

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

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

SWANSEA **TWYNI CHWITFFORDD, MORFA LANDIMÔR A BAE
BRYCHDWN/WHITEFORD BURROWS, LANDIMORE MARSH
AND BROUGHTON BAY**

Date of Notification: 1965, 1972, 1982, 1984, 1987, 2002

National Grid Reference: SO 450955

OS Maps: 1:50,000 Sheet number: 159
1:10,000 Sheet number: SS49

Site Area: 1391.2 ha (approx)

Description:

Twyni Chwitffordd, Morfa Landimôr a Bae Brychdwn/Whiteford Burrows, Landimore Marsh and Broughton Bay is of special interest for its coastal and marine habitats, including estuarine mud and sandflats, zoning through grazed saltmarsh to calcareous dunes and slacks via a species-rich transition along the freshwater seepage at the eastern dune edge. In addition, the site is of interest for the assemblages of flowering plants, fungi and invertebrates associated with the sand dunes. A number of individual plant species, a rare terrestrial snail and a nationally scarce polychaete worm are of special interest. The site supports a proportion of the population of overwintering waders and wildfowl that make the Burry Inlet internationally important. A sequence of geological exposures at Broughton Bay is also of special interest.

The site is a relatively undisturbed coastal area at the mouth of the Burry Inlet, at the most north-westerly point of the Gower Peninsula. Extensive intertidal areas are included, from the south-west end of Broughton Bay, along Whiteford Sands to the disused Whiteford Lighthouse. To the east of Whiteford Burrows, the site includes the more sheltered Landimore Marsh as far as Burry Pill and Great Pill. The former sea cliff of Tor Gro and the edge of the enclosed farmland, including the sea wall at Cwm Ivy Marsh form the southern boundary to the site.

North Hill Tor and Tor Gro are the only evidence of the underlying Carboniferous Limestone. Glacial moraines form the foundation of the spit of Whiteford Burrows, but the character of the site is predominantly influenced by the deposits of sand and mud. The site rises to about 60 m at the top of Tor Gro.

GEOLOGY

Broughton Bay is important for a sequence of deposits which contain material that can be used to date major geomorphological events and changing environmental conditions in South Wales during the Late Pleistocene. The deposits comprise: 1) raised beach; 2) till; 3) soliflucted till and head; 4) colluvium; and 5) blown sand. Amino-acid dating suggests that the raised beach at Broughton Bay was probably formed during the Ipswichian Interglacial, while the till was

deposited during the Devensian. The site also provides information concerning the maximum extent of Devensian ice over west Gower and Carmarthen Bay. From a structural viewpoint the deposits provide a fine display of deformation structures, the precise origin of which remains uncertain, and also infilled cracks which may reflect periglacial processes during the Late Devensian. Holocene dune sands overlying the Pleistocene sediments also contain datable horizons which contribute important data concerning post-glacial environmental changes.

BIOLOGY

The extensive sand dune system of Whiteford Burrows is actively accreting sand at its southern end, but eroding nearer to Whitford Point. The site displays a wide range of dune habitats. Embryonic dunes feature along the strandline with sand couch *Elytrigia juncea*, sea sandwort *Honkenya peploides* and prickly saltwort *Salsola kali*. Shifting dunes, typically vegetated with tussocks of marram *Ammophila arenaria* with sand couch, sea holly *Eryngium maritimum* and sea spurge *Euphorbia paralias*, flank the exposed western side of the Burrows.

In the less exposed, easterly dunes there is a mosaic of semi-fixed dune grassland communities. On the gentler slopes, the grassland is characterised by marram, red fescue *Festuca rubra* and common rest-harrow *Ononis repens*. Steeper dune slopes are dominated by swards of the moss *Syntrichia ruraliformis* together with annuals such as sand cat's-tail *Phleum arenarium*, thyme-leaved sand wort *Arenaria serpyllifolia* and the grass dune fescue *Vulpia fasciculata*. Sheltered areas include fixed dune grassland with dominant red fescue and lady's bedstraw *Galium verum* and sand sedge *Carex arenaria*.

Dune slacks within the site contain a range of communities. Relatively young dune slacks, just inside the westerly mobile dune ridge, have been created by the scouring effect of the wind where it has recently breached the foredune. These steep-sided slacks contain glaucous sedge *Carex flacca*, variegated horsetail *Equisetum variegatum* and self heal *Prunella vulgaris*, with the mosses *Bryum pseudotriquetrum* and *Campylium stellatum*. Many of the older, easterly dune slacks are dominated by creeping willow *Salix repens* with marsh helleborine *Epipactis palustris* and the moss *Calliergonella cuspidata*. There is a transition zone on the east of the dunes, where freshwater seepages from the underlying till support swamp and tall herb communities before grading downslope into saltmarsh; this area is one of the best examples of this type of transition zone in Britain. The vegetation is typically dominated by common fleabane *Pulicaria dysenterica*, water mint *Mentha aquatica*, yellow flag *Iris pseudacorus* and marsh pennywort *Hydrocotyle vulgaris*, with stands of the nationally scarce marsh-mallow *Althaea officinalis* toward the northern end.

Landimore Marsh is dissected by Burry Pill and Great Pill, with numerous muddy tidal channels and creeks. In lower areas, the open mud is colonised by pioneer saltmarsh species, particularly common cord-grass *Spartina anglica* and common glasswort *Salicornia europaea* agg. Additional species such as common saltmarsh-grass *Puccinellia maritima*, Annual sea-blite *Suaeda maritima* and sea aster *Aster tripolium* characterise the transitional low marsh vegetation. Upper saltmarsh communities are characterised by red fescue with sea plantain *Plantago maritima*, saltmarsh rush *Juncus gerardii*, sea rush *Juncus maritimus*, common saltmarsh-grass and creeping bent *Agrostis stolonifera*. In this locality, along the upper saltmarsh transition, there is also a large population of the uncommon and regionally rare round-fruited rush *Juncus compressus*.

Broughton Bay and Whiteford Sands comprises a large expanse of exposed sandy intertidal habitats. The site also exhibits a variety of other shore types, such as muddy sand shores, mussel beds and rockpools.

On the upper shore, talitrid amphipods (sand hoppers) inhabit the decaying seaweed and fine sands of the strand-line. Below this, extensive bands of medium-grained sand support a community of burrowing amphipods such as *Bathyporeia* spp. and *Haustorius arenaria* with the isopod *Eurydice pulchra*. A range of polychaete worms are present, including lugworm *Arenicola marina*, cat worm *Nephtys* sp. and sand mason worm *Lanice chonchilega*. Lower shore and sublittoral fringe species include razor shell *Ensis siliqua*, otter shell *Lutraria lutraria*, banded wedge shell *Donax vittatus* and sea potato *Echinocardium cordatum*.

Around the northern end of Whiteford Sands, much of the shore is dominated by a dense cover of mussel *Mytilus edulis*, consolidating areas of cobbles, pebbles and small boulders. Numerous depressions within this area support rockpools with hydroids, juvenile thick-lipped mullet *Chelon labrosus* and algae such as caragheen moss *Chondrus crispus*, *Polysiphonia elongata* and pepper dulse *Osmundia pinnatifida*. On peripheral areas, the transition towards the sandy areas is characterised by the barnacles *Semibalanus balanoides*, *Eliminius modestus* and edible wrinkle *Littorina littorea*. The sublittoral fringe includes outgrowths of serrated wrack *Fucus serratus* within areas of sand and small boulders with tide swept clumps of the sponge *Hymeniacidon perleve*.

At Broughton Bay, sand-scoured cobbles and pebbles support ephemeral communities of gut weed *Enteromorpha* sp., laver *Pophyra* sp. with littorinid molluscs. These contain pools with hydroids such as *Obelia* sp., barnacles, mussels and the red alga *Furcellaria lumbricalis*.

Other intertidal communities include rocky headlands at Hills Tor and Twlc Point, muddy sand shores and muddy channels and creeks leading up to the saltings of Landimore Marsh.

The former sea-cliff of Tor Gro and North Hill Tor add to the diversity of the site, incorporating a mixture of ash *Fraxinus excelsior* woodland and scrub with hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*. Small open areas support calcareous grassland with rock outcrops and ledges.

The site is of special interest for a range of plant species. Significant populations of dune gentian *Gentianella uliginosa*, early sand-grass *Mibora minima*, fen orchid *Liparis loeselii* and petalwort *Petalophyllum ralfsii* are found on Whiteford Burrows. In addition, the site is important for the assemblage of other local and national rarities, including marsh-mallow *Althaea officinalis*, round-fruited rush, rock sea-lavender *Limonium procerum*, round-leaved wintergreen *Pyrola rotundifolia* subsp. *maritima*, and one-flowered glasswort *Salicornia pusilla*.

The sand dunes of Whiteford Burrows are one of the most important sites in Britain for rare macrofungi. Important species include *Coprinus ammophilae*, *Hohenbuehelia culmicola*, (both growing on the base of marram grass in the foredunes), *Leucoagaricus pilatianus*, *Suillus fluyri* and *Geoglossum umbratile*.

The invertebrate fauna of the dunes is particularly important. For example, the transition zone on the eastern side of Whiteford Burrows is an important habitat for a number of scarce wetland flies such as the soldier flies *Vanoyia tenuicornis*, *Oplodontha viridula*, *Oxycera trilineata* and

Nemoletus notatus. Of key importance here is the population of narrow-mouthed whorl snail *Vertigo angustior*; Whiteford Burrows hosts the largest known population of this Red Data Book species in the United Kingdom. Dune slacks dominated by creeping willow are inhabited by species such as the leaf beetle *Chrysomela populi*, the mining bee *Colletes cunicularis* and the hoverfly *Eumerus sabulonum*. The nationally scarce dune tiger beetle *Cicindela maritima* is found in the dunes and the rare ground beetle *Nebria complanata* is restricted to the sandy strandline where it feeds on sandhoppers.

Also of special interest is the nationally scarce polychaete worm *Ophelia bicornis*, which occurs in elevated hummocks of aerated, medium-grained intertidal sand of Whiteford Sands.

The saltmarsh and intertidal areas are part of the internationally important Burry Inlet, accomodating large numbers of overwintering wildfowl and waders, including oystercatcher *Haematopus ostralegus*, pintail *Anas acuta*, shoveler *Anas clypeata*, dunlin *Calidris alpina alpina*, Black-tailed godwit *Limosa limosa islandica*, knot *Calidris canutus* and shelduck *Tadorna tadorna*.

Pot holes and fissures in the Limestone at Tor Gro act as roost sites for greater horseshoe bat *Rhinolophus ferruquinum* and lesser horseshoe bat *R. hipposiderosus*.

Remarks:

The foreshore and saltmarsh is included within the Carmarthen Bay and Estuaries/Bae Caerfyrddin ac Aberoedd cSAC for the Annex I habitats “mudflats and sand flats not covered by seawater at low tide” and “atlantic salt meadows” and as part of the “large shallow inlets and bays” and “estuaries” habitats which are listed in Annex I of the EC Habitats Directive (Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna).

The dunes are also included within the Carmarthen Bay Dunes/Twyni Bae Caerfyrddin cSAC for the following Annex 1 habitats: humid dune slacks; fixed dunes with herbaceous vegetation (‘grey dunes’); dunes with *Salix repens ssp. argentea* (*Salicion arenariae*): shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’) and; embryonic shifting dunes. The site has also been selected for significant populations of the following Annex II species: Petalwort-*Petalophyllum ralfsii*; Fen orchid *Liparis loeselii* and narrow mouthed whorl snail *Vertigo angustior*.

The majority of the site is within the Burry Inlet SPA designated under the Wild Birds Directive (Directive 79/490/EC) and the Burry Inlet Ramsar site designated under the Ramsar Convention.

The site is host to the following plant species protected under Schedule 8 of the Wildlife and Countryside Act 1981(as amended): petalwort *Petallophyllum ralfsii*; fen orchid *Liparis loeselii*; dune gentian *Gentianella uliginosa*.

The site is host to the following animal species protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended): greater horseshoe bat *Rhinolophus ferruquinum*; lesser horseshoe bat *R. hipposiderosus*.

The site lies within the Gower Area of Outstanding Natural Beauty.

Extensive areas of the site are in the ownership of the National Trust.