

**CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES**

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

CONWY

ABER AFON CONWY

<u>Date of Notification:</u>	2003
<u>National Grid Reference:</u>	SH757807 to SH783709
<u>O.S. Maps:</u>	1:50,000 Sheet number: 115 1:10,000 Sheet number: SH78SW, SH78SE, SH77NW, SH77NE, SH77SE, SH87NW.
<u>Site Area:</u>	1295.0 ha

Description:

Aber Afon Conwy is of special interest for its marine and terrestrial invertebrate biology. The tidal reach of the site extends approximately 16 kilometres, encompassing Conwy Bay between Penmaenbach Point and Great Orme's Head at its seaward limit, to its upstream boundary south of Tal y Cafn. The shoreline is backed by natural rock and boulder clay cliff, sand dune, salt marsh and woodland, with artificial substrate and sea defence walls forming the boundary throughout the remainder of the estuary.

Marine Biology:

This coastal plain estuary is of particular importance as it has the largest extent, most complete zonation, richest variety and best examples of high quality intertidal estuarine communities, between Bardsey Island and Great Ormes Head. The site also supports the most typical example of estuarine rocky and sediment communities in East Gwynedd. The site supports nationally important 'piddock' communities on; eulittoral peat, eulittoral firm clay with *Mytilus edulis*, lower eulittoral soft rock with *Fucus serratus* and sublittoral fringe soft rock with *Laminaria digitata*. In addition the site supports specialised communities of shallow pools on mixed substrata with hydroids, ephemeral algae and *Littorina littorea*.

The large number of different intertidal communities found within Aber Afon Conwy are largely a reflection of the variety of substratum types and the relatively large tidal range with seasonally high fresh-water influence. These factors account for the characteristic up-channel zonation of habitats and species occurring in the high salinity zone at the mouth of the estuary in Conwy Bay, through the middle brackish water reaches either side of Glan Conwy, to lower salinity areas upstream of Tremorfa and beyond Tal y Cafn. Coupled with this, there are gradients in wave exposure and water currents which account for across-shore zonation particularly in sediment substrate throughout the site.

Conwy Bay is subject to primarily marine water influence, consequently the intertidal communities found here are typical of those found in open coast areas. The north-eastern seaward boundary is close to Hornby Cave and part of Great Orme's Head. The moderately

exposed rock shoreline is backed by natural bedrock and boulder clay cliffs with a limestone boulder strewn shore. Bedrock and large boulders show clear zonation of yellow and grey lichens with black tar lichen *Verrucaria maura*, above boulders and cobbles with broken bands of channel wrack *Pelvetia canaliculata* and spiral wrack *Fucus spiralis* to seaward along the shore towards Llys Helig Drive. Down shore of this area is a wide and largely continuous band of acorn barnacle *Semibalanus balanoides* with the common limpet *Patella vulgata*. Lower shore boulders are colonized with serrated wrack *Fucus serratus* and oar weed *Laminaria digitata*. Embedded rocks have a dense algal turf of carragheen moss *Chondrus crispus*, dulce *Palmaria palmata* and other red algae such as *Rhodothamniella floridula*. In the centre of this low shore zone, where rock is sufficiently soft, the wrinkled rock borer *Hiatella artica*, a scarce biotope of 'piddocks', occurs with sea squirts within both the serrated wrack and the oar weed. An under-boulder community with broad clawed crab *Porcellana platycheles*, serpulid worms and lugworm *Arenicola marina*, occur within less stable boulders and cobbles. Outcrops of common mussel *Mytilus edulis* occur on mixed substrata.

Further south the eastern shoreline becomes wider with expansive areas of exposed sandy sediment bifurcated by changing channels. The back of the shore is more modified although *talitrid* shrimps occur in the strandline where seawalls are absent. Outcrops of boulders and cobbles in front of Gogarth are colonized by spiral wrack, bladder wrack *Fucus vesiculosus* and egg wrack *Ascophyllum nodosum*. Where fucoids are sparse, littorinids, limpets, acorn barnacles and *Elminius modestus* barnacles dominate. The most extensive sediment area within the bay towards low water mark is occupied by amphipods and polychaete worms, with large areas of lugworm and *Scolecopsis squamata* occurring from the high shore to seaward. Dense bands of the sand mason worm *Lanice conchilega* complete the zonation at lowest water mark. In raised sandy areas the isopod *Eurydice pulchra* predominates. Along the channel edges, less stable and scoured cobbles support mermaid's tresses *Chorda filum*, sea belt *Laminaria saccharina* and landlady's wig *Desmarestia aculeata*, these are colonized by a fine covering of Maiden's Hair *Ectocarpacea* sp. Between these areas, a substrate of red clay is colonized by common mussel, dog whelk *Nucella lapillus* and the nationally scarce white piddock *Barnea candida*. Other small areas of clay and peat are also colonized by white piddock. Near the mouth of the estuary in the lower shore of the channel, large hummocks of common mussel have formed, around which bladder wrack and ephemeral algae are abundant. Carragheen moss and mermaid's tresses are found in pools within the mussel beds, with the base of the channels showing a fresh water influence with mussels colonized by hydroids such as *Sertularia* sp.

The moderately exposed sand shore at Morfa Conwy is backed by a pebble ridge and sand dune. Adjacent to the marina a zonation of barnacles, limpets, littorinids and a small patch of common mussels lie in front of shingle. Westward this area gives way to a belt of amphipods and *Eurydice* isopods with the main sandy substrate being dominated by amphipods and polychaetes with large areas of lugworm. Offshore of the Morfa head is a dense area of common mussels on cobbles. An area of rockpools dominated by hydroids occurs near the channel within the mussel beds. The band of amphipods and polychaetes continues towards Penmaenbach Point, with an area of sand-mason worm *Lanice conchilega* occurring to seaward. Westward along the back of the shore, typical zonation includes lichens and purple laver *Porphyra umbilicalis*, spiral wrack, acorn barnacles *Chthamalus montagui* and *C. stellatus* limpets and amphipods with polychaetes. White piddock occurs in patches of red clay along the back shore of Morfa Conwy and in lower shore peat.

Between Deganwy 'Narrows' and the causeway, pebbles and cobbles occur along the back of the

shore, where channel wrack, bladder wrack and egg wrack often occur in zonation. On the east bank, extensive areas of muddy sand occur with ragworm *Hediste diversicolor*, baltic tellin *Macoma balthica* and lugworm. Similarly, on the west bank ragworm and peppery furrow shell *Scrobicularia plana* are present. Cleaner sediments are typical of the lower shore, with baltic tellin and lugworm present. Tide swept and scoured patches of cobbles and pebbles on the east bank are dominated by bladder wrack with ephemeral algae such as *Enteromorpha* sp. and laver seaweed *Porphyra* spp. Steep and narrow channels on the west bank are colonized by common mussel beds often with a covering of carrageen moss or hydroids such as *Sertularia cupressina* and *Obelia* spp. An area of muddy creeks with ragworm and oligochaetes lies below pioneer saltmarsh supporting glasswort *Salicornia* sp.

Beyond and upstream of the causeway a brackish water area, although predominantly sheltered from tidal scour, displays many exposed sand banks. The eastern shoreline is a largely uninterrupted area of pioneer and mature salt marsh. Where rock and cobbles occur they are colonized by channel wrack and spiral wrack, however, the predominant habitat and species assemblages in this area are associated with mud or sand substrates. Within narrow salt marsh channels ragworm and oligochaetes predominate. In front of Glan Conwy reserve muddy sediments are colonized by ragworm, lugworm, baltic tellin, sand gaper *Mya arenaria*, peppery furrow shell, edible cockle *Cerastoderma edule* and the shrimp *Corophium* sp. Extensive sand banks down shore support the amphipods *Bathyporeia* sp. and *Haustorius arenarius* and the isopod *Eurydice pulchra*. As the shoreline widens in front of Meddiant farm a large area of the impressive and regionally scarce purple sea-lavender *Limonium* sp. saltmarsh is bounded downshore by sediment comprising of ragworm, peppery furrow shell, baltic tellin, lugworm and a wide expanse of amphipods and *Eurydice*.

The narrower mixed rock and sediment of the western shore is predominantly backed by pasture and woodland. Channel wrack, spiral wrack, egg wrack and bladder wrack occur on much of the hard substrate on the western bank. Ragworm, peppery furrow shell and the brackish-water horned wrack *Fucus ceranoides* occur on muddier mixed sediments. Adjacent aerated sands support *Bathyporeia* sp., *Haustorius arenarius* and the isopod *Eurydice pulchra*. Upstream the narrow shore is predominantly cobbles and mixed substrata. Steep eroding banks have few infauna whereas flatter areas support peppery furrow shell. Hard substrata support channel wrack, spiral wrack, egg wrack and bladder wrack. Beyond Cymryd Point the shoreline widens and is fringed by saltmarsh, displaying similar muddy shore zonation to that which occurs on the opposite bank.

Upstream of Tremorfa, the estuary supports lower-salinity sheltered mud communities. Ragworm with peppery furrow shell, and ragworm and oligochaetes are typical of lower shore areas and regions upstream of Tal y Cafn. The influence of fresh water is demonstrated not only by these characteristically species poor sediments, but also by the frequent occurrence of horned wrack on cobbles and boulders. Infrequent but well drained sandbanks support *Bathyporeia*, *Haustorius arenarius* and *Corophium* sp. Rapid water flow results in banks of mobile and sparsely colonized cobbles, pebbles and gravel.

Invertebrate Biology:

The site is of particular importance as it supports the nationally scarce belted beauty moth *Lycia zonaria britannica* occurring here at its only extant native location in Wales. Breeding populations of the belted beauty moth occur at Morfa Conwy. In March and April the males and

flightless females can be found at rest on dune vegetation. Eggs batches are laid in dead plant stems, flower heads, tussocks of dead grass or within cracks and fissures of available wood. Larvae feed in May and June predominantly on dune vegetation such as birds foot trefoil *Lotus corniculatus*, but occasionally on yarrow *Archillea millefolium*, clover *Trifolium* spp., plantains *Plantago* spp. and burnet rose *Rosa pimpinellifolia*. Pupation takes place in areas of bare uncompacted sand, with adults emerging the following year if weather conditions are suitable.

Remarks:

A bonus feature of the site are the frequently high numbers of waders, especially curlew *Numenius arquata*, redshank *Tringa totanus* and oystercatcher *Haematopus ostralegus*.

A bonus feature of the estuary are the regularly high numbers of migratory salmon *Salmo salar*, which spawn in upstream regions of the River Conwy.

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