

Red-gilled mud worm (*Marenzelleria neglecta*)



Photos © Rasmus Neideman, Stockholm University (left), Ilkka Lastumäki, Finnish Institute of Marine Research

Common name(s) in English	Red-gilled mud worm (also used for <i>Marenzelleria viridis</i>)
... and in other languages	Estonian: Hulkharjasuss. Finnish: Amerikanmonisukasmato. Lithuanian: Marenceliarija. Polish: Rogoza amerykanska.
Scientific name	<i>Marenzelleria neglecta</i> . The species found in the Baltic Sea was previously referred to as <i>Marenzelleria viridis</i> . It has recently been determined, however, that the Baltic species is <i>M. neglecta</i> , while <i>M. viridis</i> is the Atlantic species, found for example in the North Sea. "Marenzelleria is revised on the basis of material from the Arctic, North America, Europe and the Far East. Types of all species included in the genus are examined. Five species are registered. <i>Marenzelleria neglecta</i> sp. nov. is described from the coastal waters of the southern Baltic. Two species, <i>M. arctia</i> and <i>M. wireni</i> , occur in the Arctic, whereas <i>M. viridis</i> and <i>Marenzelleria</i> sp. A are found in coastal waters of the Atlantic. <i>Marenzelleria neglecta</i> occurs both in arctic and boreal estuaries." (North Atlantic Marine Science: see reference below.)
Organism group	Segmented worms (Annelida). Bristleworms (Polychaeta).
Size and appearance	This species can be up to 12 cm long, and has hooked chaetae (bristles) on the anterior part of its body. It can vary in colour from red, via light brown, to dark green. It swims with characteristic "corkscrew" movements, which distinguish it from other polychaete species in the Baltic.
May be confused with	<i>Marenzelleria viridis</i> . The two species may co-occur (this is the case in the North Sea, for example). Only adult specimens of these species can be reliably distinguished. <i>M. viridis</i> , however, is not found in waters of lower salinity than 16 psu. (For a comparison between <i>M. neglecta</i> and <i>M. viridis</i> , see reference below to fact sheet on <i>M. neglecta</i> .)
Geographical origin	North America.
First observed in Swedish waters	1990, along the coast of Blekinge and in southern parts of Kalmar Sound.
Occurrence in Swedish seas and coastal areas	Occurs throughout the Baltic Sea area, from the Blekinge coast in the south to the northern Gulf of Bothnia. Was previously found mainly in shallow coastal waters, but since 2000 the species has also begun to

	colonize deeper parts of the Åland and Bothnian Seas. In addition, it has shown a very marked increase in abundance in the Quark.
Occurrence in other sea areas	The first find of <i>M. neglecta</i> in European coastal waters was in the Ems estuary, between Germany and the Netherlands, in 1983. Since then, the species has spread to most estuaries and intertidal areas in Europe. In the Baltic, the species was first discovered off the German coast in 1985, and subsequently in the lagoon areas of Poland in 1988 and Lithuania in 1992, and in the Gulf of Riga in 1994. In the Vistula Lagoon on the Polish coast, <i>M. neglecta</i> has become dominant, making up 97 per cent of the biomass of the benthic fauna in the area. The species was found in the Gulf of Finland in 1990, and now occurs along the entire coast of Finland. It has also spread to Russian waters (round the mouth of the river Neva).
Probable means of introduction	Shipping (ballast water). In both the North Sea and the Baltic, <i>Marenzelleria</i> species have primarily been found in the vicinity of ports.
Habitat(s) in which species occurs	<i>Marenzelleria neglecta</i> inhabits soft substrata, at depths of up to 130 m. It lives in tubes built from mud, sand and mucus, extending 10–40 cm into the sediment, and feeds primarily at the surface of the sediment (on plankton and other settling organic matter, together with benthic diatoms). It can often be found, for example, on the seabed near beaches, and a swimmer equipped with a mask will be able to see millimetre-thick faecal-pellet strings near the openings of the burrows. The species can cope with salinities ranging from almost fresh water to over 30 psu. However, it develops most rapidly in waters with a salinity of around 10 psu and a temperature of 10°C or higher. Normally there can be between 200 and 1,100 worms in a single square metre of sediment, but in German and Polish estuaries 5,000–30,000 individuals per square metre have been found.
Ecological effects	As this polychaete burrows deep into the seabed, it is difficult for many other benthic animals to get at – one exception being the Baltic tellin (<i>Macoma balthica</i>). On the other hand, <i>Marenzelleria neglecta</i> competes with other, native bristleworms, and also with amphipods (e.g. <i>Monoporeia affinis</i>), which can affect the composition of local benthic communities. The species appears to be increasing in numbers in deeper waters, and research shows that it influences the swimming behaviour of <i>Monoporeia affinis</i> , possibly indicating that this amphipod avoids areas where the worms are present. The amphipod's growth has been found to be affected by high densities of the polychaete, probably as a result of the two species competing for the same food, or because the amphipods are disturbed by the worms' presence. The Baltic tellin, on the other hand, is a natural enemy that preys on <i>M. neglecta</i> and thus controls its spread. <i>M. neglecta</i> also has a beneficial effect on its environment. When benthic animals burrow and drill into, feed on and rearrange material on the seabed (bioturbation), more oxygen is able to penetrate into the sediment, speeding the decomposition of organic matter settling to the bottom. This polychaete probably loosens the sediment to greater depths than any of the native species of the Baltic. However, in areas with sediments in which nutrients and toxic substances have accumulated over a long period, as is the case in many parts of the Baltic, this may also have detrimental effects.
Other effects	<i>M. neglecta</i> has been found in the stomachs of several demersal fish species, suggesting that it forms part of their diet. The worms swim in "swarms", which means that from time to time they are an easy prey for fish.

Additional information

Bristleworms (polychaetes) are close relatives of earthworms (oligochaetes), but are only found in the sea. There are 500–1,000 species of polychaetes in Swedish waters, the majority of them occurring off the west coast (with around a dozen in the Baltic).

FIND OUT MORE

- Stockholm University, Dpt of Zoology. (R. Neideman): How do the introduced polychaete *Marenzelleria neglecta* affect resident benthic fauna in the Baltic Sea?
<http://www.zoologi.su.se/research/bentecol/currentresearch.htm>
- *North Atlantic Marine Science*: Revision of *Marenzelleria* Mesnil, 1896 (Spionidae, Polychaeta)
<http://www.ingentaconnect.com/content/tandf/ssar/2004/00000089/00000004/art00003>
- North European and Baltic Network on Invasive Alien Species: *Marenzelleria neglecta*
<http://www.nobanis.org/speciesInfo.asp?taxaID=3568>
-  144 kB North European and Baltic Network on Invasive Alien Species: *Marenzelleria neglecta* Fact Sheet
http://www.nobanis.org/files/factsheets/Marenzelleria_neglecta.pdf
- North European and Baltic Network on Invasive Alien Species: *Marenzelleria viridis*
<http://www.nobanis.org/speciesInfo.asp?taxaID=1628>
- Baltic Sea Alien Species Database: *Marenzelleria neglecta*
http://www.ku.lt/nemo/directory_details.php?sp_name=Marenzelleria+neglecta
- Baltic Sea Alien Species Database: *Marenzelleria viridis*
http://www.ku.lt/nemo/directory_details.php?sp_name=Marenzelleria+viridis
- HELCOM: Alien species (see also Fourth Periodic Assessment)
http://www.helcom.fi/environment2/biodiv/en_GB/alienspecies/
- HELCOM: Third Periodic Assessment
http://www.baltic.vtt.fi/balticinfo/text_files/chapter4.5.6.html
- FIMR, Baltic Sea Portal: Itämeren uusi tulokaslaji monisukasmato, *Marenzelleria* on levinnyt räjähdysmäisesti koko Pohjanlahdelle - Aranda palasi Pohjanlahden seurantamatkaltaan
<http://www.fimr.fi/fi/itamerikanta/uutiset/46.html>
- FIMR, Baltic Sea Portal: Alien species in the Baltic Sea
<http://www.fimr.fi/en/itamerikanta/tietoa/eliot/tulokaslajit.html>
<http://www.fimr.fi/sv/itamerikanta/galleria/31/546.html>
- Regional Biological Invasions Centre: Aquatic Invasive Species of Europe.
<http://www.zin.ru/projects/invasions/gaas/marspp.htm>
-  92 kB: Gollasch Consulting: Daunys, Zettler & Gollasch: *Marenzelleria viridis*
<http://www.gollaschconsulting.de/download/Marenzelleria.pdf>
-  8,7 MB: Bundesanstalt für Gewässerkunde: Neozoa (Makrozoobenthos) an der deutschen Nordseeküste: Eine Übersicht
http://www.stefannehring.de/downloads/083_Nehring+Leuchs-1999_BfG-Bericht-1200_neozoa-nordsee.pdf
- European Nature Information System Database (EUNIS): *Marenzelleria viridis*
<http://eunis.eea.europa.eu/species-factsheet.jsp?idSpecies=51135&idSpeciesLink=51135>
-  500 kB: Joint Nature Conservation Committee: Non-native marine species in British waters: a review and directory
http://www.jncc.gov.uk/pdf/pub02_nonnativereviewdirectory.pdf

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http://www.fimr.fi/fi/ajankohtaista/mtl_uutisarkisto/2002/fi_FI/39/

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