



# UK Biodiversity Action Plan Priority Habitat Descriptions

## Sheltered Muddy Gravels

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<http://webarchive.nationalarchives.gov.uk/20150302161254/http://jncc.defra.gov.uk/page-5706>

## Sheltered Muddy Gravels

This habitat description has been adapted from the 1994 UK BAP Action Plan for Sheltered Muddy Gravels and therefore would benefit from an update: <https://webarchive.nationalarchives.gov.uk/20110303150007/http://www.ukbap.org.uk/UKPlans.aspx?ID=36>.

The Steering group associated with the UK Marine BAP review, agreed in 2007 that this habitat would benefit from being split into two subcategories (i.e. *Intertidal mixed sediments* and *Subtidal mixed sediments*).

### Correspondence with existing habitats

#### *Intertidal mixed sediments*

Habitats Directive Annex I: Mudflats and sandflats not covered by seawater at low tide, estuaries and large shallow inlets and bays.

*Subtidal mixed sediments* – Not covered

### Description

Sheltered muddy gravel habitats occur principally in estuaries, rias and sea lochs, in areas protected from wave action and strong tidal streams. In fully marine conditions on the lower shore this habitat can be extremely species-rich because the complex nature of the substratum supports a high diversity of both infauna and epifauna. However, good quality examples of this habitat are very scarce. Polychaetes and bivalve molluscs are normally dominant and the most varied, but representatives of most marine phyla can be present. The fauna is often characterised by a large range in body size. As one moves into an estuary, with a consequent reduction in salinity, there is a marked reduction in species richness. Low salinity (mid to upper estuarine) muddy gravels have a lower, but distinctive, species diversity. This plan concentrates on the intertidal and shallow subtidal high salinity muddy gravel habitats.

The carpet shell mollusc *Venerupis senegalensis* is often, though not necessarily, present and can sometimes occur in large numbers. The blunt gaper *Mya truncata* is another characteristic species. There are considerable variations in the composition of these communities depending upon the sediment composition and salinity regime present. Members of the fully saline community can include the tube-dwelling polychaetes *Sabella pavonina*, *Myxicola infundibulum* and *Amphitrite edwardsi*, the sipunculan worm *Golfingia* sp, the anemones *Sagartia troglodytes* and *Cereus pedunculatus*, and the holothurian *Labidoplax digitata*. Burrowing deposit-feeding polychaetes such as *Notomastus latericeus*, *Aphelochaeta marioni* and *Melinna palmata* may be abundant throughout the salinity range. The presence of coarse gravel and stones at the sediment surface often provides a substratum for the attachment of a variety of fauna and epiflora, for example fucoids, ephemeral green algae with associated littorinids and filamentous red algae.

Although the most diverse communities occur in fully saline conditions a number of different species can occur under reduced salinity (upper estuarine) conditions. Here, *Mya arenaria* may be present, with the polychaetes *Neanthes virens* and *Cirriformia tentaculata*, the cockle *Cerastoderma edule* and the native oyster [\*Ostrea edulis\*](#). Oligochaetes and the rag worm *Hediste diversicolor* usually dominate the upper estuarine low salinity muddy gravels.

The priority habitat may be considered as an intertidal extension of a habitat more common in the sublittoral. The communities of interest to this plan are restricted to the intertidal and shallow sublittoral. Shallow subtidal muddy gravel (more than 3m below Chart Datum) can contain communities of burrowing anemones such as *Mesacmaea mitchelli*, *Aureliania heterocera*, *Cereus pedunculatus* and *Cerianthus lloydii*. Deeper water muddy gravel

associations are not considered here. However, there are similarities in the infaunal component of the offshore muddy-gravel (*Venerupis*) associations.

### Relevant biotopes

#### *Intertidal mixed sediment:*

LS.LMx – Littoral mixed sediment

LS.LMx.GvMu – Hediste-dominated gravelly sandy mud shores

LS.LMx.Mx – Species-rich mixed sediment shores

LS.LMx.Mx.CirCer – Cirratulids and *Cerastoderma edule* in littoral mixed sediment

#### *Subtidal mixed sediment:*

SS.SMx.IMx – Infralittoral mixed sediment

SS.SMx.IMx.CreAsAn – *Crepidula fornicata* with ascidians and anemones on infralittoral coarse mixed sediment

SS.SMx.IMx.SpavSpAn – *Sabella pavonina* with sponges and anemones on infralittoral mixed sediment

SS.SMx.IMx.VsenAsquAps – *Venerupis senegalensis*, *Amphipholis squamata* and *Apseudes latreilli* in infralittoral mixed sediment

Analysis of the survey records held on the MNCR database suggests that fully saline sheltered muddy gravel communities are scarce in their British distribution. However, the biotope is found extensively in the Solent and Helford River. Other notable locations include the rias of south-west Britain, for example the Fal Estuary, Salcombe Harbour and Milford Haven. Other known sites include the Sound of Arisaig, Lough Foyle, the Dyfi Estuary and Llanbedrog on the Lleyn Peninsula.

Available descriptions of intertidal muddy gravel beds are often sparse on detail due to a lack of comprehensive data. They are not easy to survey and monitor, due to the large quantities of coarse material that would need to be laboriously sampled and sieved.

Historical data on the distribution of muddy gravel beds are also very limited, presumably for similar reasons to those given above. Information from surveys carried out in the early 1900s in certain inlets (particularly the Kingsbridge Estuary and Helford River) highlights the extremely diverse communities found in muddy gravel habitats at that time. A review of sediment shores in Great Britain in the late 1970s described a similar distribution of muddy gravel communities to that shown by more recent surveys.

### Current and potential threats

- *Physical disturbance:* Coastal developments including the construction of marinas and slipways, sediment extraction, the widening and dredging of channels and sea defences such as barrages. Such activity may alter tidal flow patterns, affecting the sedimentary conditions across the gravel beds.
- *Bait digging:* Threat is especially prevalent where king rag *Neanthes virens* is common.
- *Fisheries:* Intertidal mollusc beds, including *Venerupis senegalensis*, have been the subject of small fisheries in the past. The current fishery is small, but has the potential for resurgence, whereas *Mercenaria mercenaria* dredging in Southampton Water has severely disrupted this habitat.
- *Organic enrichment,* especially sewage pollution stress: Severe pollution can lead to anoxic conditions and a decrease in macrobenthic populations and species diversity.
- *Persistent bio-accumulating chemicals* (e.g. polychlorinated biphenyls and tri-butyl tin), waste discharges containing heavy metals and chemicals.
- *Introduction of non-native species:* *Crepidula fornicata* can dominate the fauna resulting in the smothering of the sediment surface leading to anoxia in the sediment. They are also considered a pest of oyster beds.

## **References**

<https://webarchive.nationalarchives.gov.uk/20110303145223/http://www.ukbap.org.uk/Habits.aspx>

Edited by Nikki Chapman