CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

GWYNEDD **GLANNAU ABERDARON**

Date of Notification: 1957, 1986, 2001

National Grid Reference: SH167263 to SH167301

O.S. Maps: 1:50,000 Sheet number: 123
1:10,000 Sheet numbers: SH12 NW, NE, SW, SE and SH13 SE

Site Area: 302.3 ha

Description:

This site is of special scientific interest for features of geological, botanical, ornithological, and marine biological interest. The site extends along 10 km of coast dominated by seacliffs, from Porth Oer on the north coast to Porth Simdde on the south coast of Pen Llŷn.

Geological Interest

The geological interest is at two locations: the outstanding exposures of Precambrian rocks overlain by Ordovician strata between Braich y Pwll and Parwyd and the Quaternary deposits at Porth Oer.

Braich y Pwll – Parwyd (Precambrian of England and Wales). The coastal section between Braich y Pwll and Parwyd has long been recognized as one of the key locations in the Precambrian Mona Complex of North Wales. The site provides the finest exposures of the Gwna Mélange on Anglesey and Llŷn, and displays one of the clearest transitions from the Gwna Mélange into the Llŷn Shear Zone, the latter representing a major tectonic boundary that separates the recently defined Monian Composite and Cymru terranes. Although the contact between the Llŷn Shear Zone and Sarn Complex is cut out by a post-Arenig thrust, retrogressed garnetiferous gneisses, unique within the Mona Complex, are exposed on the east side of Parwyd. The Parwyd Gneiss represents the only outcrop of high-grade metamorphic basement in mainland North Wales. The unconformity with overlying Arenig strata is one of only three such occurrences on Llŷn, and constrains the deformation in the mélange to a pre-Arenig age.

The section continues to be of crucial importance to the evolution of ideas on the origin of the Gwna Mélange. The Gwyddel Beds, for example, were originally thought to lie above the Gwna Mélange; detailed mapping, however, has shown that the Gwyddel Beds are in fact huge clasts within the chaotic Gwna Mélange which have retained original bedding and way-up characteristics. The superbly exposed transition from mélange to mylonitic rocks on Trwyn Bychestyn provides rare evidence indicating that the mélange is older than the Llŷn Shear Zone. This is a crucial factor in any reconstruction of Monian tectonic history.

Porth Oer (Quaternary of Wales). Porth Oer provides important evidence for interpreting the Quaternary history of Llŷn. It demonstrates one of the finest examples of a raised shore platform in North Wales. This platform is cut across Precambrian rocks, and although its age is unknown, it is likely that it was fashioned, at least in part, during high relative sea levels in more than one Pleistocene interglacial. Sediments overlying the platform and in cliff sections at the site demonstrate the following generalized sequence: 1. parautocthonous deposits; 2. sands and gravels

(locally cemented); and 3. interbedded diamictons and sands and gravels. The sands and gravels of unit 2 (Porth Oer Member) were formerly interpreted as interglacial raised beach deposits – one of only a few such postulated occurrences in North Wales. Accordingly, the site featured in numerous reconstructions of Pleistocene events in the region and was afforded reference status. However, recent work suggests that the sand and gravel deposits of unit 2 are more likely to be part of the extensively developed overlying glacigenic sequence at the site, which records a major incursion of the Irish Sea glacier onto Llŷn. Nonetheless, the site remains a critical reference site for its excellent example of a raised shore platform and overlying glacigenic sequence.

Biological Interest

Botanically, the cliffs and areas of western coastal heath with stands of bell heather *Erica cinerea*, western gorse *Ulex gallii* and ling *Calluna vulgaris* are plant communities of special interest. The heath found on Mynydd Anelog, Mynydd Mawr, Mynydd y Gwyddel, Mynydd Bychestyn and Pen y Cil is 'wave formed' in places, as a result of exposure to salt-laden winds. Between and within the heathland blocks, maritime grassland communities and localised flushes on boulder-clay slopes provide a contrasting flora and increase the diversity of the stands. The variety of rare and uncommon plants is also of special interest. The heath supports spotted rock rose *Tuberaria guttata*, only known elsewhere in Britain on Anglesey and prostrate broom *Cytisus scoparius* subsp. *maritimus* occurring here as a very isolated outlier at the north of its range. Golden samphire *Inula crithmoides*, lanceolate spleenwort *Asplenium obovatum* and an endemic sea-lavender *Limonium procerum* subsp. *procerum* also occur on the cliffs. Two nationally rare heathland lichens, the endangered *Heterodermia leucomelos* and the vulnerable *Teloschistes flavicans*, have been recorded from the site.

Ornithologically the site supports an internationally important population of breeding chough *Pyrrhocorax pyrrhocorax* (20 pairs in 1997). Sea caves provide suitable nest sites, the cliffs provide roosting sites, and grazed rough grassland and heathland provide feeding areas. The site also supports a good diversity of cliff-nesting sea birds including species of gull, auks and fulmar, as well as peregrine.

The marine biological interest includes bedrock cliffs which show the best example of wave-exposed rock habitat and its associated marine communities found between Bardsey Island and the Great Orme. Complete community zonation characteristic of this habitat occurs along more than 8 km of the coast. The site is also of importance because of its species-rich rockpool and overhanging bedrock communities.

This section of coast experiences strong wave action due to its westerly/south-westerly aspect. Steeply sloping narrow bedrock cliffs are present over most of the site, with caves and occasional storm beaches of boulders and cobbles. Between Porth Oer and Brach y Pwll the area of cliff subject to sea-spray supports a wide band of yellow and grey lichens. Below this the black tar lichen *Verrucaria maura* dominates, with the black lichen *Lichina pygmaea* also occurring regularly in this zone. Below the lichens a mixture of barnacles *Semibalanus balanoides* and limpets *Patella* sp. dominates the upper shore. From mid to low shore the community is characterised by foliose red and coralline seaweeds with thongweed *Himanthalia elongata*. The zone below this is dominated by dabberlocks *Alaria esculenta* and oarweed *Laminaria digitata*, with an understorey of red seaweed. Caves in the cliff at Porth Llanllawen support a rich assemblage of sponges, ascidians, bryozoans and shade-tolerant seaweeds.

The stretch of shore between Brach y Pwll and Porth Simdde forms the tip of Pen Llŷn and is subject to very strong tidal currents. The communities present are typical of a very exposed shore, with a very wide lichen zone consisting of black tar lichen below the orange lichens *Caloplaca marina* and *Xanthoria parietina*. Further down the shore black tar lichen is associated with black lichen and laver *Porphyra purpurea*. The barnacles *Chthamalus montagui* and *Semibalanus*

balanoides dominate the upper mid shore, and the periwinkle *Littorina neglecta* inhabits their empty shells. In the most exposed areas the red seaweed *Corallina officinalis* dominates the lower shore, with Irish Moss *Mastocarpus stellatus* growing into a thick layer in slightly more sheltered areas. On the even more sheltered east-facing coast the red algae is overgrown by toothed wrack *Fucus serratus.* Species of *Enteromorpha* are the dominant seaweed in small sheltered bays along the coastline. Dabberlocks kelp covers the extreme low shore of the more exposed areas, while oarweed dominates this zone in less exposed areas.

Remarks:

1. This site supports vegetation assignable to vegetated sea cliffs of the Atlantic and Baltic, and lowland heath. These are habitat types listed on Annex 1 of the EC Habitats Directive (Directive 92/43EEC on the Conservation of Natural Habitats and Wild Flora and Fauna).

2. *Limonium procerum* subsp. *procerum* and *Heterodermia leucomelos* are listed as priority Biodiversity Action Plan species.

3. The chough *Pyrrhocorax pyrrhocorax* is protected under Annex 1 of the EC Conservation of Wild Birds Directive 1979.

4. The lichens *Heterodermia leucomelos* and *Teloschistes flavicans* are protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

5. The seacliffs form part of the Clogwyni Pen Llŷn/Lleyn Sea Cliffs cSAC (Directive 92/43 EEC on the Conservation of Natural Habitats and Wild Flora and Fauna).

6. The whole SSSI forms part of the Glannau Aberdaron and Ynys Enlli Special Protection Area (under the EC Conservation of Wild Birds Directive 1979).

7. The site is a component of the Lleyn Peninsula Environmentally Sensitive Area, the Lleyn Peninsula Heritage Coast and the Lleyn Peninsula Area of Outstanding Natural Beauty.