S., Todorova, V., Dimitrov, L. 2013. *Initial assessment of the technogenic pressure in the mediolittoral zone of the bulgarian black sea coast*. Second European SCGIS Conference "Conservation of Natural and Cultural Heritage for Sustainable Development: GIS-Based Approach", 2013: 4-13.

Salomidi, M., Katsanevakis, S., Damalas, D., Mifsud, R., Todorova, V., Pipitone, C., Fernandez, T. V., Mirto, S., Galparsoro, I., Pascual, M., Borja, Á., Rabaut, M., Braeckman, U. 2010. *Monitoring and Evaluation of Spatially Managed Areas. Catalogue of European seabed biotopes. Deliverable 1.2*. Available at: <http://www.mesma.org/default.asp?ZNT=S0T10-1P24>. (Accessed: 19/08/2015).

Terentyev, A. S. 2002. State of of the bottom community of the sandy bottom in Opuksky Nature Reserve. *Reserves of Crimea. Biodiversity in the priority areas: 5 years after Gurzuf. / Materials of II scientific conference: 250-253*.

Terentyev, A. S. 2011. Macrozoobenthos of coastal part of the Kerch Bay (summer, 2009). Ecology of cities and recreational areas. / *All_Ukrainian Scientific Conference Proceedings of articles: 261-263*.

Teyubova V. F, 2005. Features interannual dynamics species composition and structure macrophytobenthos in the Bay of Novorossiysk (Black sea), *Ekologiya Morya*, (69), p. 53 - 57.

Teyubova V. F. 2012. The diversity and ecological features macrophytobenthos the Russian sector of the Black Sea., *Dissertation on competition degree of candidate of biological sciences*, 280 pp.

Tkachenko, F. P., Kovtun O. O. 2014. Contemporary condition of seaweeds flora of Zmeiny island costal zone (Black Sea). *Chornomors'k. bot. z.* 10(1): 37-47.

Todorova, V., Panayotova, M. 2011. *Black mussels and/or barnacle communities on mediolittoral rocks*. Red book of Republic of Bulgaria, Vol. III, Natural habitats, Eds. BAS & MOEW. [ISBN 978-9549746-23-5].

Vershinin, A. 2007. *Life in the Black Sea*. Maccentr, Moscow, Russia.

Zaika V.E., Boltachev A.R., Zuev G.V., Kovalev A.V., Milchakova N.A., Sergeeva N.G. 2004. Floristic and faunistic changes in the Crimean Black Sea shelf after 1995 - 1998, *Marine Ecological Journal*, 3(2), p. 37-44.

Zaitsev, Y. P., Alexandrov, B. G. 1998. *Black Sea Biological Diversity: Ukraine. Volume 7 of the Black Sea Environmental Series*. United Nations Publications, New York, USA.