

Booklet 4 Guide to Recording Wetland Habitats in Rhondda Cynon Taf



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Rhondda Cynon Taf habitats mapping project

In order to conserve and enhance our biodiversity we need up-to-date information about habitats and species. Understanding habitats is fundamental to understanding how to protect and manage biodiversity. Between the late 1980s and the mid 1990s, the Countryside Council for Wales (now part of Natural Resources Wales) undertook a Phase I Habitat Survey of the whole of Wales. An amazing undertaking, which has proved invaluable to Welsh nature conservation. However, that information is now aging. So perhaps it is time for all of us who have an interest in finding, identifying and recording species, to start thinking about and recording their habitats as well? If that sounds interesting, and perhaps a new way to interpret and understand the biodiversity of Rhondda Cynon Taf (RCT), then read on.

Use this booklet in conjunction with the Introduction to Recording Habitats in RCT and the other 5 habitat booklets in this series.

RCT Wetlands

There are four main types of Phase I Habitat wetland habitat in RCT:

- [Peat bog](#) (sub-divided into blanket and raised peat bogs)
- [Fens](#) (sub-divided into valley mire, basin mire and floodplain mire)
- [Swamp \(including Reedbeds\)](#)
- [Flushes](#)

Why are wetland habitats important?

Wetlands are habitats influenced by the presence of freshwater including blanket bog, raised bog, swamps & fens, reedbeds and flushes

- Wetlands boast a **rich biodiversity**. They support important plant and bryophyte communities and provide nesting and feeding grounds for specialist invertebrates, birds and mammals.

- Wetlands are **under threat** from: a lack of management leading to scrub and wet woodland invasion, drying through periods of increasingly frequent summer droughts, and localised impacts such as drainage and water pollution.
- Blanket bog, raised bog and fens are peat-forming. Peatlands are one of the most carbon-rich ecosystems on Earth so they act as carbon sinks. Their formation and retention helping to **mitigate climate change**. All wetland soils capture carbon through plant growth and due to their waterlogged soils, dead plant material does not fully decompose. The carbon becomes locked within the peat/soil rather than being released into the atmosphere.
- Wetlands **reduce flood risk** by storing water and slowing down the flow of water from the uplands. They also filter water so play an important role in **maintaining water quality**.

Identifying and recording a wetland habitat

A wetland is a semi-aquatic area that is permanently or seasonally inundated with water. Different types of wetlands can be identified by both their soil type and vegetation. Many wetlands are peat-forming and may contain rich bryophyte (mosses, liverworts and hornworts), rush and sedge floras. Wetlands often occur in complex mosaics with other semi-natural habitats.

Similar Habitats

- Wet scrub and woodland is often a component of valley-bottom swamp sites: consult [Booklet 1: Woodland & Scrub](#).
- Depending on peat depth, heath or rush/purple moor grass dominated vegetation may either be a form of bog or fen (wetland), or a wet heath or marshy grassland: consult [Booklet 3: Heathlands](#) and [Booklet 2: Grasslands](#).
- If there are large pools of water or freely running water associated with a wetland site consult [Booklet 5: Waterbodies](#).

To record the habitat, start with the [Introduction to Recording Habitats in RCT](#) booklet for step-by-step instructions.

Wetland classification

Classification of wetlands and bogs is complex and based on their water source and the topography of the land.

Ombrotropic: Rain-fed, receiving water and nutrients mostly from rainfall and are low in nutrients. Examples include peat bogs such as raised and blanket bogs.

Minerotrophic: Mainly ground-water fed, receiving water and nutrients from groundwater and surface run off. These wetlands are higher in nutrients than ombrotrophic bogs.

Soligenous: Form where the water table reaches the surface on slopes as flushes from the lateral movement of surface or groundwater.

Topogenous: Form where the water table reaches the surface in low-lying hollows where there is low drainage. Waterlogging occurs and then shallow open water bodies. Water movement is vertical.

Staying Safe

Please take a common sense approach to recording. We do not advocate any form of trespassing, and please do not take any risks with regards to your own health and safety.

- Check the weather forecast, avoid recording in bad weather.
- Ideally avoid working alone. If not, always tell someone where you are going and when you will be back.
- Carry a mobile phone.
- Carry a basic first aid kit, and maybe a whistle for emergencies.
- Take appropriate equipment and clothing for the weather and site conditions. For example, walking boots or shoes, warm clothes, waterproofs, sunhat, suncream.

- Take an OS map, and a compass if going to remote areas. Don't rely solely on your mobile to know where you are, especially in remote and upland areas with fewer landmarks or areas with limited phone or GPS signal. An OS map may also help you map habitats within an area. If you are not confident in reading maps, stick to established routes.
- Remember to always wash your hands before eating, particularly after touching plants, animals, fungi or water. Some plants and fungi are poisonous so don't be tempted to have a nibble!
- Ticks are small invertebrates that can bite humans and spread Lyme disease. High risk places include grassy and wooded areas. To reduce risk, cover your skin, tuck trousers into socks, and use insect repellent containing DEET. Check your body for any ticks on arriving home and safely remove any as soon as possible using a tick-removal tool. If you start to feel unwell or develop a rash in the following days, consult a GP. For more information see nhs.uk/conditions/lyme-disease
- Trust your own instincts. If you feel uneasy, leave and return home.

Staying Safe in wetlands

Wetland habitats are characterised by soft peaty areas, pools and ditches, but also drier hummocks. The following additional safety warnings are specific to wetlands:

- Pool depths can be deceptive; they may appear shallow but can be very deep. They may also be difficult to exit so avoid entering them.
- Ditches can be concealed by vegetation. Be mindful of where you walk.
- Peat surfaces should be tested before walking (or avoid walking on them). You can easily sink deeply into them.
- Insect bites. Midges and mosquitoes love wetlands, so to reduce insect bites, cover up by wearing long trousers and long sleeves. Consider using an insect repellent.
- Adders. Whilst the likelihood of being bitten by an Adder is very small, please do not attempt to touch them, and keep your distance. If you are bitten, seek medical help immediately as they are venomous.

Habitat Descriptions

Habitat guide symbols

The following symbols are used in the habitat guides to denote indicator species to record.



A key symbol means that a plant is a key feature of the habitat.



A hand symbol means this species is associated with the habitat, but not always present.



A beetle symbol means these animals are supported in this habitat.



This icon denotes invasive non-native species (INNS) which may cause damage to the habitat.

Peat Bogs

There are two main types of rain-fed (ombrotrophic) bogs, **blanket** and **raised**. These are not always easy to distinguish on site, particularly given that much of the peatland of RCT has been previously modified by drainage and conifer tree planting. However, the following may help:

- **Blanket bog** is associated with flat or gently sloping upland plateau areas, with high rainfall, at around 300 metres or above. Blanket bogs are usually large in area, with the peat and peatland hydrology having gradually developed and spread out across upland expanses.

Unmodified blanket bog will often support a complex hummock (a raised dry mound) and hollow (a low-lying wet depression) microtopography, with peat pools

in the wetter hollows. However, in RCT, much of the blanket bog resource has been modified by Welsh Government Woodland Estate planting and drainage. Phase I Habitat mapping includes modified bog options (see the JNCC Handbook for Phase 1 Habitat Survey 2010).

Raised bog has developed from open water (for example lakes or wet hollows) and unmodified sites often have a characteristic dome-shaped profile, which is higher towards the centre of the bog. On an unmodified raised bog, this means you may sometimes step up into the bog from surrounding land. These are usually smaller, more distinct features than blanket bogs, occurring in lowland flat valley bottom locations under 300 metres.

Differentiating lowland raised bogs from valley mire, basin mire and floodplain mires (see page 9), is not always straightforward. However, in all cases



A frosty bog pool © Adam Rowe

recording the habitat as occurring on peat, and describing the vegetation, with your best 'interpretation' of the Phase I habitat type, will be important in helping to record that there is peat habitat present that may deserve further detailed assessment in order to more fully classify it.

Both blanket bog and raised bogs form peat, are acidic and nutrient poor. Peat is partially decayed plant material mainly derived from Bog-mosses (*Sphagnum* species), that build up very slowly over time. It forms in waterlogged areas where the vegetation remains partially decayed. The plant material builds up at a gradual rate of about 0.5-1mm a year which means it could take over 1000 years to make 1 metre of peat. Peat can eventually accumulate into very deep layers measuring several metres.

Key upland areas of blanket bog include the upland plateaus above the head of the Rhondda Valleys and on the west side of the Cynon Valley with smaller but important areas in the southern uplands between Tonyrefail and Pontypridd. There is also a very important resource of lowland raised bog and mire sites (see 'What to look for' section below) that include; the Blaencynon SAC and areas around Rhigos, Buarth Y Capel at Ynysbwl, Y Waun at Tonyrefail and a series of lowland bog features on Llantrisant Common and Pastures SSSI. Lowland bogs are particularly uncommon.

Peat Bogs: What to look for

 **Bog-mosses (*Sphagnum* species).** This large group of mosses with over 30 species in the UK can be seen all year round and have a crucial role in the creation of peat due to their unique morphology, anatomy and chemical composition. In RCT, there are half a dozen or so more frequently found *Sphagnum* species and perhaps another half dozen less frequently recorded species. Some species are particularly good indicators of healthy, growing peat bogs.



Images above: Bog-moss shoots and growth form.
Below: Hare's-tail Cottongrass © Katherine Slade

Cottongrass (*Eriophorum* species), a group of sedges with characteristic fluffy, white seed heads, flowering April to June. In RCT bogs, there are two species. Common Cottongrass (*Eriophorum angustifolium*) has an inflorescence with multiple, branched, cotton head spikelets. Hare's-tail Cottongrass (*Eriophorum vaginatum*) (see image right) has an inflorescence with a single cotton head. In the summer months, the two species are quite easy to tell apart.





The insectivorous Sundews (*Drosera* species) can be quite easy to find in more open peat areas of the better condition bogs but is missing from heavily modified or planted bogs. The beautiful Bog Asphodel (*Narthecium ossifragum*) is associated with the edges of peat pools.

Other associated species include Purple Moor-grass (*Molinia caerulea*), Rushes (*Juncus* species), Cross-leaved Heath (*Erica tetralix*), and Deergrass (*Trichophorum cespitosum*). Sedges (*Carex* species), such as the distinctively flowered Star Sedge (*Carex echinata*) can all be components of bog vegetation.

Willows (*Salix* species), Downy Birch (*Betula pubescens*), and conifer trees are often found as invasive or colonising scrub and woodland.



Birds: Unfortunately breeding wading birds that once used peat bogs, such as Snipe (*Gallinago gallinago*) and Curlew (*Numenius arquata*) are now either extremely rare or no longer breed in RCT. However, in the winter, Snipe and their diminutive cousin Jack-snipe (*Lymnocyptes minimus*) are often found wintering in peat bogs. In the uplands, wintering Hen Harrier (*Circus cyaneus*) and Short-eared Owl (*Asio flammeus*) may also be seen.

Herptiles: Adder (*Vipera berus*), Common Toad (*Bufo bufo*), Common Frog (*Rana temporaria*), Common Lizard (*Zootoca vivipara*).

Invertebrates: Black Darter (*Sympetrum danae*), Keeled Skimmer (*Orthetrum coerulescens*), Common Hawker (*Aeshna juncea*).

Mammals: Water Vole (*Arvicola amphibius*) in upland peatbogs.

Fens, Swamps and Reedbeds

Fens

Fens are fed by mineral-rich groundwater and surface runoff, in addition to rainfall, so are known as minerotrophic. They usually occur over peat which is more than 0.5 metres deep, often in natural depressions, and where the water table is always near the surface. Due to being fed by mineral-rich water, they typically have higher nutrient levels and are less acidic than bogs. Fens offer a diverse range of conditions (for example wetter and drier areas) and structures (including shaded areas, pools, tussocks, hummocks); and therefore, support a wide range of wildlife.

Three types of fen are identified in the Handbook for Phase I Habitat Survey:

- **valley mire** (fed by obvious water flow)
- **basin mire** (an enclosed basin with deep peat)
- **floodplain mire** (formed by impeded drainage)

Valley and basin mires are very rare upland habitats in south Wales, but RCT supports regionally important areas of valley mire which are restricted to the northern upland fringe.

Floodplain mires tend to be lowland features and are more nutrient rich. They are more likely to support tall emergent plants and are often described as swamp (although not all swamp is flood-plain mire). They are rare habitats.

As described in the peat bog section, differentiating between lowland peat-based Phase I categories by vegetation and topography can sometimes be difficult, particularly where sites have been modified. In all cases, establishing that the habitat is peat based, and providing as good a species list, DAFOR and description of the habitat as possible, will help to better understand the peat-based habitat you may have found.

Swamps (including Reedbeds)

Where drainage is impeded, often on floodplains, swamp communities of very wet, often tall emergent wetlands can establish. Typical swamp communities

include single and mixed species stands of Greater Pond-sedge (*Carex riparia*), Lesser Pond-sedge (*Carex acutiformis*), Common Reed (*Phragmites australis*), Bladder-sedge (*Carex vesicaria*), Hemlock Water-dropwort (*Oenanthe crocata*) *, Flag Iris (*Iris pseudacorus*) and Meadowsweet (*Filipendula ulmaria*).

* Note this is a highly poisonous plant!

Swamps can often be confused with damper marshy grassland. The main difference is swamps will have TALL sedge species (e.g. *Carex vesicaria*), marshy grasslands have SHORT sedge species (i.e. *Carex* sp.) and dominating *Juncus* species (over 25%) as well as *Molinia*. It can be hard to differentiate short and tall sedges species if they are not fully grown. (Fully grown: Short sedge - up to 30cm, Tall sedge - 50cm to 1.5m+)

Fens and Swamps: What to look for



In RCT, Valley and Basin Mires may often support vegetation very similar to that described under peatbog (see pages 8 to 11). Some of the sites mapped as Valley Mire during the CCW Phase I Habitat Survey in the 1990s, would now be better classified as raised bog!

In terms of swamp, look out for and record the main sedge or grass species. Important examples include: Common Reed (*Phragmites australis*), Reed-Canary Grass (*Phalaris arundinacea*), Lesser Pond-sedge (*Carex acutiformis*), Greater Pond-sedge (*Carex riparia*), and Bladder Sedge (*Carex vesicaria*). The latter is something of an Ely Valley speciality.



Associated species may include Yellow-flag Iris (*Iris pseudacorus*), Marsh Marigold (*Caltha palustris*), Greater Willowherb (*Epilobium hirsutum*), Reed Sweet-grass (*Glyceria maxima*), Marsh Cinquefoil (*Potentilla palustris*), Water Mint (*Mentha aquatica*), Bogbean (*Menyanthes trifoliata*), Bog Pimpernel (*Anagallis tenella*), Bog Asphodel (*Narthecium ossifragum*), and Skullcap (*Scutellaria galericulata*).



Birds: Wintering Snipe (*Gallinago gallinago*), Jack Snipe (*Lymnocyrtus minimus*), Reed Bunting (*Emberiza schoeniclus*) and Sedge Warbler (*Acrocephalus schoenobaenus*) breed in taller fen/swamp, while Reed Warbler (*Acrocephalus scirpaceus*) is restricted largely to common reed beds. Water Rail (*Rallus aquaticus*) both breed and winter.

Mammals: Otter (*Lutra lutra*), Water Shrew (*Neomys fodiens*), Harvest Mouse (*Micromys minutus*).

Herptiles: Grass Snake (*Natrix natrix*), Common Frog (*Rana temporaria*).

Flushes

Where the water table is high and water cannot seep through the substrate, water will emerge to the surface allowing 'flushed' vegetation to develop. Flushes arise where water flows gently over the surface through the vegetation, spreading across the ground to make an area of wetland. These differ from bogs and fens as they are usually not on peat, and if they are then the peat is less than 50cm deep.

These soligenous wetlands form from the lateral movement of surface or groundwater to the surface on slopes, in comparison to topogenous wetlands where the water movement is vertical. Flushes may or may not form over peat, and where found on peat, it measures less than 0.5m deep.

Flushes are a frequent component of valley side ffridd sites, where acidic marshy or peatland type vegetation is sustained. Water emerging from limestone is rich in calcium (lime) which precipitates out to form deposits called tufa. These lime-rich flushes are more species-rich than acidic flushes. Natural limestone flushes are rare in RCT, but on colliery spoil, tufa springs, which support base-rich flush vegetation, can sometimes be found. If you find one of these look out for mosses such as Curled Hook-moss (*Palustriella commutata*) rather than Bog-mosses (*Sphagnum* species), plus short flowering plants such as Carnation Sedge (*Carex panicea*), Flea Sedge (*Carex pulicaris*) and taller plants such as Angelica (*Angelica sylvestris*), Meadowsweet (*Filipendula ulmaria*), and Ragged Robin (*Lychnis flos-cuculi*).

Flushes: What to look for

To spot flushes on valley slopes look for discrete, often narrow darker patches of wetter vegetation that may contrast with surrounding acid grassland, heath or Bracken. On colliery spoil look out for small areas of tufa deposit.



Mosses and sedges (*Carex* species) dominate flushes. Examples include Curled Hook-moss (*Palustriella commutata*) an excellent indicator of wet, highly calcareous habitats; Flea Sedge (*Carex pulicaris*) whose fruits spring off the stem like fleas in June to July; Carnation Sedge (*Carex panicea*), a grey-green sedge with knobbly looking fruits found from June to September.



Associated species include Meadowsweet (*Filipendula ulmaria*), Marsh Marigold (*Caltha palustris*), Ragged Robin (*Lychnis flos-cuculi*), and Angelica (*Angelica sylvestris*).

Where to see different wetlands in RCT

Become familiar with key habitats in RCT by visiting the network of 29+ sites managed for nature. These important areas are nature hotspots and connected stepping stones for the wider countryside.

For more information click on the links for each site or see the RCT Living Landscapes website: www.rctlivinglandscape.wales. Other sites (not currently part of the Living Landscapes network of sites) are also included in the list below.

Habitat	Example RCT Sites	Location – What3Words
Peat Bog (lowland)	Llantwit Fardre Marsh	highly.prevented.blur
	Caeau Cwm	affair.energetic.enlighten
Peat Bog (upland)	NRW upland forestry Estate	Throughout the uplands
Wetland (fen/swamp/reedbed)	Cors Pant Marsh , Llantrisant	indicated.suppose.organ
	Parc Nant Celyn	array.carting.fooling

Summary: Key wetland species by habitat

Habitat	Key Species
Peat Bog	Bog-mosses (<i>Sphagnum</i> species) Cotton-grass (<i>Eriophorum</i> species)
Fen, swamp & reedbed	Bladder Sedge (<i>Carex vesicaria</i>) Greater Pond-sedge (<i>Carex riparia</i>) Common Reed (<i>Phragmites australis</i>) Lesser Pond-sedge (<i>Carex acutiformis</i>)
Flush	Carnation Sedge (<i>Carex panicea</i>) Curled Hook-moss (<i>Palustriella commutata</i>) Flea Sedge (<i>Carex pulicaris</i>)

Alphabetical list of key wetland species

Key Species by Common Name	Habitat
Bladder Sedge (<i>Carex vesicaria</i>)	Fen, swamp & reedbed
Bog-mosses (<i>Sphagnum</i> species)	Peat Bog
Carnation sedge (<i>Carex panicea</i>)	Flush
Common Reed (<i>Phragmites australis</i>)	Fen, swamp & reedbed
Cotton-grass (<i>Eriophorum</i> species)	Peat Bog
Curled Hook-moss (<i>Palustriella commutata</i>)	Flush
Flea Sedge (<i>Carex pulicaris</i>)	Flush
Greater Pond-sedge (<i>Carex riparia</i>)	Fen, swamp & reedbed
Lesser Pond-sedge (<i>Carex acutiformis</i>)	Fen, swamp & reedbed

Key Species by Scientific Name	Habitat
<i>Carex acutiformis</i> (Lesser Pond-sedge)	Fen, swamp & reedbed
<i>Carex panicea</i> (Carnation Sedge)	Flush
<i>Carex pulicaris</i> (Flea Sedge)	Flush
<i>Carex riparia</i> (Greater Pond-sedge)	Fen, swamp & reedbed
<i>Carex vesicaria</i> (Bladder Sedge)	Fen, swamp & reedbed
<i>Eriophorum</i> species (Cotton-grass)	Peat Bog
<i>Palustriella commutata</i> (Curled Hook-moss)	Flush
<i>Phragmites australis</i> (Common Reed)	Fen, swamp & reedbed
<i>Sphagnum</i> species (Bog-mosses)	Peat Bog

Useful resources

- Britain's Habitats: A field guide to the wildlife habitats of Great Britain and Ireland, Lake, S. *et al.* Wild Guides. 2nd Edition, 2020
- rctlnp.wixsite.com/rct-actionfornature/bogs RCT Action plan for nature, 2023: Bogs
- rctlnp.wixsite.com/rct-actionfornature/fens-swamp-and-reedbed RCT Action plan for nature, 2023: Fens, Swamps and Reedbed
- npt.gov.uk/system/hosted-by-npt-council/lost-peatlands/the-project/ The Lost Peatlands Project aims to restore peatland habitat between Neath Port Talbot and RCT
- iucn-uk-peatlandprogramme.org/blanket-bog Description of Blanket Bog by the IUCN UK Peatland Programme
- ceh.ac.uk/sites/default/files/Peatland%20factsheet.pdf (PDF) Peatlands factsheet by the UK Centre for Ecology and Hydrology