

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

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

ANGLESEY

NEWBOROUGH WARREN -YNYS LLANDDWYN

Dates of Notification: 1955, 1957, 1986, 1990, 1995

National Grid Reference: SH 400640

O.S. Maps: 1:50,000 Sheet number: 114
1:25,000 Sheet number: SH36 & SH46

Site Area: 2269 ha

Description:

This site is notified for its geological, geomorphological and biological (botanical, invertebrate and ornithological) interest.

Newborough Warren, the southernmost point of Anglesey, is a large sand-dune and estuarine system renowned for pioneering work on dune ecology (Ranwell 1972). It encompasses the estuaries of the Afon Cefni and the Afon Braint, which are controlling influences on the physical development of the intervening dune system as well as supporting important biological communities in their own right. The dunes mask the central rock ridge leaving only Llanddwyn Island and a few exposures of the underlying solid rock. Afforestation of half the dune system has altered the ecological development of that area, but it remains an integral part of the site through its shared landforms, hydrology, relic dune communities and many rare species. The juxtaposition and interrelationship of ancient rocks, dynamic coastal processes and diverse biological communities make this a site of outstanding importance.

Geological features: The colourful exposures of the Gwna Group on Llanddwyn Island have long been recognised as providing the best examples of jaspery pillow lavas, hyaloclastites, agglomerates and mass-flow lava-limestone mixtures in the Mona complex of Anglesey. The island is the type locality for Greenley's "Spilitic lavas" of the Gwna group. Geochemical studies of these lavas has led to the interpretation of them as ocean floor basalts, possibly derived from a fragmented ophiolite. The red jasper cherts associated with these lavas have yielded microfossils interpreted as bacteria and acritarchs of Lower Cambrian age - a discovery which has overturned previously held ideas on the age of the Mona complex. It has recently been suggested that the rocks on Llanddwyn Island represent slices of Cambrian ocean floor imbricated on the hanging wall of a subduction trench, so that these exposures continue to play a vital role in the development of interpretations of the Mona rocks as an ancient subduction complex.

Geomorphological features: Newborough Warren is an important site for coastal geomorphological features and processes, including the study of wave and current processes in beach development. It comprises a major coastal dune system whose form is controlled by the Menai Strait to the east, Afon Cefni to the west and Llanddwyn Island which divides the shoreline between Malltraeth Bay and Llanddwyn Bay. There are large expanses of both active and fixed dunes and although many of these have been afforested their morphology remains substantially intact. East of Llanddwyn Island parts of the dunes are cliffed and experience net sediment deficit. Sand is transported eastwards towards a spit which extends (in association with an artificial breakwater) to Abermenai Point. In Malltraeth Bay, the dunes attain altitudes in excess of 30 metres above sea level, resting upon and masking the central rock ridge. North-westwards, the beach extends into extensive intertidal sandy flats in the Cefni Estuary. The dune forms at Newborough Warren are varied in character and provide an excellent range of features of different ages.

Biological features: Newborough Warren is the largest sand dune system in West Gwynedd, showing the full development from strandline and shingle flora, dune ridges, wet and dry slacks to dune grassland and scrub development along with a dune-dammed lake, freshwater fen, saltmarsh and mudflats. Although ecological development in the afforested dunes has been substantially modified by the conifer crop, some of the damper slacks still retain remnant sand-dune vegetation. There is an outstanding vascular plant assemblage, including the endemic dune helleborine *Epipactius leptochila ssp. dunensis*, dwarf adder's tongue *Ophioglossum azoricum* and shore dock *Rumex rupestris* along with interesting lichen and moss communities. The nationally scarce liverwort *Petalophyllum ralphsii* occurs in some dune slacks and the nationally rare golden hair lichen *Teloschistes flavicans* has recently been found on Llanddwyn Island which also supports an interesting rocky cliff flora including golden samphire *Inula crithmoides*. The area supports a very rich invertebrate fauna particularly of *Diptera* and such scarce species as the small red damselfly *Ceriagrion tenellum* and the hairy dragonfly *Brachytriton pratense*, whilst rare species include the hoverfly *Eumerus sabulonum*, the mining bee *Colletes cunicularius* and the medicinal leech *Hirudo medicinalis*. There is also a small population of the warty newt *Triturus cristatus*. Intertidal mudflats and saltmarshes adjoining the dunes at Traeth Abermenai and Malltraeth Sands are important wintering grounds for wading birds and wildfowl, regularly supporting over 1% of the British population of pintail. Ynys yr Adar, near Llanddwyn Island, supports over 1% of the British breeding population of cormorant.

Remarks:

Warty newt *Triturus cristatus* is listed under Schedule 5 of the Wildlife and Countryside Act 1981 and in Annex IIb of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna.

Medicinal leech *Hirudo medicinalis* is listed in schedule 5 of the Wildlife and Countryside Act 1981.

Shore dock *Rumex rupestris* and *Petalophyllum ralphsii* are listed in Schedule 8 of the Wildlife and Countryside Act 1981 and in Annex IIb of Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna.

Golden hair lichen *Teloschistes flayicans* is listed in schedule 8 of the Wildlife and Countryside Act 1981

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