CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

POWYS
NEATH PORT TALBOT
RHONDDA CYNON TAFF

DYFFRYNNOEDD NEDD A MELLTE, A MOEL PENDERYN

Date of Notification: 1954, 1965, 1978, 1979, 1999

National Grid Reference: SN 907100, SN 921090, SN 937088

O.S. Maps: 1:50,000 Sheet number: 160
1:10,000 Sheet number: SN 80 NE, SN 90 NW, SN 91 SW

Site Area: 421.1 ha

Description:

Dyffrynnoedd Nedd a Mellte, a Moel Penderyn is of special interest for its extensive and diverse semi-natural woodland, important populations of several flowering plants and supporting outstanding assemblages of mosses, liverworts and lichens. The site includes a range of geological features, well-exposed in the cliffs and rocky river beds. These include exposures at Moel Penderyn, Craig y Ddinas and Bwa Maen and geomorphological features within parts of the valleys of the Hepste and Mellte are also of special interest.

This site includes the wooded valleys of the rivers Nedd and Mellte, and their tributaries above Pontneddfechan, as they pass through a Millstone Grit and limestone plateau, and Moel Penderyn, which lies to the east. The plateau lies at about 300 m, the rivers having eroded deep, narrow valleys with gorges, river cliffs, block scree and waterfalls.

GEOLOGY

The old quarry faces and rock outcrops at Craig y Ddinas and Moel Penderyn provide important exposures of geological structures formed during the Variscan Orogeny, late in the Carboniferous and early in the Permian periods of geological history. The Carboniferous Limestone layers are steeply tilted on Craig y Ddinas, as a result of folding, and small tight folds can be seen in the banks of the River Sychryd. The exposed Dinas fault, a major dislocation of the crust, is marked by a belt of shattered limestone associated with several minor fractures. Numerous other small structures occur, including faults, fractures, veins and folds. This complex assemblage of structures makes up a narrow belt called the Neath Disturbance, which extends from the Welsh Borders to the Gower Peninsula. The Disturbance probably lies above an ancient line of weakness in the deep crust reactivated during the Variscan Orogeny. These localities provide the best exposures of this important feature of the geological structure of South Wales.

The best exposure in South Wales of the rock strata of the *Gastrioceras subcrenatum* Marine Band (below the Farewell Rock) in its full development occurs in the valley of the Nedd Fechan. The full range of environment types is represented in the marine band section, including brackish

water with a restricted fauna and off-shore marine environments with a goniatite-rich fauna. The site is important in understanding how this brief marine incursion occurred, which, in turn, is important because the marine band, the expression of this event in the rocks, is taken to indicate the start of the Westphalian Epoch of Carboniferous time.

The Nedd, Mellte and Sychryd, forming the headwaters of the Afon Nedd, provide key exposures of Carboniferous rocks. These include extensive and spectacular exposures of the whole Namurian of the North Crop. In particular, the Basal Grits are well exposed and present the best available section in the Main South Wales Basin. The predominantly shaley sequences of the higher Namurian are also well exposed here and their study has been of great importance in the elucidation of the stratigraphy of the Namurian. Additional importance attaches to the presence of a varied and abundant Basal Grit flora. These are outstanding, nationally important sections of the Carboniferous.

The river system is exceptional in showing the combined effects of geological controls and changing sea levels in river landform development. Faulting has juxtaposed rocks of varying resistance and influenced the form and evolution of waterfalls. Thus the landforms of this area reflect a variety of interacting controls, and both the total assemblage as well as the individual features are important.

BIOLOGY

This site supports one of the most extensive and diverse areas of semi-natural woodland in Wales. The predominant woodland vegetation communities are characteristic of the uplands of north and western Britain, with extensive areas of oak *Quercus spp*. woodland, and smaller areas of ash *Fraxinus excelsior* woodland. The distribution of the particular communities reflects the distribution of soils of low, moderate and high base status, respectively. More locally, however, the aspects and microclimate have allowed the development of the southern and eastern lowland counterparts of these free-draining oak, birch *Betula spp*. and ash-dominated woodlands.

Large areas of the site have a woodland canopy dominated by oak intermediate in character between the sessile oak *Quercus petraea* and the pedunculate oak *Q. robur*, with a little downy birch *Betula pubescens* and small-leaved lime *Tilia cordata* in places. Here, the shrub layer is absent or sparse with a little hazel *Corylus avellana* or rowan *Sorbus aucuparia*. The field layer is typically dominated by wavy hair-grass *Deschampsia flexuosa*, with bilberry *Vaccinium myrtillus* present and, where grazing is relatively light, quite abundant. The ground layer has a very high cover of mosses, including *Rhytidiadelphus loreus*, *Polytrichum formosum*, *Dicranum majus*, *Plagiothecium undulatum*, *Hypnum cupressiforme*, *Mnium hornum* and *Sphagnum quinquefarium*. Elsewhere, large stands of similar canopy and shrub layer composition have a ground layer typically dominated by wavy hair-grass with common bent *Agrostis capillaris* and some sweet vernal-grass *Anthoxanthum odoratum*. Purple moor-grass *Molinia caerulea* is present occasionally and is sometimes abundant, while bilberry is absent or very rare except on inaccessible ledges and cliffs. The ground layer often has carpets of the bryophytes mentioned above.

Another woodland community that occurs extensively in some parts of the site is dominated by sessile oak and forms intermediate with pedunculate oak, or downy birch, or a mixture. Other canopy trees are rare and the shrub layer is typically sparse, but in some areas dense hazel and scattered hawthorn *Crataegus monogyna* are present. The field layer is grassy, with common bent, sweet vernal-grass and creeping soft-grass *Holcus mollis* often abundant with patchy wavy

hair-grass. Other species that occur here are wood-sorrel *Oxalis acetosella*, bluebell *Hyacinthoides non-scripta*, bracken *Pteridium aquilinum* and heath bedstraw *Galium saxatile* and the mosses *Rhytidiadelphus squarrosus* and *Polytrichum formosum*.

Small stands of woodland, particularly along steep tributary stream valleys are dominated by ash with a dense shrub layer of hazel, a little hawthorn and locally frequent rowan. No single species is dominant in the field layer, but wood-sorrel, false brome *Brachypodium sylvaticum*, common bent, lady-fern *Athyrium filix-femina* and rough meadow-grass *Poa trivialis* are all locally frequent. In the ground layer, mosses and liverworts are prominent, with *Plagiomnium undulatum*, *Mnium hornum*, *Atrichum undulatum*, *Pellia* sp., and *Ctenidium molluscum* all frequent and often abundant. The ground flora in these areas can be extremely rich and includes species that are scarce in mid and south Wales, such as wood fescue *Festuca altissima*.

The canopy in one area of the site is composed mainly of intermediate oak, with a little downy birch in places. The shrub layer is sparse, with only scattered hazel and holly *Ilex aquifolium*. The field layer is a carpet of wavy hair-grass with few other species present, although bracken occurs in places. Mosses are sometimes quite prominent in scattered tufts, especially *Polytrichum formosum* and *Mnium hornum*.

In another area, the canopy mostly comprises intermediate oak and occasional ash with a relatively dense shrub layer, primarily of hazel, but with scattered holly and rowan. The field layer is dominated by three species: bramble *Rubus fruticosus*, bracken and creeping soft-grass with frequent wavy hair-grass.

Small patches of woodland on open, steep cliffs and screes, particularly of limestone, are dominated by ash and are relatively species-rich, with many calcicoles. On shadier steep cliffs, similarly ash-dominated patches are relatively species-poor, with abundant ivy *Hedera helix* and some calcicoles. In small areas of woodland at the base of shadier steep cliffs, scattered field maple *Acer campestre* occurs in the shrub layer, beneath a canopy of ash. The field layer includes species such as dog's mercury *Mercurialis perennis*, herb-Robert *Geranium robertianum*, common nettle *Urtica dioica*, cleavers *Galium aparine* and, where bouldery, hart's-tongue *Phyllitis scolopendrium*.

Elsewhere, soils with impeded drainage or flushing support an extensive area of alder *Alnus glutinosa*-dominated woodland, in a range of topographical situations. Wet flushes within this type of woodland provide the most southerly known locality in Britain for marsh hawk's-beard *Crepis paludosa*. There are small patches of woodland where alder is dominant, with a little ash and downy birch over a shrub layer of hazel. Here, the field layer is generally dominated by remote sedge *Carex remota* with many other species present in small amounts. Elsewhere, extensive stands of alder-dominated woodland have a relatively dense shrub layer, primarily composed of hazel but often with ash saplings, hawthorn and downy birch saplings. The ground layer is dominated by tufted hair-grass *Deschampsia cespitosa*, with wood-sorrel and lady-fern. Further areas have a canopy mostly of alder with occasional downy birch and little of a shrub layer except scattered ash saplings. The field layer is a mixture of meadowsweet *Filipendula vulgaris*, creeping buttercup *Ranunculus repens*, false brome, soft-rush, great horsetail *Equisetum telmateia* and bramble. In the ground layer, the mosses *Eurhynchium praelongum* and *Thuidium tamariscinum* are frequent.

Locally, where woodland extends onto the drift-covered plateau, stands of a community dominated by alder with occasional downy birch, rowan and ash are present. There is no shrub

layer and the field layer is dominated by purple moor-grass, with frequent bramble, soft-rush *Juncus effusus* and broad buckler-fern *Dryopteris dilatata*. Scattered, relatively small patches of a similar type of woodland have the same canopy trees and a typically sparse or absent shrub layer. The field layer here is always dominated by purple moor-grass, with soft-rush, tormentil *Potentilla erecta*, creeping soft-grass, tufted hair-grass and common bent typically present. In the ground layer, bog moss *Sphagnum recurvum* and hair moss *Polytrichum commune* are usually present.

The overall botanical diversity is outstanding, with more than 600 species of plant having been recorded from the site. This includes a very large proportion of the bryophyte flora of mid and south Wales.

The high humidity of much of the woodland has a strong influence on its botanical diversity. Trees and rocks support a diverse assemblage of plant species largely confined in their distribution to the Atlantic Seaboard of Europe. These Atlantic species include green spleenwort *Asplenium viride*, Tunbridge filmy-fern *H. tunbridgense*, hay-scented buckler-fern *Dryopteris aemula*, all of which are rare in south Wales, liverworts, such as *Bazzania trilobata*, *Jubula hutchinsiae* and the scarce *Anastrophyllum hellerianum*, *Colura calyptrifolia*, *Jamesoniella autumnalis* and *Sphenolobopsis pearsonii*, mosses, such as *Isothecium holtii*, *Dichodontium denudatum* and the scarce *Bartramia hallerana* and *Seligera acutifolius*, lichens, such as *Enterographa hutchinsii*, *Micarea alabastrites*, the rare *Micarea hedlundii*, and the scarce *Micarea stipitata* and *Phyllopsora roseii*. These contrast with the local abundance of more continental species such as, on logs, the scarce moss *Dicranum flagellare*, on gritstone cliffs, the scarce lichen *Chrysothrix chlorina* and, on bark, the scarce lichen *Micarea pycnidiophora*.

Boulder screes, cliff faces, springs, seepages, decaying logs and mature and overmature trees provide some of the specific habitats required by several scarce lower plants demanding conditions that are subject to little change with time, including the lichens *Leptogium plicatile* and *L. subtile*, and the liverwort *Cephalozia catenulata*. Despite recent high levels of atmospheric pollution, the epiphytic <u>*Lobarion*</u> lichen community persists in these sheltered valleys and includes species such as *Lecanactis premnea*, *Biatora sphaeroides*, *Parmeliella triptophylla* and *Dimerella lutea*.

The rivers, with their fine waterfalls, are an integral part of the site with the splash zones and spray providing wetness and humidity necessary for many species. River courses support a notable riparian flora dominated by liverworts, and mosses, including the nationally scarce *Fissidens rufulus* and *F. rivularis*, and *Tetrodontium brownianum*, which is threatened in Europe.

The woodland in the valleys is interspersed with several more open habitats that provide additional interest. As well as the cliffs, screes and rivers there are extensive areas of grassland dominated by common bent and sheep's fescue *Festuca ovina*. There are also patches of less acidic grassland in the valley bottoms and, at Craig y Ddinas and Moel Penderyn, the limestone supports calcareous grassland. Wet grassland dominated by purple moor-grass or rushes (*Juncus* spp.) occurs in a series of flushes along the valley sides and bracken-dominated glades are widespread. Patches of dry heath and wet heath characterised by deergrass *Scirpus cespitosus* and cross-leaved heath *Erica tetralix* can be found in Hepste valley.

Other habitats of interest include areas of beech *Fagus sylvatica* plantation, grey willow *Salix cinerea* and bramble scrub and nutrient-rich ponds.

The fauna of these valleys is well developed, and includes birds such as breeding dipper, grey wagtail, goosander, pied flycatcher, redstart, wood warbler, woodcock, buzzard and sparrowhawk.

Remarks:

Part of this site lies within the Brecon Beacons National Park.

The Forestry Commission and the Brecon Beacons National Park Authority own parts of this site.