

# FEN, MARSH AND SWAMP

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**A range of wetland priority habitats that require various water regimes. All would be negatively impacted upon by inflowing water pollution, nutrient enrichment or drainage.**

## **UK Priority Habitats covered by this statement:**

Lowland fens  
Upland flushes, fens and swamps  
Purple moor-grass and rush pasture  
Reedbeds

## **Cumbria Biodiversity Action Plan habitats covered by this statement:**

Reedbed  
Purple moor-grass and rush pasture  
Basin mire

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*Basin mire, Cliburn Moss © Stephen Hewitt*

## **Description**

This habitat statement covers a wide range of upland and lowland wetland types ranging from reedbeds and swamps, to basin and valley mires, springs, flushes and marshy grasslands (purple moor-grass and rush pastures). It does not cover coastal and floodplain grazing marshes or bogs which have their own separate habitat statements.

These habitats come under the broad heading of **fen**. The defining feature of these wetlands, and what distinguishes them from bogs, is that they receive most of their nutrients and water from groundwater and surface runoff rather than from direct rainfall. Those in which water movement is mainly vertical due to impeded drainage include basin mires and floodplain fens (reedbeds and swamps), whilst those where water movement is mainly horizontal in the form of surface water flow and groundwater seepage include valley mires, flushes and springs. These are further described in the UK and Cumbria Action Plans.

**Swamps** have a water table which is at or above ground level for most of the year. They are found around the margins of ponds, lakes and slow-moving sections of rivers and can extend over the

entire surface of shallower water bodies. A variety of plants can form swamps, including Reed Canary-grass, Branched Bur-reed, Water Horsetail, Common Spike-rush, Common Reed, sedges, reedmaces and club-rushes. Pure stands of Common Reed form reedbeds. Similar vegetation can also be found where there is only seasonal inundation of the vegetation and is often, confusingly, termed fen. Tall herb fen occurs in similar seasonally inundated situations and may be dominated by some of these species, or by Meadowsweet. Tall herb fen tends to also have species such as Yellow Flag, Wild angelica and Purple Loosestrife.

**Basin mires or fens** are formed in ill-drained hollows. A variety of wetland vegetation can be present, including various types of swamp, tall herb fen, and sedge and *Sphagnum* bog-moss dominated vegetation. Some basin mires have formed as a result of the progressive colonisation of open-water bodies by vegetation rafts and may have extensive areas of floating vegetation and areas of open water.

**Valley mires or fens** are generally found in linear depressions, usually with a central stream. They are usually characterised by bog-mosses, Cross-leaved Heath, Bog Asphodel and sedges, though rushes may also be abundant.

**Springs and flushes** occur where there are upwellings of groundwater and where there is water movement over or through the soil surface. Acid flushes are generally species-poor and are characterised by bog-mosses, small sedges and Common Cottongrass. Base-rich flushes (usually high pH) are more diverse and are characterised by a range of mosses and liverworts together with small sedges, Bird's-eye Primrose, Butterwort and Autumn Hawkbit.

Springs are generally dominated by mosses and liverworts, with Starry Saxifrage, Blinks and Opposite-leaved Golden Saxifrage prominent in acid examples and Lesser Clubmoss and Autumn Hawkbit in base-rich springs.

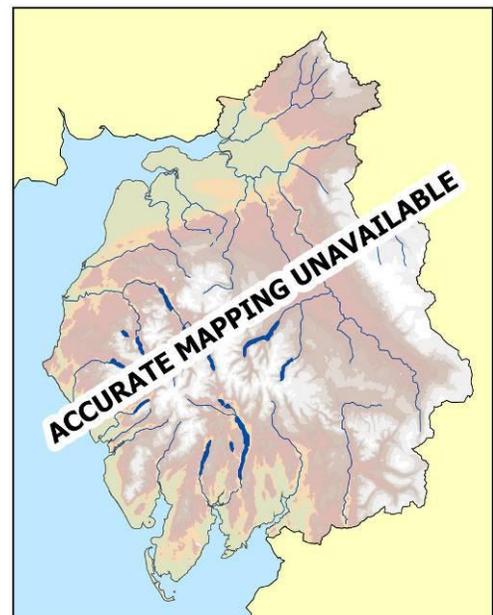
Springs and flushes provide a locus for a number of uncommon species, including Bird's-eye Primrose, Alpine Bartsia and Marsh Saxifrage.

**Purple moor-grass and rush pasture** (often referred to as marshy grassland) covers a range of species-rich vegetation dominated by Purple Moor-grass and/or tall rushes. A variety of herbs can be present, including Meadowsweet, Marsh Marigold, Cuckooflower, Lady's Smock, Ragged Robin, Devil's-bit Scabious, Wild Angelica, Marsh Hawk's-beard, and Common Spotted Orchid. It should be noted that species-poor vegetation dominated by Purple Moor-grass or tall rushes is not included in the UKBAP definition of purple moor-grass and rush pasture.

These habitats are important for a wide range of animal species, including Marsh Fritillary butterfly, Variable Damselfly, Sandbowl Snail, Common Toad, Curlew, Reed Bunting, Redshank, Snipe, Water Rail, Black Grouse, Reed Warbler and Sedge Warbler.

## Distribution and Extent

Fens, marshes and swamps are found throughout Cumbria. Particularly good examples of purple moor-grass and rush pasture, swamps and reedbeds can be found around Bassenthwaite Lake, Derwent Water and Esthwaite Water, whilst Cliburn and Newton Reigny Mosses, to the south and west of Penrith are good examples of basin mire.



Distribution of fen, marsh & swamp in Cumbria

Good examples of springs and flushes can be found on the Orton Fells and on the Pennine fells around Crossfell and Great Dun Fell, and the commons south of Torver have good valley mires.

## Conservation Issues

The principal issues affecting these habitats relate to their hydrology and nutrient status. Land drainage schemes have seriously reduced the extent of wetland habitats in the past and any new schemes could threaten existing sites. The reduction of water quantity as a result of direct and adjacent abstraction and the lowering of the water table due to local mineral extraction or developments are threats to wetlands.

These habitats are nutrient-poor in nature and any increase in the amount of nutrients received by the wetland can dramatically affect the type of vegetation present and significantly reduce the biodiversity interest of a site. Fertiliser and slurry runoff is generally the main cause of the nutrient enrichment, but sewage treatment works, industrial developments, landfill sites and illegal tipping can all have similar adverse affects.

In addition to the above inappropriate management, including overgrazing and undergrazing, or a lack of grazing; and trampling by anglers and tourists in marginal vegetation around lakes and tarns can also result in the degradation of wetland habitat.

As with other habitat types, the small size of most wetland sites and their isolation from one another increases the potential for habitat loss or degradation and further habitat fragmentation due to development or agricultural intensification is a continual threat to these habitats.

## Planning Considerations

- Any development that may impact upon any of these habitats, or their species interests, would require an assessment of the likely effects on the habitat/species and, as necessary, appropriate protection and mitigation measures.
- Any development which affects the local hydrology, either through abstraction or drainage can affect water levels in fens and swamps, even several kilometres away. Limestone quarries which go below the natural water table are perhaps the most likely developments to have such far reaching effects.
- Any lakeshore development is potentially detrimental to swamp and fen around the margin of the lake, either through direct habitat loss or through disturbance of wildlife.
- Lakeshore paths cause erosion of lakeshore swamp and fen vegetation and disturbance to wildlife.
- Wind farm developments on purple moor-grass and rush-pasture may lead to direct habitat loss and impacts upon breeding and wintering birds.
- Whilst large numbers of fen, marsh and swamp sites are within SSSIs, many examples of this habitat lie outside the SSSI system. Some are designated as County Wildlife Sites.

## Enhancement Opportunities

- Incorporation of Sustainable Urban Drainage Systems (SUDS, which are also appropriate in rural situations) in developments can create a range of wetland habitats.
- Reduction of pollution and other impacts resulting from existing developments, through new development and design opportunities.
- Large scale developments, such as mineral extraction, have the potential to create significant new habitat.

## Key Species

The following Key Species could benefit from enhancement of these habitats, or be negatively impacted upon by inappropriate developments on or near these habitats:

Slender Green Feather-moss	Variable Damselfly	Curlew
an Eyebright <i>Euphrasia rivularis</i>	Oxbow Diving Beetle	Lapwing
Tubular Water-dropwort	Zircon Reed Beetle	Reed Bunting
Marsh Saxifrage	a Whorl Snail <i>Vertigo geyeri</i>	Black Grouse
Marsh Stitchwort	Common Toad	Grasshopper Warbler
Marsh Fritillary butterfly	Grass Snake	
Sandbowl Snail	Great Crested Newt	

## Further Information

[Countryside Stewardship Scheme](#)

[Buglife- Managing priority habitats for invertebrates](#)

[Planning and Development for Protected Sites and Species](#)

[ARC Trust - Planning](#)

## Contacts

- **Natural England Cumbria Team**, 01539 792800 Email: [cumbria@naturalengland.org.uk](mailto:cumbria@naturalengland.org.uk)
- **Cumbria Wildlife Trust**, 01539 816300 Email: [mail@cumbriawildlifetrust.org.uk](mailto:mail@cumbriawildlifetrust.org.uk)
- **RSPB**, Campfield Marsh Reserve: 01697 351330

## Current Action in Cumbria

- The Countryside Stewardship Scheme run by Natural England provides financial incentives to manage land in a way that is sympathetic to its nature conservation interest with specific options applicable to this habitat.