



UK Biodiversity Action Plan Priority Habitat Descriptions

Horse Mussel Beds

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Horse Mussel Beds

This habitat description has been adapted from the 1994 UK BAP Action Plan for [Modiolus modiolus beds](#) and would benefit from an update.

Correspondence with existing habitats

OSPAR habitat: *Modiolus modiolus* reefs

Habitats Directive Annex I: Large shallow inlets and bays and Reefs

Description

The horse mussel *Modiolus modiolus* forms dense beds at depths of 5–70m in fully saline, often moderately tide-swept areas off northern and western parts of the British Isles. Although it is a widespread and common species, true beds forming a distinctive biotope are much more limited and are not known south of the Humber and Severn estuaries. Beds are known from Shetland, Orkney, the Hebrides and other parts of western Scotland, the Ards Peninsula, Strangford Lough, off both ends of the Isle of Man, off north-west Anglesey and north of the Llyn Peninsula. Dense beds of young *Modiolus modiolus* also occur in the Bristol Channel but often seem not to survive to adulthood. Off North Sea coasts occasional beds occur between Berwickshire and the Humber, and probably elsewhere.

M. modiolus can occur as relatively small, dense beds of epifaunal mussels carpeting steep rocky surfaces, as in some Scottish sealochs, but is more frequently recessed at least partly into mixed or muddy sediments in a variety of tidal regimes. In some sea lochs and open sea areas, extensive expanses of seabed are covered in scattered clumps of semi-recessed *M. modiolus* on muddy gravels. In a few places in the UK, beds are more-or-less continuous and may be raised up to several metres above the surrounding seabed by an accumulation of shell, faeces, pseudofaeces and sand. In some areas of very strong currents, extensive areas of stony and gravelly sediment are bound together by more-or-less completely recessed *M. modiolus*, creating waves or mounds with steep faces up to one metre high and many metres long. These areas of semi-recessed and recessed beds may in some cases extend over hundreds of hectares, and in many cases may be considered as 'biogenic reefs', though they are all referred to here as beds. The JNCC Marine Nature Conservation Review (MNCR) has identified four major biotopes dominated by dense *M. modiolus*.

M. modiolus is a long-lived species and individuals within beds are frequently 25 years old or more. Juvenile *M. modiolus* are heavily preyed upon, especially by crabs and starfish, until they are about 3–6 years old, but predation is low thereafter. Recruitment is slow and may be very sporadic; there may be poor recruitment over a number of years in some populations.

There have been no studies of the recovery of damaged beds but full recovery after severe damage would undoubtedly take many years at best and may not occur at all. Some beds may be self maintaining relict features.

The byssus threads secreted by *M. modiolus* have an important stabilising effect on the seabed, binding together living *M. modiolus*, dead shell, and sediments. As *M. modiolus* is a filter feeder, the accumulation of faeces and pseudofaeces probably represents an important flux of organic material from the plankton to the benthos. This rich food source, together with the varied habitat, means that extremely rich associated faunas, sometimes with hundreds of species, may occur on dense beds.

The composition of the biotopes is variable, and is influenced by the depth, degree of water movement, substrate, and density of *M. modiolus*. Sponges, ascidians, soft corals, anemones, hydroids, bryozoans, tubeworms, brittlestars, urchins, starfish, barnacles, crabs,

spider crabs and other decapods, whelks and other gastropods, scallops and fish all tend to be abundant as epifauna, while there may also be coralline algae and other red seaweeds in shallower areas. Infauna often includes the purple heart urchin *Spatangus purpureus* and numerous bivalves. The possible role of *M. modiolus* beds as nursery areas for other species has not been investigated.

Relevant biotope

EUNIS Code: A5.621, A5.622, A5.623 and A5.624

National Marine Habitat Classification for UK & Ireland code:

SS.SBR.SMus.ModT – *Modiolus modiolus* beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata

SS.SBR.SMus.ModMx – *Modiolus modiolus* beds on open coast circalittoral mixed sediment

SS.SBR.SMus.ModHAs – *Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata; and

SS.SBR.SMus.ModCvar – *Modiolus modiolus* beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata

Current and potential threats

- **Fishing:** Particularly using trawls and dredges for scallops and queen scallops, is known to have caused widespread and long-lasting damage to beds in Strangford Lough and off the south-east of the Isle of Man. Effects include flattening clumps of *M. modiolus* causing fatalities, and loss of much of the associated epifauna, especially emergent types such as *Alcyonium digitatum*. Fishing impacts are likely to be occurring on *M. modiolus* beds elsewhere.
- **Physical impacts:** *Modiolus* beds are likely to be badly damaged by any other physical impacts, such as aggregate extraction, trenching and pipe/cable-laying, dumping of spoil/cuttings, or use of jack-up drilling rigs.
- **Contaminants:** *M. modiolus* is known to accumulate contaminants such as heavy metals in spoil disposal areas but the effects on condition, reproduction and mortality rates are unknown.
- **Commercial consumption:** *M. modiolus* has until now been taken for consumption only on a very small scale in a few localities.
- **Natural fluctuations:** In spawning, settlement and recruitment into adult sizes occur in some beds, with predation of young mussels probably being very influential. These must affect the population structure of *M. modiolus* beds over periods of a few years, but in the long term they seem to be stable features.

References

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