

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

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

GWYNEDD

AFON EDEN - CORS GOCH, TRAWSFYNYDD

Date of Notification: 2003, 2004

National Grid Reference: SH702349 to SH735223

O.S. Maps: 1:50,000 Sheet number: 124
1:10,000 Sheet number: SH63 SE; SH72 SW/NW; SH73 SW

Site Area: 366.3 ha

Afon Eden - Cors Goch Trawsfynydd is of special interest for its biological features including mesotrophic river types, raised bog and associated peatland habitats, neutral and acid grasslands, broadleaved woodland, as well as a mixture of marshy grassland, flush and wet heath. The site supports a number of species of special interest including the freshwater pearl mussel *Margaritifera margaritifera*, floating water-plantain *Luronium natans*, Atlantic salmon *Salmo salar*, otter *Lutra lutra* and a lichen assemblage.

The SSSI includes the entire length of the Afon Eden from its source just south of Llyn Trawsfynydd. The site includes parts of its tributaries and 3 km of the Mawddach between its confluence with the Afon Eden and the Afon Wen. The lower 4 km of the Afon Wen, another tributary of the Mawddach is also included. The upper headwaters of the Afon Eden arise from and are fed by the extensive peatland of Cors Goch which lies immediately to the south of Llyn Trawsfynydd. The lower stretch of the river enters a steep-sided valley as it runs through Coedy-Brenin forest before entering the Afon Mawddach just north of the village of Ganllwyd. The altitude ranges from 10-200 m.

The solid geology at this site is characterized by dominantly coarse-grained lithologies of Lower Palaeozoic (Cambrian) age. These rocks have been deformed into a major north-trending fold, the Dolwen Pericline, the axis of which is transected by the Afon Eden in its upper reaches. The bedrock in the vicinity of the river is overlain by a variety of unconsolidated superficial deposits including boulder clay (till), peat and river alluvium.

The Afon Eden is relatively unmodified and supports abundant and diverse aquatic, emergent and bank-side vegetation within a wide range of channel and riparian habitats. It is dominated by oligo-mesotrophic (poor to moderate nutrient status) communities but is noteworthy for having four different river types within a relatively short length of river. The major tributaries of the Eden are the Crawcwellt north and the Crawcwellt south which arise on the eastern slopes of the Rhinogydd. Both streams are fast flowing and very oligotrophic (nutrient poor) with river vegetation dominated by aquatic mosses such as *Fontinalis squamosa* and *Rhyncostegium riparioides* with boulders supporting mosses such as *Racomitrium aciculare* and characteristic acid-tolerant liverworts such as *Scapania undulata* and *Marsupella emarginata*. The side of the streams support flushes with *Breutelia chrysocoma* and *Campylopus atrovirens*. The upper

reaches of the Afon Eden flow through the Cors Goch mire and are slow-flowing and mesotrophic (more nutrient rich). Aquatic species here include yellow water-lily *Nuphar lutea*, floating bur-reed *Sparganium angustifolium* and broad-leaved pondweed *Potamogeton natans* with bottle sedge *Carex rostrata* on the channel margins. *N. lutea* in particular is primarily a lowland species, and the Afon Eden is the second highest altitude river record in the UK. Below the Cors Goch mire the river remains slow-flowing but becomes deeper and wider and the vegetation includes the internationally rare floating water-plantain *Luronium natans* along with shoreweed *Littorella uniflora*, quillwort *Isoetes lacustris* and alternate water-milfoil *Myriophyllum alterniflorum*. On the river margins are species such as branched bur-reed *Sparganium erectum*, water horsetail *Equisetum fluviatile* and reed canary-grass *Phalaris arundinacea*. The banks of the river support a species-rich flora including the globeflower *Trollius europaeus*, purple-loosestrife *Lythrum salicaria*, ivy-leaved bellflower *Wahlenbergia hederacea* and saw-wort *Serratula tinctoria*. A small silted-up ox-bow lake has formed in the middle reaches of the Eden and supports a hybrid sedge *Carex rostrata x vesicaria*. Below Pont-y-Gribble the gradient of the Afon Eden increases and it becomes more typically upland in character. The lower reaches of the Eden, along with the Afon Mawddach and the Afon Wen are more oligotrophic, being fast-flowing through steep sided gorges with waterfalls, rapids and boulder-strewn channels. There are few aquatic higher plant species in these sections and the lower plants are mainly bryophytes such as *Fontinalis antipyretica*, *F. squamosa* and *R. riparioides*. The drier river margins support liverworts such as *Scapania undulata* and *Marsupella emarginata* and mosses such as *Hyocomium armoricum*. Parts of the riverbanks are tree-lined, in the upper catchment mainly with grey willow *Salix cinerea* and eared willow *Salix aurita* and in the lower catchment with alder *Alnus glutinosa*, sessile oak *Quercus petraea*, birch *Betula spp* and rowan *Sorbus aucuparia*.

The Afon Eden is of European importance for its population of freshwater pearl mussel *Margaritifera margaritifera* which represents the last breeding population of this species in Wales. The mussels are concentrated in a 3 km stretch of the upper catchment. The freshwater pearl mussel is dependent on the salmonid (salmon and trout) populations because its larval stage is parasitic on their gills. Atlantic salmon *Salmo salar* spawn on the Afon Eden, Mawddach and Wen although the Eden is the most productive river having a greater prevalence of spawning gravels and juvenile salmon habitat combined with better water quality. Sea trout *Salmo trutta trutta* also spawn in the rivers and native brown trout *Salmo trutta fario* are abundant. Otters *Lutra lutra* are widespread throughout the catchment of the three rivers. Otters rely on woodland, scrub and tall bankside vegetation for cover and the roots of large trees at the river's edge are likely to be important for breeding holts. Water vole *Arvicola terrestris* has been recorded on the upper Afon Eden.

Cors Goch mire was formerly more extensive with the most northerly part having been flooded to create Llyn Trawsfynydd. Of particular significance within the mire complex are two ombrogenous (rain-fed) peatland units, which represent important examples of lowland raised bog close to the altitudinal limit of this habitat in Wales. Recent investigations have revealed that the larger of the two ombrogenous peatlands retains a sequence of peat deposits over 6 m thick and analyses of plant remains preserved within the peat indicate a pattern of development which has passed from alder carr woodland through a fen-bog transition to the present day rain-fed peatland. Bog vegetation appears to have been present at this site for at least 5,000 years, and the preserved sequence includes abundant remains of the classic peat-forming bog moss *Sphagnum austinii*. Both of the ombrogenous peatland units occur within a wider peatland landscape which includes significant areas of modified and unmodified blanket bog on peats of

varying thickness as well as wet heath on shallower peats and valley mire along the course of the Eden and its tributaries. Each of these units are hydrologically linked and the occurrence of raised bog in this context represents the closest approach in Wales to a peatland type referred to as intermediate bog, namely bog with characteristics of both blanket and lowland raised bog.

The raised bog vegetation at the site includes cross-leaved heath *Erica tetralix*, deergrass *Scirpus cespitosus*, hare's-tail cottongrass *Eriophorum vaginatum* and bog asphodel *Narthecium ossifragum*, as well as more specialised elements indicative of high quality raised bog including bog-rosemary *Andromeda polifolia* and the attractive wine-red bog moss *Sphagnum magellanicum*. Other frequent bog moss species include *S. papillosum*, *S. capillifolium* and *S. tenellum*, but aquatic Sphagna are unusually sparse despite the localised abundance of shallow pools and hollows. White-beaked sedge *Rhynchospora alba* and cranberry *Vaccinium oxycoccus* add to the characteristic assemblage of raised bog species, and there are recent records for two ombrogenous bog mosses, the nationally scarce *Sphagnum austinii* and the regionally rare *S. fuscum*. Despite the evident quality of the vegetation of the raised bog areas, the presence of substantial areas of bare peat and the generally low cover of heather *Calluna vulgaris* both point to overgrazing and past burning as key factors in the site's recent history. Past management has also affected much of the surrounding peatland, with extensive peat cutting in particular having obscured the original form of the overall peatland unit. Purple moor-grass *Molinia caerulea* is ubiquitous and often abundant on gently sloping shallow blanket peats peripheral to the raised mire units and in places forms a very species-poor sward. Elsewhere, deergrass, hare's-tail cottongrass, common cottongrass *Eriophorum angustifolium* and occasional bog-myrtle *Myrica gale* contribute to a more diverse flora.

Flush and valley mire vegetation occurs widely throughout the Cors Goch mire wherever water seepage contributes to slight nutrient enrichment, and characteristic species include bottle sedge *Carex rostrata*, star sedge *Carex echinata*, bogbean *Menyanthes trifoliata*, sharp-flowered rush *Juncus acutiflorus* and the bog mosses *Sphagnum recurvum* and *S. palustre*. These areas also support the largest known lowland populations in Wales of the nationally scarce bog moss *Sphagnum affine*, while other notable species include oblong-leaved sundew *Drosera intermedia*, bog-sedge *Carex limosa*, water sedge *Carex aquatilis* and lesser bladderwort *Utricularia minor*. Areas of marginal lagg fen bordering the raised mires at this site are regarded as particularly significant in view of their widespread loss across the UK as a result of peripheral drainage and peat cutting.

Bryn Crwn is an area of unimproved herb-rich grassland lying above the general water table and the Cors Goch mire on a fluvio-glacial deposit called an esker. The predominant vegetation is neutral grassland with the main grasses being red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus*, common bent *Agrostis capillaris* and sweet vernal grass *Anthoxanthum odoratum*. The more frequent herbs include common knapweed *Centaurea nigra*, common bird's-foot-trefoil *Lotus corniculatus*, eyebright *Euphrasia officinalis* and red clover *Trifolium pratense*. Most of the lower slopes on the western flank of the esker, together with an area of flatter ground near the centre of the site, support the more nutrient-poor neutral grassland. This vegetation is distinguished by the presence of frequent tormentil *Potentilla erecta* and heath-grass *Danthonia decumbens*. Areas of more acidic grassland characterised by frequent heath bedstraw *Galium saxatile* and sheep's fescue *Festuca ovina* occur locally. Much of the acid grassland is species-rich and floristically similar to the neutral grassland. Some stands include bitter-vetch *Lathyrus linifolius*, devil's-bit scabious *Succisa pratensis* and mountain pansy *Viola lutea*. Notable grassland species include bitter wood-vetch *Vicia orobus*, adder's tongue

Ophioglossum vulgatum, mountain pansy, smooth lady's-mantle *Alchemilla glabra*, saw-wort *Serratula tinctoria* and pale sedge *Carex pallescens*.

South of Pont-y-Grible on the eastern bank of the river is an area of wet grassland and associated mire and flush communities. The wet grassland is dominated by purple moor-grass but includes frequent sharp-flowered rush *Juncus acutiflorus*, and cross-leaved heath with only scattered *Sphagnum* cover. Herbs include tormentil, devil's-bit scabious and wild angelica *Angelica sylvestris*. Areas of acidic flushing have *Sphagnum*-dominated vegetation with a variety of grasses and sedges including carnation sedge *Carex panicea* and star sedge *Carex echinata*. Some flushes display a more base-rich influence, being dominated with sedges and mosses such as *Calliergon cuspidatum* and *Campylium stellatum* and flowering plants that include common butterwort *Pinguicula vulgaris*. Also within the site are areas of rush pasture, dry acidic grassland and wet heath. The uncommon globeflower *Trollius europaeus* is frequent along the river and the nationally rare liverwort *Scapania paludicola* is found in acid flushes.

The sessile oak *Quercus petraea* and downy birch *Betula pubescens* woodland supports a rich assemblage of lichens and characteristic ferns such as hard-fern *Blechnum spicant* and broad buckler-fern *Dryopteris dilatata*. Holly *Ilex aquifolium* and hazel *Corylus avellana* form the understorey and the field layer includes wavy hair-grass *Deschampsia flexuosa*, bilberry *Vaccinium myrtillus* and heather *Calluna vulgaris*. Characteristic mosses and liverworts include *Polytrichum formosum*, *Dicranum majus*, *Rhytidiadelphus loreus* and *Plagiochila spinulosa*. Rotting timber within the wood supports liverworts such as *Nowellia curvifolia*. The largest numbers of rare and scarce lichen species are found growing on sessile oak and include the nationally rare *Cladonia norvegica*, *Micarea hedlundii* and *Micarea xanthonica*. Other lichen species including the nationally rare *Micarea viridileprosa* are found on birch *Betula pubescens*, grey willow *Salix cinerea* and other broadleaved species. A number of nationally scarce lichens, for example *Bacidia trachona* and *Herteliana taylorii*, are found on rocks along the rivers and beneath the trees. The woodlands support large populations of flying insects that provide an important food source for bats, including the rare lesser horseshoe bat *Rhinolophus hipposideros*.

The Cors Goch mire supports a colony of the locally rare large heath butterfly *Coenonympha tullia* at one of its relatively few Welsh sites. The large heath butterfly occurs in lowland raised bogs, upland blanket bogs and damp acid moorland where the main larval food plants, hare's-tail cottongrass *Eriophorum vaginatum* and white beak-sedge *Rhynchospora alba* occurs. Wales contains the most southerly sites in Britain for this species.

Remarks:

1. The entire site is within the Snowdonia National Park.
2. Afon Eden - Cors Goch Trawsfynydd SSSI underpins both the Afon Eden Special Area of Conservation and the Coedydd Derw a Safleoedd Ystlumod Meirion/ Meirionydd Oakwoods and Bat Sites Special Area of Conservation.
3. Floating water-plantain, freshwater pearl mussel, Atlantic salmon and otter are listed under Annex II of the EC Habitats Directive (Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) and qualify the site as part of the Afon Eden Special Area of Conservation.
4. The site supports a significant presence of two habitats listed in Annex 1 of the EC Habitats Directive namely, old sessile oak woods with *Ilex* and *Blechnum* and active raised bog.

5. The freshwater pearl mussel *Margaritifera margaritifera* is listed as Endangered (Category 1) on the IUCN Red List and is on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).
6. The otter *Lutra lutra* and floating water-plantain *Luronium natans* are listed on Schedule 5 and Schedule 8 respectively of the Wildlife and Countryside Act 1981 (as amended).

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