

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

**SITE OF SPECIAL SCIENTIFIC INTEREST CITATION**

**POWYS/CEREDIGION**

**RIVER WYE (UPPER WYE)/  
AFON GWY (GWY UCHAF)**

**Date of Notification:** 1972, 1978, 1983, 1996

**National Grid References:** SN815864 - SO229428

**O.S. Maps:** 1:50,000 Sheet number: 135, 147, 161  
1:10,000 Sheet number: SN 78 NE, SE SO 05 NW, SW, SE  
SN 88 NW, SW, SE SO 04 NE, SE  
SN 87 SE, SO 14 SW, SE  
SN 97 NW, SW, SE SO 13 NW, NE  
SN 96 NE, SE SO 24 SW  
SO 06 SW

**Site Area:** 552.8 ha

**Description:**

**River Wye**

Together, the River Wye (Lower Wye) and the River Wye (Upper Wye) SSSIs and several of their tributaries represent a large, linear ecosystem which acts as an important wildlife corridor, an essential migration route and a key breeding area for many nationally and internationally important species. The Wye is of special interest for its associated plant and animal communities.

Its character spans a range of types from an upland base-poor stream to an estuarine, silty lowland river. The river's overall diversity is a product of its underlying geology, soil type, adjacent land use and fluvio-geomorphological regime.

The River Wye forms one of the longest rivers in England and Wales. From its source to its confluence the main channel is 250kms long, drains a catchment of 4136km<sup>2</sup> and has the fourth largest flow of any river in England and Wales. Rising at an altitude of 680m on Pumlumon Fawr in Powys the Wye meanders down through Wales, Herefordshire and Gloucestershire, finally entering the Severn Estuary at Chepstow.

**River Wye (Upper Wye) (Source to Hay on Wye)**

The River Wye (Upper Wye) is a fine example of a upland river typified by steep gradients, rock and coarse river beds. The river drains a predominantly upland catchment dominated by semi-natural vegetation and permanent pasture.

The river is of special interest for five main aquatic plant community types - clay rivers; rivers on rich geological strata; rivers on sandstone, mudstone and hard limestone; mesotrophic rivers downstream from oligotrophic catchments; and oligotrophic rivers.

From its source in the Cambrian Mountains, it descends rapidly through moorland and rocky gullies to join with the Afon Tarennig at Bontrhydgaled. The latter tributary, being significantly larger than the River Wye, is included within the site.

The river then flows through a u-shaped valley down to Nannerth, where it enters a steep rocky gorge. Below Nannerth it cuts deeply into the bedrock in numerous places along its course to Llyswen, where it enters a broad, alluvial floodplain, which extends to and beyond Hay on Wye, where the river enters England and the River Wye (Lower Wye) SSSI.

The River Wye (Upper Wye) shows a clear downstream succession of plant communities, closely reflecting variations in geology and flow rate. There are extensive beds of water crowfoot *Ranunculus spp.* which are of international importance, and it is also notified for a number of rare and scarce species of flowering plant, bryophyte and lichen which can be found in the river and on its banks. The river is of high invertebrate interest for species (of beetles, mayflies, spiders and dragonflies) associated with turbulent flow and, in particular, river shingle. The fish fauna is of international significance and includes a number of rare and scarce species. The upper Wye also supports internationally important populations of Atlantic stream crayfish *Austropotamobius pallipes*, and common otter *Lutra lutra*.

Whilst not a special feature of the site, there is a good range of breeding birds associated with riverine habitats.

The SSSI incorporates adjacent areas of riparian habitats. These include woodlands, dominated by alder *Alnus glutinosa*, willows *Salix spp.* and downy birch *Betula pubescens*, moorland flushes, marshy grassland dominated by purple moor-grass *Molinia caerulea* and rushes *Juncus spp.*, and stands of tall fen and marsh vegetation. Shingle banks and gravel shoals support a variety of plant communities characterised by species more normally considered to be arable weeds, some of which are now scarce in mid Wales. Back channels and oxbows support still water plant communities not found in the main channel, and these are frequented by otters and waterfowl and provide valuable refuges for small fish and invertebrates in times of flood.

### **Geology and Topography**

The catchment of the River Wye (Upper Wye) is 1623 km<sup>2</sup> in area and is predominantly upland in nature. The Cambrian Mountains, Radnor Forest and Eppynt being the most significant upland areas forming part of the catchment. The river is therefore upland in nature, largely following a predetermined glacial valley in its upper reaches and falling from 680m at its source to 72m AOD at Hay-on-Wye over a distance of 93 km.

The source of the Wye and its major tributary, the Afon Tarennig, lies in the uplands of the Cambrian Mountains where, in places, peat deposits overlie relatively resistant Ordovician and Silurian rocks. The river cuts deeply into these generally acidic strata in many places as it descends to Rhayader, and in such sections the river channel is characterised by rapids and plunge pools with numerous large boulders. Elsewhere, in the upper courses of the river, where bedrock is buried below alluvial and glacial deposits, there are easily eroded earth and gravel

cliffs, extensive shingle bars and pool/riffle systems over a coarse bed. Below Rhayader the Wye Valley broadens, but rapids occur where the river cuts into the underlying Ordovician and Silurian mudstones and shales. Below Builth Wells, the valley narrows again, the river flowing over and cutting into more base-rich shales and mudstones and the Downtonian Series of the Old Red Sandstone. This section of the river is characterised by major rapids and, in places, a deep channel has been cut between marginal rock shelves. Below Llyswen, the river enters into and forms an extensive floodplain. It meanders widely and cuts through deep alluvial deposits, although where the sandstone bedrock outcrops the river has created a series of minor rapids. The Wye Valley between Rhayadr and Hay-on-Wye contains extensive spreads of glacial deposits; impressive terraces of glaciofluvial (meltwater) deposits flank the river and provide the source of material for extensive gravel shoals. Between Glasbury and Hay-on-Wye, there are extensive gravel shoals with areas of braided channels. Backwaters and oxbows, which are reconnected to the main river during peak floods, indicate the former positions of the river channel as it meandered over the floodplain.

## **Flora**

Above Llangurig the Wye supports a flora that is characteristic of oligotrophic mountain streams. Aquatic higher plants such as round-leaved crowfoot *Ranunculus omiophyllus* and bulbous rush *Juncus bulbosus*, are scarce. The most prominent plants on rocks are mosses, with *Hygrohypnum ochraceum*, *Campylopus atrovirens*, *Racomitrium aciculare* and *Fontinalis squamosa* occurring frequently. Bankside vegetation is mostly an extension of the adjacent moorland and damp grassland, with purple moor-grass, rushes, sedges *Carex spp* and a range of associates including sneezewort *Achillea ptarmica*, wild angelica *Angelica sylvestris*, common marsh-bedstraw *Galium palustre*, lemon-scented fern *Oreopteris limbosperma*, lesser spearwort *Ranunculus flammula*, marsh violet *Viola palustris*, bog moss *Sphagnum spp.* and the mosses *Atrichum crispum* and *Oligotrichum hercynicum*. Bankside scrub is composed mainly of the eared willow *Salix aurita* and rusty willow *S. cinerea spp. oleifolia*.

Below Llangurig the river becomes wider and aquatic plants, such as intermediate water-starwort *Callitriche hamulata*, alternate water-milfoil *Myriophyllum alterniflorum*, bog pondweed *Potamogeton polygonifolius*, and floating sweet-grass *Glyceria fluitans* become more prominent, although mosses and liverworts are still abundant. Typical marginal plants include bottle sedge *Carex rostrata*, water mint *Mentha aquatica* and reed canary-grass *Phalaris arundinacea*.

The rocky gorge sections between Nannerth and the Elan confluence below Rhayader are well shaded and support particularly diverse communities of lower plants. Western Atlantic species form a notable element with the mosses *Isothecium holtii* and *Hyocomium armoricum* occurring in some abundance, together with *Fissidens curnovii*. On boulders in the river close to the Marteg confluence the nationally rare lichen *Pterygiopsis lacustris* is frequent, whilst the nationally scarce moss *Fissidens rivularis* occurs on rocks at Rhayader. This part of the river is bordered by extensive areas of woodland, dominated by alder, downy birch or sessile oak *Quercus petraea* which support notable epiphytic lichen communities.

Below the Elan confluence the river is broader, although the banks are still well wooded. The bed comprises mainly pebbles and coarse gravel and floating plants, such as river water-crowfoot *Ranunculus fluitans*, are locally abundant. The margins of the river between here and Builth Wells are characterised by plants such as marsh-marigold *Caltha palustris*, meadowsweet *Filipendula ulmaria*, water mint, water forget-me-not *Myosotis scorpioides*, hemlock water-

dropwort *Oenanthe crocata*, reed canary-grass, and rarely, globeflower *Trollius europaeus* and wood club-rush *Scirpus sylvaticus*.

Between Builth Wells and Llyswen the river cuts through more base-rich rocks and the aquatic and riparian flora is rich and varied. Characteristic species here include alternate water-milfoil, river water-crowfoot, yellow loosestrife *Lysimachia vulgaris*, monkeyflower *Mimulus guttatus*, water forget-me-not, hemlock water-dropwort, reed canary-grass, amphibious bistort *Persicaria amphibia*, lesser spearwort, bittersweet *Solanum dulcamara*, the mosses *Amblystegium fluviatile*, *Cinclidotus fontinaloides*, *Fontinalis squamosa*, *Rhynchostegium riparioides*, *Schistidium alpicola* var. *rivulare* and *Thamnobryum alopecurum*, the liverworts *Chiloscyphus polyanthus*, *Conocephalum conicum*, *Lunularia cruciata* and *Marchantia polymorpha*, the filamentous alga *Lemanea fluviatilis* and lichens of the genera *Dermatocarpon* and *Verrucaria*. The nationally scarce moss *Campylopus subulatus*, occurring on sand and gravel in rock crevices, reaches its lowest station on the Wye at Erwood.

Regular flooding scours scrub from riverside rocks to create open conditions. A number of rare and scarce species are found in this pioneer habitat including rock cinquefoil *Potentilla rupestris*, chives *Allium schoenoprasum*, rock stonecrop *Sedum forsterianum*, lesser meadow-rue *Thalictrum minus*, the hawkweed *Hieracium vagense*, the dandelion *Taraxacum varchellii* and the moss *Grimmia retracta*. Rocks within the river channel support fine aquatic lichen and bryophyte communities, including a number of nationally rare and scarce species such as *Collema dichotomum*, *Porocyphus kenmorensie*, *Pyrenocollema strontianense*, *Dermatocarpon leptophyllum*, *Porella pinnata* and *Fissidens rufulus*.

From Llyswen to Hay-on-Wye the river is essentially lowland in character and the flora is characteristic of fairly eutrophic conditions. Long stretches are dominated by stream water-crowfoot *Ranunculus penicillatus*, ssp *penicillatus* and a variety of other aquatic and marginal plants are present including yellow loosestrife, water mint, water chickweed *Myosoton aquaticum*, marsh yellow-cress *Rorippa palustris*, water figwort *Scrophularia auriculata*, bittersweet, water plantain *Alisma plantago-aquatica*, slender tufted-sedge *Carex acuta*, lesser pond-sedge *Carex acutiformis*, common spike-rush *Eleocharis palustris*, soft rush *Juncus effusus*, branched bur-reed *Sparganium erectum*, the moss *Fontinalis antipyretica* and the filamentous algae *Cladophora glomerata*, *Hydrodictyon reticulatum* and *Enteromorpha intestinalis*. The trees within the flood zone of the river support characteristic riparian bryophyte communities. On trunks exposed to high flows the mosses *Orthotrichum sprucei* and *O. rivulare* are a feature, whilst more sheltered, silt covered bark, supports *Scleropodium cespitans*, *Tortula latifolia* and *Leskea polycarpa*. There are extensive gravel shoals on this part of the river. Some are sparsely vegetated with species such as water-pepper *Persicaria hydropiper*, redshank *P. maculosa*, tansy *Tanacetum vulgare*, common restharrow *Ononis repens* and trifid bur-marigold *Bidens tripartita*. More stable areas support communities dominated by stinging nettle *Urtica dioica*, great willowherb *Epilobium hirsutum*, hemp-agrimony *Eupatorium cannabinum*, Indian balsam *Impatiens glandulifera* and other tall herbs such as mugwort *Artemisia vulgaris* and butterbur *Petasites hybridus*. Thickets of willow scrub *Salix* spp. have developed locally along backwaters and on islands and a range of bankside trees are present including alder, crack willow *Salix fragilis* and native black poplar *Populus nigra*. In places ash woodland clothes the banks and a wide range of shade tolerant species are present. Vertical silt banks may become colonised by ruderal bryophytes such as *Pohlia* and *Bryum* spp. and occasionally by the characteristic river bank species *Henediella stanfordensis*.

At Fforddfawr there is an extensive wetland area occupying old river channels which are connected to the main river in times of flood. A variety of habitats occur here including willow carr, swamp and open water supporting locally uncommon plants, including purple willow *Salix purpurea*, wood club-rush and trifold bur-marigold. Similar wetland areas can be found adjacent to the opposite bank of the river between Glasbury and Llowes.

### **Mammals**

The upper Wye supports one of the strongest populations of otters in England and Wales. This species is threatened by habitat destruction, disturbance and pollution throughout its European range and is specially protected. Otters rely on woodland, scrub and tall bankside vegetation for cover. Breeding holts may often be found amongst the roots of large trees at the water's edge. The river and bankside trees support large populations of flying insects which provide an important food source for bats, including Daubenton's bat *Myotis daubentonii* and the rare lesser horseshoe bat *Rhinolophus hipposideros*. Below Glasbury, tall bankside vegetation provides breeding habitat for the harvest mouse *Micromys minutus* which is rare in this part of mid-Wales.

### **Invertebrates**

The invertebrate fauna of the River Wye (Upper Wye) is unusually rich and diverse. Below Builth Wells the river supports important populations of the Atlantic stream crayfish *Austropotamobius pallipes*, a species which has declined in the UK and is now specially protected. The specialist invertebrate communities associated with river shingles are particularly well developed, especially in the vicinity of Glasbury, where a number of rare and scarce species occur, including the five-spot ladybird *Coccinella quinquepunctata*, the beetles *Scopaeus gracilis*, *Neobisnius prolixus*, *Hydrosmectina delicatula* and *Negastrius sabulicola* and the wolf spider *Arctosa cinerea*. A wide range of scarce aquatic species are also found in the upper Wye including the riffle beetles *Bidessus minutissimus* and *Stenelmis canaliculata*, the mayflies *Potamanthus luteus* and *Baetis digitatus*, the swarming fly *Tachydromia acklandi*, the white-legged damselfly *Platycnemis pennipes* and the freshwater pearl mussel *Margaritifera margaritifera*, a declining species that is specially protected.

### **Breeding Birds**

The River Wye (Upper Wye) supports a wide range of breeding bird species that are associated with riparian habitats including common sandpiper *Actitis hypoleucos*, grey wagtail *Motacilla cinerea*, dipper *Cinclus cinclus*, goosander *Mergus merganser*, and little grebe *Tachybaptus ruficollis*. The Wye is one of the few inland breeding sites in Wales for red-breasted merganser *Mergus serrator* and a number of species which are scarce in this part of mid-Wales, such as yellow wagtail *Motacilla flava*, little ringed-plover *Charadrius dubius* and oystercatcher *Haematopus ostralegus*, breed on the river below Glasbury. Kingfisher *Alcedo atthis* and sand martin *Riparia riparia* nest in earth cliffs and banks produced by the actively eroding river throughout the whole length of the Wye, but particularly on the alluvial plain below Llyswen.

Flooded fields in the vicinity of Glasbury attract a wide variety of birds in winter and on passage including Bewick's swan *Cygnus columbianus*, curlew *Numenius arquata*, lapwing *Vanellus vanellus*, jack snipe *Lymnocyptes minimus*, green sandpiper *Tringa ochropus*, spotted redshank *Tringa erythropus*, greenshank *Tringa nebularia* and ruff *Philomachus pugnax*.

## Fish

A wide range of fish species occur in the River Wye (Upper Wye). The upland sections contain native populations of brown trout *Salmo trutta fario* and provide important spawning areas for Atlantic salmon *Salmo salar* and brook lamprey *Lampetra planeri*. Below Rhayader, species such as grayling *Thymallus thymallus* and chub *Leuciscus cephalus* can be found and minnows *Phoxinus phoxinus*, stone loach *Noemacheilus barbatulus* and bullhead *Cottus gobio* are abundant. Below Glasbury species favouring slack water, such as pike *Esox lucius* and roach *Rutilus rutilus*, become increasingly common. A number of rare and scarce migratory species breed in the River Wye (Upper Wye) including sea lamprey *Petromyzon marinus*, which spawn between Hay and Glasbury, twaite shad *Alosa fallax*, spawning mostly between Hay and Glasbury and occasionally as far upstream as Newbridge on Wye, allis shad *Alosa alosa*, which are believed to spawn between Glasbury and Builth Wells, and river lamprey *Lampetra fluviatilis* which spawn in the upper reaches.

## Remarks

The site supports the following habitats and species covered by EC Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna:

Floating vegetation of *Ranunculus* of plain, submountainous rivers - Annex I

Atlantic stream crayfish *Austropotamobius pallipes* - Annex II and V

Common otter *Lutra lutra* - Annex II and IV

Atlantic salmon *Salmo salar* - Annex II and V

Bullhead *Cottus gobio* - Annex II

Twaite shad *Alosa fallax* - Annex II and V

Allis shad *Alosa alosa* - Annex II and V

River lamprey *Lampetra fluviatilis* - Annex II and V

Brook lamprey *Lampetra planeri* - Annex II

Sea lamprey *Petromyzon marinus* - Annex II

Grayling *Thymallus thymallus* - Annex V

Freshwater pearl mussel *Margaritifera margaritifera* - Annex II and V

Otter, Atlantic stream crayfish and freshwater pearl mussel are also listed in Schedule 5 of the Wildlife and Countryside Act 1981 as amended.

The River Wye (Upper Wye) lies partly within the Brecon Beacons National Park.

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