

SPECIES INFORMATION SHEET

Modiolus modiolus

English name: Northern horse mussel	Scientific name: <i>Modiolus modiolus</i>	
Taxonomical group: Class: Bivalvia Order: Mytiloidea Family: Mytilidae	Species authority: (Linnaeus, 1758)	
Subspecies, Variations, Synonyms: <i>Modiola modiolus</i> <i>Mytilus modiolus</i> Linnaeus, 1758	Generation length: 30–35 years	
Past and current threats (Habitats Directive article 17 codes): Fishing (bottom trawling; F02.02.01), Construction (stone fishing; J03.01), Eutrophication (H01.05)	Future threats (Habitats Directive article 17 codes): Fishing (bottom trawling; F02.02.01), Construction (C03.03), Eutrophication (H01.05), Climate change (M01)	
IUCN Criteria: A2c	HELCOM Red List Category:	VU Vulnerable
Global / European IUCN Red List Category NE/NE	Habitats Directive: <i>Modiolus</i> -reefs is a part of the Habitats Directive habitat 1170 (Reefs)	
Protection and Red List status in HELCOM countries: Denmark –/–, Estonia –/–, Finland –/–, Germany –/2 (Endangered, incl. North Sea), Latvia –/–, Lithuania –/–, Poland –/–, Russia –/–, Sweden –/LC		

Distribution and status in the Baltic Sea region

Modiolus modiolus is a long living and large bivalve that lives in the western Baltic Sea in hard bottom habitats. It has suffered from various human activities that have destroyed or deteriorated its habitats and the population has declined in the HELCOM area.

In general, *M. modiolus* is an arctic-boreal species, and its distribution ranges from the seas around Scandinavia (including Skagerrak & Kattegat) and Iceland south to the Bay of Biscay.



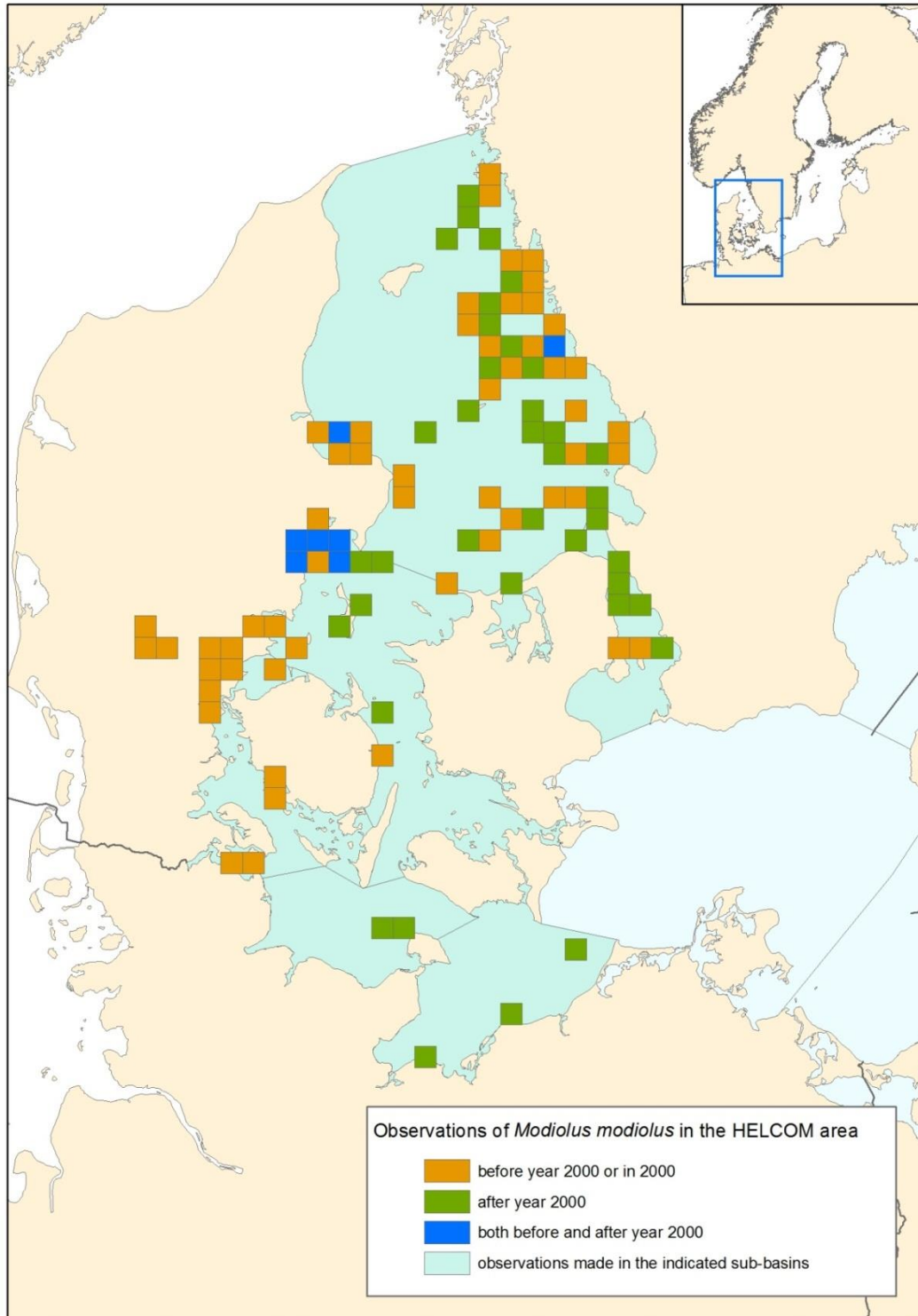
Modiolus modiolus. Photo by Michael Zettler. Leibniz Institute for Baltic Sea Research Warnemünde (IOW).

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Distribution map

The georeferenced records of species compiled from the Danish national database for marine data (MADS) and from the databases of the Swedish Species Information Centre (Artportalen), Swedish Meteorological and Hydrological Institute, and the Leibniz Institute for Baltic Sea Research (IOW).



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Habitat and ecology

M. modiolus can be found part buried in soft sediments or coarse grounds or attached to hard substrata. It usually occurs as individuals but it can also form clumps or extensive beds or reefs. In the OSPAR area, *Modiolus* beds are habitats protected by OSPAR. The species itself is still fairly common in the western HELCOM area but *Modiolus* beds is rare and only two locations are known for it (Kattegat and Öresund).

M. modiolus forms dense beds, at depths up to 70 m (but may extend onto the lower shore), mostly in fully saline conditions and often in tide-swept areas (OSPAR 2010). The mussels attach to the substratum and to each other with byssal threads so that they aggregate into clumps. They can cover much of the underlying seabed to create a distinctive biogenic habitat. Although *M. modiolus* is a widespread and common species outside the HELCOM area, horse mussel beds (with typically 30% cover or more) are more limited in their distribution. *M. modiolus* beds are found on a range of substrata, from cobbles through to muddy gravels and sands, where they tend to have a stabilising effect, due to the production of byssal threads.

Description of major threats

M. modiolus is threatened by both direct and indirect effects of bottom trawling. Previously also stone fishing destroyed habitats of the species. Eutrophication affects the species negatively and in the future increasing temperatures, decreasing salinities and construction activities such as windmill farms may have an impact on the population.

Assessment justification

M. modiolus is a large bivalve that can live up to ca. 100 years and its generation time is estimated to 30–35 years (time period for decline estimation 90–100 years). In Germany the habitats of *Modiolus* are well-monitored and a large proportion of occurrences is known. In Sweden the species was considered Least Concern in the 2010 Red List, but it is not well covered by monitoring programs. In Denmark, many of the locations seem to lack recent records but this may be explained also by decreased monitoring effort. The status in Danish waters is not well known. The overall reduction in population size is assumed to range between 25–29% based on loss of suitable habitat (AOO/EOO). The species is restricted to hard bottom habitats and has probably suffered from various human activities, including bolder fishing, bottom trawling and effects of dredging. The species is categorized as Vulnerable (VU) under the A2c criterion.

Recommendations for actions to conserve the species

The species would benefit from restrictions to bottom trawling, more restoration of habitats and working against eutrophication and climate change.

Common names

Denmark: almindelig hestemusling, Estonia: –, Finland: –, Germany: Pferdemoschel, Große Miesmuschel, Latvia: –, Lithuania: –, Poland: –, Russia: –, Sweden: hästmussla

References

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