

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

**SITE OF SPECIAL SCIENTIFIC INTEREST CITATION**

**PEMBROKESHIRE,  
CARMARTHENSHIRE**

**AFON CLEDDAU DWYREINIOL/  
EASTERN CLEDDAU RIVER**

**Date of Notification:** 2003

**National Grid Reference:** SN151317 to SN060145

**O.S. Maps:** 1:50,000 Sheet number: 157  
1:10,000 Sheet number: SN 01 NW, NE, SE  
SN 02 NW, NE, SW, SE  
SN 03 SE, SN 11 NW, SW  
SN 12 NW, SW, SN13 SW, SE

**Site Area:** 354.2 ha

**Description:**

The Eastern Cleddau River is of special interest primarily for important populations of otter *Lutra lutra*, bullhead *Cottus gobio*, river lamprey *Lampetra fluviatilis* and brook lamprey *Lampetra planeri*. It is also of special interest for sea lamprey *Petromyzon marinus*; for its range of river habitats including beds of submerged aquatic plants often dominated by water-crowfoot *Ranunculus spp*, the aquatic plant *Potamogeton berchtoldii x P. polygonifolius* (cf.) as well as a variety of associated riverside habitats. The tributaries included within this site are the Afon Wern, Llanycefn, Rhyd-afallen, Afon Syfynwy, Rhyd-y-Brown Brook, Ty-llog Brook, Deepford Brook, Cotland Brook, Afon Conin, Pont Shan and Narberth Brook.

The Eastern Cleddau is one of the westernmost rivers in Britain. The site starts at an altitude of 225m, approximately 1.5km from Mynachlog-ddu, at the foot of the Preseli hills of north Pembrokeshire. The river flows for 26km (74km including tributaries) south to its tidal limit at Blackpool Bridge, where it discharges into the Milford Haven Waterway SSSI. A striking feature of this river is that it flows southwards, cutting across the structural orientation in the underlying rocks, which are of Precambrian to Silurian age (650-395 million years ago). In contrast to the orientation of the main channel, its main tributaries follow the orientation of the rocks or are controlled by structural features such as faults and folds.

From its source the river flows south, across an ancient valley wetland. The boundary for the upper reach of the Eastern Cleddau River and Afon Wern abuts the Mynydd Preseli SSSI. The gradient of the river increases producing a turbulent flow during its journey south through narrow wooded valleys. In its lower reaches the river meanders through a wide valley floodplain bordered by low bluffs. The catchment for the Eastern Cleddau River is predominantly agricultural land with significant areas of permanent pasture, broadleaved woodland and other semi-natural vegetation. Most of the soils are of clay-rich acidic brown earth type, developed under former and surviving woodland cover, although there are also peaty deposits and peaty soils in some areas.

## Biology:

In comparison with most other Welsh rivers, the Eastern Cleddau has a low source (at approximately 230m) and is predominantly lowland in character. The river substrates are a result of deposition from melting ice sheets during the last glaciation. The upper reaches flow over pebbles, cobbles, bedrock and shales with moderate-poor nutrient status. The lower reaches have a moderate nutrient status and are more typical of western, stable rivers flowing over sandstone and shales. The flora of the lower reaches often reflects a transition between these two river types.

Water crowfoot habitat, typically including stream water-crowfoot *Ranunculus penicillatus* ssp. *penicillatus*, alternate water-milfoil *Myriophyllum alterniflorum*, water-mosses *Fontinalis* spp., common water-starwort *Callitriche stagnalis*, intermediate water-starwort *C. hamulata*, accompanied by a diverse lower plant flora in the splash zone is found throughout the river system where the conditions are suitable.

From the headwaters of the Eastern Cleddau River to Llangolman, including the Afon Wern, the river flows through a complex patchwork of marshy grassland, wet heath, blanket bog, fen and dense willow scrub. The river is narrow and fast flowing with low earth banks, part shaded by dense willow scrub and patches of gorse. The substrate of the riverbed varies along this section, with gravels pebbles and cobbles giving way to boulders and bedrock as the gradient of the river increases through a steep wooded valley. The aquatic plant communities in the channel of the main river are typical of these moderate-poor nutrient status rivers with a rich diversity of species dominated by mosses, including alpine water moss *Fontinalis squamosa* and long-beaked water feather moss *Rhynchostegium riparioides*, although fewer mosses occur in the Afon Wern. Water crowfoot, common water-starwort, hemlock water-dropwort *Oenanthe crocata* and alternate water-milfoil are the most abundant higher plants and liverworts such as broad-leaved pellia *Pellia epiphylla* are common. The presence of lowland species such as marsh woundwort *Stachys palustris* and the alga *Batrachospermum* spp. on the Afon Wern is unusual for this type of river and suggests a base-rich influence.

In the middle reach from Llangolman to Gelli, the Eastern Cleddau River widens as it meanders through a narrow valley with broad strips of semi-natural woodland covering much of the steep valley slopes. Two tributaries join the main river in this stretch, Llanycefn and Rhyd-afallen; both are small streams flowing within undisturbed deep, narrow, wooded valleys, giving way to marshy grassland and pasture in their lower reaches. The nutrient levels are still moderate-poor, as reflected by the plant communities. The main river has long riffle sections and occasional deep pools have been scoured where the river's lateral movement is restricted by bedrock. Moss covered cobbles line the tributaries, with bedrock, pebbles and gravels common throughout this shaded section. Consequently, the plant communities in the Llanycefn and Rhyd-afallen tributaries are dominated by lower plants including mosses typical of fast flowing streams such as long-beaked water feather moss, brook-side feather-moss *Amblystegium fluviatile*, alpine water-moss, fox-tail feather-moss *Thamnobryum alopecurum* and river feather-moss *Brachythecium rivulare*, the liverworts endive pellia *Pellia endiviifolia*, broad-leaved pellia, St Winifred's moss *Chiloscyphus polyanthos*, water earwort *Scapania undulata* and the red alga *Hildenbrandia rivularis*. Patches of water crowfoot, common water-starwort and intermediate water-starwort, occur in the main river where there is sufficient light.

The Afon Syfynwy is a major tributary of the Eastern Cleddau River, rising in the Preseli Hills, and flowing through two reservoirs, Rosebush and Llys-y-fran. It is joined by tributaries of its own, the Deepford Brook, Rhyd-y-Brown Brook and Ty-llosg Brook, before joining the Eastern Cleddau near Gelli. Above Rosebush reservoir the Syfynwy flows between conifer plantation and heathland habitat. Rosebush itself, the smaller of the two reservoirs, contains the aquatic plant six-stamened waterwort, *Elatine hexandra*, scattered over a 400m zone. The shore is dominated by shoreweed *Littorella uniflora* and is surrounded by conifer plantation, whereas fen and scrub surround the northern shore. Below Rosebush, the river enters a densely vegetated gorge, flowing on through a small, steep-sided, predominantly wooded valley until it reaches the larger Llys-y-fran reservoir. The river above Llys-y-fran is heavily shaded and consequently the diversity of aquatic vegetation is less than expected and is dominated by a few lower plants, such as brook-side feather-moss and alpine water-moss, and the alga *Lemanea* sp.. Hemlock water-dropwort is the most common higher plant along the channel margins. Much of the western shore of Llys-y-fran reservoir is lined with dense, semi-natural, broadleaved woodland. To the east, amenity grassland predominates, with areas of recently planted trees. Below Llys-y-fran, the Syfynwy, Deepford Brook and Cotland Brook are slower and meandering, with small gravel bars and shallow pools. As well as the typical mosses, the higher aquatic plants water crowfoot, intermediate and common water-starwort and alternate water-milfoil are abundant and increase in frequency down the river. The river is typically separated from adjoining improved farmland by a line of trees and shrubs. The Rhyd-y-Brown/Ty-llosg tributary flows between by extensive woodland, scrub and fen vegetation in its upper reaches.

In the lower reaches, from Gelli downstream, including the Afon Conin, Pont Shan and Narberth Brook, the river meanders through a wide floodplain bordered by improved pasture with occasional steep bluffs. The river meets the Milford Haven Waterway (SSSI) at Blackpool Bridge although there is tidal influence as far upstream as the weir at Canaston Bridge. This section of the river is typical of a western river on sandstone and shales with moderate levels of nutrient. The partly shaded river channel supports a range of aquatic plants typical of this river type including water crowfoot, intermediate and blunt-fruited water-starwort *Callitriche obtusangula*, pondweed *Potamogeton* spp. floating sweet-grass *Glyceria fluitans*, fool's water-cress *Apium nodiflorum* and greater water-moss *Fontinalis antipyretica* and long-beaked water feather moss. The nationally rare hybrid species *Potamogeton berchtoldii* x *P. polygonifolius* (cf.), a cross between small pondweed *Potamogeton berchtoldii* and *Potamogeton polygonifolius* bog pondweed, has been located north of Canaston Bridge; this is its only known UK location. Marginal vegetation mainly consists of reed canary-grass *Phalaris arundinacea*, branched bur-reed *Sparganium erectum* and hemlock water-dropwort. The riverbanks are predominantly tree lined with alder *Alnus glutinosa* and ash *Fraxinus excelsior*. Where the riverbank has been fenced off the vegetation tends to be dominated by bramble *Rubus fruticosus*, nettles *Urtica dioica* and other tall ruderals.

Throughout the Eastern Cleddau River, fringing emergent species along the river channel typically include hemlock water dropwort, branched bur-reed and unbranched burr-reed *Sparganium emersum*, reed canary-grass, floating sweet-grass and water-pepper *Persicaria hydropiper*. Emergent vegetation is scarce in the densely wooded stretches of the river where the banks are dominated by great wood-rush *Luzula sylvatica* and ferns often with abundant bluebells *Hyacinthoides non-scripta*. Water horsetail *Equisetum fluviatile* occurs in less nutrient-rich reaches. The riverbanks support a diverse range of herbs including ramsons *Allium ursinum*, ragged-robin *Lychnis flos-cuculi*, bitter-cresses *Cardamine* spp., lesser

celandine *Ranunculus ficaria* and opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*.

The riverside vegetation communities form a complex patchwork with extensive areas of woodland and scrub interspersed with smaller open areas of marshy grassland, swamp, fen and mire. Broadleaved woodland and scrub is widespread along the banks of the upper and middle reaches. The dominant species are alder, ash, oak *Quercus* species, sycamore *Acer pseudoplatanus*, willow *Salix* spp. and hazel *Corylus avellana*. Wet woodland dominated by alder and willow with greater tussock sedge *Carex paniculata* and tufted hair-grass *Deschampsia cespitosa* frequently occurs alongside the river. Where land adjacent to the river has been fenced to exclude grazing stock, the vegetation tends to be dominated by scrub including bramble, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and gorse *Ulex europaeus* in the upper sections of the site. Areas of marshy grassland protected from grazing support tall vegetation dominated by meadowsweet *Filipendula ulmaria*, wild angelica *Angelica sylvestris*, common valerian *Valeriana officinalis*, marsh-marigold *Caltha palustris*; wet pastures are dominated by rushes *Juncus* spp., purple moor-grass *Molinia caerulea* and sedges *Carex* spp. The lower reaches are less shaded with narrow strips of scrub and woodland occurring intermittently along the steep and mobile grassy-banks, which are dominated by Yorkshire-fog *Holcus lanatus*, bent grasses *Agrostis* spp., cock's-foot *Dactylis glomerata* and nettle. Partially vegetated gravel bars occur throughout the river system. Two invasive alien species, Japanese knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera* are present throughout.

The Eastern Cleddau River and tributaries support several fish species including bullheads, which have declined greatly over Europe as a result of pollution and dam construction, occur in shallow, well-oxygenated stony streams and rivers of moderate flow, and are widespread and numerous throughout the Eastern Cleddau catchment. Lampreys, especially brook and river lamprey, are also widespread in the river, and their larvae are abundant wherever suitable deposits of well-aerated silty sand occur. Sea lamprey also occur on the river but are predominantly restricted to the lower reaches. Both river and sea lamprey migrate to coastal waters to mature, and unimpeded access to Milford Haven and the sea is therefore important. Other migratory fish present on the river include salmon *Salmo salar*, sea trout *Salmo trutta trutta*, flounder *Platichthys flesus* and eel *Anguilla anguilla*. Other fish in the river include brown trout *Salmo trutta fario*, stone loach *Noemachilus barbatulus*, 3-spined stickleback *Gasterosteus aculeatus*, and minnow *Phoxinus phoxinus*.

The Eastern Cleddau is one of the best rivers in Britain for otter, which are found on all the tributaries within the site. The river is an essential source of the small fish (particularly salmonids and eels) that make up the bulk of the otters' diet. Amphibians found in the wet habitats by the river, are an important secondary food source in winter and spring. Dense riverside vegetation, especially woodland, scrub and tussocky vegetation is particularly important to the otter, providing safe, concealed breeding and resting sites known as couches, holts or dens. Where dense vegetation is not available otters may use the roots of bankside trees, stone filled gabions or piles of flood debris. A number of breeding sites have been identified in some of the more undisturbed parts of the river system.

Although not of special interest in their own right, the site supports a range of breeding birds including dipper *Cinclus cinclus*, grey heron *Ardea cinerea*, kingfisher *Alcedo atthis*, grey wagtail *Motacilla cinerea*, mallard *Anas platyrhynchos*, moorhen *Gallinula chloropus*, mute swan *Cygnus olor*, sedge warbler *Acrocephalus schoenobaenus* and grasshopper warbler

*Locustella naevia*. Associated wetlands provide valuable feeding habitats for snipe *Gallinago gallinago*, curlew *Numenius arquata*, lapwing *Vanellus vanellus*, and barn owls *Tyto alba*. The river and associated habitat is also an important feeding corridor and resting site for an assemblage of bat species including the greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros* and the Pipistrelle bat *Pipistrellus pipistrellus*. Two nationally scarce lower plants are also found in the site; the liverwort *Porella pinnata* and *Schistidium platyphyllum*, a moss.

**Remarks:**

This site is a component part of the Cleddau Rivers SAC.

The site supports the following habitats and species covered by the EC Habitats Directive (Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora):

Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation - Annex I  
Common Otter – Annex II and IV  
Atlantic salmon – Annex II and VI  
Bullhead – Annex II  
River lamprey – Annex II and V  
Brook lamprey – Annex II  
Sea lamprey – Annex II  
Bat species – Annex II & IV

The otter and bat species are also listed in Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended).

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