

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

SITE OF SPECIAL SCIENTIFIC INTEREST: CITATION

POWYS

AFON IRFON SSSI

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SN 85 SW & SE
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SN 95 SW, NW, SE & NE
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Site Area: 179.7 ha

Description:

River Wye

The Wye system, comprising the River Wye and several of its tributaries, including the Afon Irfon, represents 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 types, adjacent land use and hydrology.

The River Wye is one of the longest rivers in England and Wales. From its source to its confluence the main channel is 250km long, drains a catchment of 4136km sq. 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.

Afon Irfon

The site is of special interest for its populations of otter *Lutra lutra*, Atlantic salmon *Salmo salar*, bullhead *Cottus gobio*, river lamprey *Lampetra fluviatili*, brook lamprey *Lampetra planeri* and lichen species, including river jelly lichen *Collema dichotomum*, *Pyrenocollema strontianensis*, *Verrucaria pachyderma* and *Dermatocarpon meiophyllizum*. The site is also of special interest for its mesotrophic and oligo-mesotrophic river types, which include communities of submerged aquatic plants containing water crowfoot *Ranunculus* spp. It is also of special interest for its exposures of Wenlock aged rocks.

The site includes the main Irfon channel, from Abergwesyn to the confluence with the River Wye, and a number of important tributaries such as Afon Gwesyn, Cledan, Afon Dulas (south), Camddwr, Afon Cammarch, Garth Dulas, Hafrena and Chwefri. Together they form a representative series of mid-altitude, oligo-mesotrophic watercourses that have characteristics of both northern and south-western British types. The Irfon catchment comprises large section of the eastern slopes of the Cambrian Mountains between the Tywi Forest and Llanafan Fawr. The southern part of the catchment includes the northern flanks of the Mynydd Epynt and a lowland area between Llanwrtyd Wells and Builth Wells. The Irfon rises at an altitude of 540m above sea level to the northwest of Drygarn Fawr and flows south, descending rapidly to Abergwesyn where it is joined by the Gwesyn. At Llanwrtyd Wells the main river turns east and is joined by a number of tributaries on both sides before it enters the Wye at Builth Wells at an altitude of 120 m above sea level. Most of the catchment comprises upland pasture, conifer forests, enclosed agricultural land, with significant areas of permanent pasture, broadleaved woodland and other semi-natural vegetation.

Geology:

The Irfon drainage basin is developed entirely on rocks of Ordovician and Silurian age, which form the greater part of mid Wales. These rocks are variable in character, ranging from conglomerates and coarse sandstones to fine mudstones.

The Cambrian Mountains area consists predominately of hard slates and can also be sub-divided along a line, which extends from the Culent valley, through Abergwesyn to Llanwrthwl. The Irfon and its tributaries in this area are thus cut deeply into narrow valleys, with numerous waterfalls and gorges, but occasional areas of glacial-till and valley floor alluvium occur.

The lowland area also consists of Ordovician and Silurian rocks. The rocks of this area are folded into a small number of large, open folds, with vertical south eastern limbs and very gently northward-dipping northern ones. The Irfon and its tributaries in this area flow in shallow, open courses, frequently on rock pavements, but there are also large areas of glacial-till deposits exposed in the river courses.

The northern slopes of Mynydd Epynt are divisible into two narrow strips. The lower slopes from Tirabad to Builth, including Cefn Brith, consist mostly of Silurian, Wenlock flaggy-siltstones and silty-mudstones. The second strip consists of the upper, steeper, slopes of Mynydd Epynt and is composed of siltstones and flaggy siltstones of the Silurian, Ludlow and Pridoli Series.

The soils in the Irfon catchment range from highly acidic to moderately nutrient rich and drainage varies considerably. Some of the valleys contain peat deposits. The Cledan drains an extensive area of lowland peat bog.

The section of Afon Irfon between Caer Beris and the river Wye at Builth is of special interest because it shows the stratigraphical boundary between two of the major divisions of Silurian time. A graptolite rich, Wenlock section is exposed in the banks and bed of the river in this area. These exposures show the *Cyrtograptus ellesae* (= *Cyrtograptus rigidus* Zone of Elles) and *Cyrtograptus lundgreni* zones of the Wenlock, and continue up into the early Ludlow, Gorstian Stage. This is an excellent late Wenlock - early Ludlow sequence in a very important area, both historically and, potentially, for graptolite biostratigraphy. Lapworth, Elles and Wood all

studied the Irfon section during their classic works, which provided the foundations for a graptolite-based zonal sequence for the Wenlock. It is an historic locality of great interest and with considerable potential for biostratigraphic studies of the British Wenlock.

Biology:

The headwaters support ultra-oligotrophic aquatic communities and extensive areas of semi-natural riparian habitats can still be found next to the Irfon and its tributaries. These include semi-natural woodland, dry and marshy grassland, stands of tall fen and marsh vegetation and gravel banks. The site also includes back channels and oxbows that support otters and waterfowl and provide valuable refuges for small fish and invertebrates in times of flood.

Upstream of Llanwrtyd, the Irfon is strongly acidic. Aquatic plants are scarce here but the moss and liverwort flora is well developed, with frequent *Amblystegium fluviatile*, *Fontinalis squamosa*, *Hyocomium armoricum*, *Racomitrium aciculare*, *Rhynchostegium lusitanicum*, *R. riparioides*, *Pellia epiphylla* and *Scapania undulata*. Marginal plants include sneezewort *Achillea ptarmica*, lady fern *Athyrium filix-femina*, sedges *Carex* spp., lemon-scented fern *Oreopteris limbosperma*, lesser spearwort *Ranunculus flammula*, bog mosses *Sphagnum* spp., marsh violet *Viola palustris* and the locally uncommon globeflower *Trollius europaeus*.

The lower reaches of the Irfon support plant communities that are typical of moderately nutrient-poor waters. Typical aquatic plants include alternate water-milfoil *Myriophyllum alterniflorum*, small pondweed *Potamogeton berchtoldii*, stream water-crowfoot *Ranunculus penicillatus* subsp. *pseudofluitans*, the mosses *Fontinalis antipyretica* and *F. squamosa* and filamentous algae, including *Lemanea fluviatilis*. Rocks in the flood zone support species such as the nationally scarce wild chives *Allium schoenoprasum*, the mosses *Amblystegium fluviatile*, *Brachythecium rivulare*, *Cinclidotus fontinaloides*, *Hygrohypnum ochraceum* and *Thamnobryum alopecurum*, the liverworts *Chiloscyphus polyanthos* and *Pellia epiphylla* and lichens, such as *Dermatocarpon luridum*, *Verrucaria praetermissa* and rare and scarce species including river jelly lichen, *Pyrenocollema strontianense*, *Verrucaria pachyderma* and *Dermatocarpon meiophyllizum*. Marginal species here include marsh marigold *Caltha palustris*, water mint *Mentha aquatica*, butterbur *Petasites hybridus*, reed canary-grass *Phalaris arundinacea*, wood club-rush *Scirpus sylvaticus* and unbranched bur-reed *Sparganium erectum*. Further upstream, the water chemistry is slightly less nutrient-rich and the dominant aquatic plants are the mosses *Fontinalis antipyretica* and *F. squamosa* and filamentous algae, although stream water-crowfoot continues to grow as far upstream as Llangammarch Wells. Mosses remain prominent in the riparian zone and common marginal plants include creeping bent *Agrostis stolonifera*, common spike-rush *Eleocharis palustris*, rushes *Juncus* spp., hemlock water-dropwort *Oenanthe crocata*, reed canary-grass and bog stitchwort *Stellaria uliginosa*. Most of the main tributaries support similar plant communities to the middle reaches of the Irfon but the Cledan has a very gentle gradient and is strongly influenced by the peat deposits in its catchment. Characteristic aquatic plants here include intermediate water-starwort *Callitriche hamulata*, alternate water-milfoil, floating bur-reed *Sparganium angustifolium*, floating sweet-grass *Glyceria fluitans* and round-leaved crowfoot *Ranunculus omiophyllus*.

Woodland is widespread along the river and stream banks, dominated variously by alder *Alnus glutinosa*, willows *Salix* spp., ash *Fraxinus excelsior* and oak *Quercus* spp. Wet areas that are protected from grazing stock support a tall vegetation dominated by meadowsweet *Filipendula ulmaria*, with frequent wild angelica *Angelica sylvestris*, common valerian *Valeriana officinalis*,

common marsh bedstraw *Galium palustre*, ragged robin *Lychnis flos-cuculi* and greater bird's-foot-trefoil *Lotus uliginosus*. Grassland dominated by bents *Agrostis* spp. and fescues *Festuca* spp. is common, particularly along the upper reaches of the system, whilst wetter pasture is largely dominated by rushes and purple moor-grass *Molinia caerulea*. Old back channels contain swamp vegetation that includes rushes, floating sweet-grass, tall sedges and yellow iris *Iris pseudacorus*. Partly vegetated shingle occurs throughout the river system and supports a range of characteristic plants including nodding bur-marigold *Bidens cernua*, marsh cudweed *Gnaphalium uliginosum*, toad rush *Juncus bufonius*, water pepper *Persicaria hydropiper*, procumbent pearlwort *Sagina procumbens* and colt's-foot *Tussilago farfara*.

The upper Wye and its tributaries support 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. Resting holts may often be found amongst the roots of large trees at the water's edge, whilst breeding holts are often located in dense cover on the river banks. A range of fish species occurs in the Irfon and its tributaries. The system provides important spawning areas for Atlantic salmon and juvenile salmon are present throughout, except for the strongly acidic reach between Abergwesyn and Llanwrtyd. Brook and river lamprey are present in the main river and may also spawn in the tributaries. Bullhead are abundant everywhere. Twait shad *Alosa fallax* spawn at the confluence with the River Wye and are also regularly seen further upstream. Other fish species that occur include brown trout *Salmo trutta*, grayling *Thymallus thymallus* and stone loach *Noemacheilus barbastulus*.

The site supports a range of breeding birds that are associated with riparian habitats, including grey heron *Ardea cinerea*, common sandpiper *Actitis hypoleucos*, grey wagtail *Motacilla cinerea*, dipper *Cinclus cinclus*, kingfisher *Alcedo atthis* and sand martin *Riparia riparia*. 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*. The invertebrate fauna has not been studied in detail but there is a small population of Atlantic stream crayfish *Austropotamobius pallipes* in the lower reaches.

Remarks:

Afon Irfon SSSI is part of the River Wye Special Area of Conservation, being host to the following habitats listed in Annex I of the EC Habitats Directive: (Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora).

‘Floating vegetation of *Ranunculus* of plane, sub mountainous rivers’

The site is also host to the following species which are listed in Annex II, IV and V of the EC Habitats Directive:

Common otter *Lutra lutra* - Annex II and IV

Twait shad *Alosa fallax* - Annex II and V

Atlantic salmon *Salmo salar* - Annex II and V

Bullhead *Cottus gobio* - Annex II

River lamprey *Lampetra fluviatilis* - Annex II and V

Brook lamprey *Lampetra planeri* - Annex II

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

Otter, twait shad and Atlantic stream (white-clawed) crayfish are also listed in Schedule 5 of the

Wildlife and Countryside Act 1981 as substituted by Schedule 9 to the Countryside and Rights of Way Act 2000.

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