

UPLAND FLUSHES, FENS & SWAMPS

Nationally

Upland flushes, fens and swamps are peat or mineral-based terrestrial wetlands in upland situations, which receive water and nutrients from surface and/or groundwater sources as well as from rainfall. The soil, which may be peaty or mineral, is waterlogged with the water table close to or above the surface for most of the year.

This habitat type includes both soligenous mires (springs, flushes, valley fens) and topogenous mires (basin, open-water transition and flood-plain fens), montane/alpine springs and flushes, as well as certain *Molinia* grasslands and rush pastures; not included are ombrotrophic bogs and associated bog pools and seepages (blanket bog priority habitat); species-poor *Molinia* swards (M25 except M25c) and species-poor or 'weedy' *Juncus effusus* swards (M23b and MG10). Swamps are included, except for those forming a fringe less than 5m wide adjacent to standing waters.

This priority habitat is restricted to upland areas, i.e. above the limit of agricultural enclosure, so complementing but not overlapping the fens priority habitat. This 'upland/lowland' boundary definition is intended to match that for grassland and heathland priority habitats. Usually this habitat is grazed by deer and/or sheep, sometimes cattle, in conjunction with surrounding grassland/heath. Some types, e.g. springs, may be ungrazed. Generally this habitat is too wet to be burned.

This is a varied habitat category but is typically dominated by sedges and their allies, rushes, grasses (e.g. *Molinia*, *Phragmites*), and occasionally wetland herbs (e.g. *Filipendula ulmaria*), and/or a carpet of bryophytes e.g. *Sphagnum* spp., *Cratoneuron* spp. Vegetation is generally short (<1m, often <30cm) but sometimes taller e.g. swamps. They are composed of the following habitat types described under the Common Standards Monitoring Guidance published by the Joint Nature Conservation Committee (JNCC 2009):

- Alkaline fen (upland, excluding alpine flushes);
- Alpine flush;
- Mire grasslands and rush pasture (upland);
- Soakway and sump;
- Short sedge acidic fen (upland);
- Spring-head, rill and flush (upland);
- Transition mire, ladder fen and quaking bog (upland);
- Valley mire (upland)



Upland flush © Karen Shelley-Jones



Sundew © Karen Shelley-Jones

The habitat overall supports a rich flora of vascular plants with many rare species e.g. scorched alpine-sedge (*Carex atrofusca*), bristle sedge (*C. microglochin*), sheathed sedge (*C. vaginata*), mountain scurvygrass (*Cochlearia micacea*), alpine rush (*Juncus alpinoarticulatus*), two-flowered rush (*J. biglumis*), chestnut rush (*J. castaneus*), three-flowered rush (*J. triglumis*), false sedge (*Kobresia simpliciuscula*), Iceland-purslane (*Koenigia islandica*), yellow marsh saxifrage (*Saxifraga hirculus*) and Scottish asphodel (*Tofieldia pusilla*). This habitat is also exceptionally important for bryophytes with notable species including *Sphagnum lindbergii*, *S. riparium*, *Hamatocaulis vernicosus*, *Bryoerythrophyllum caledonicum* and *Campylopus setifolius*.

Upland flushes, fens and swamps may also be important as nesting habitat for waders, such as curlew, snipe and redshank. The habitat also supports a varied invertebrate fauna, notably taxa such as Diptera (e.g. *Clinocera nivalis* and *Pseudomyopina moriens*), Coleoptera (e.g. *Gabrieus scoticus* and *Elaphrus lapponicus*), spiders (e.g. *Maro lepidus*) and Mollusca (e.g. *Vertigo* spp), which in turn provide an important food source for upland breeding birds at critical times of year.

Extent in UK:
Unknown

In the Peak District

Wet areas occur throughout the moors, at for example, spring heads and seepage zones. These moorland flushes vary widely in their composition and often support an abundance of unusual species including sphagnum mosses, bog asphodel, sundew, cranberry and a host of sedge species. These wet areas are a vital source of insects for moorland breeding birds such as grouse chicks.

Extent in PD:
c. 655 ha

Current Factors Affecting the Habitat & Habitat Condition

Upland flushes, fens and swamps are extremely varied wetland communities but share a common feature of waterlogging, be it on a permanent, seasonal or periodical basis. The most obvious threat to their interest therefore is likely to be drainage, and other activities that affect water supply.

However the activity that has been reported as having the greatest impact contributing to unfavourable condition on SSSIs/ASSIs is over-grazing. This can lead to changes in vegetation structure and composition, leading to the decrease and possible loss of the more palatable and vulnerable plant species, and an increase in the rank, less palatable and 'weed' species. In extreme cases, very heavy grazing and associated trampling can lead to exposure of bare soil and erosion. Dunging by livestock is an additional issue where animals congregate in these wet areas, resulting in eutrophication and enrichment of waterlogged ground.

As these are an extremely sensitive group of habitats they can be highly susceptible to human influences, especially in those situations where the habitat is very restricted in extent, for example, flushes. In addition to drainage and grazing (including trampling and dunging), they can also be damaged by burning management and wildfires; the use of vehicles (as part of upland management and illegal use); and recreational damage through human trampling.

Other threats include atmospheric deposition; changes in climate that may reduce water supply and amount; undergrazing; intensification of agricultural management through ploughing/reseeding; changes of land-use, for example to forestry.

Grazing is required to keep these wetland habitats open by preventing the spread of scrub and woodland. Appropriate levels of grazing and limited amounts of trampling by livestock also helps maintain species-rich swards by holding in check the tendency of a few vigorous species to dominate and to help create niches by smaller species.

Recent Work

This habitat has recently been added to the UKBAP priority list, and is now recorded during Farm Environment Plan (FEP) surveys for Higher Level Stewardship (HLS) scheme applications. This is helping us to get a better understanding of the distribution and quality of this habitat type.

Associated BAP Species in the Peak District

Curlew	<i>Numenius arquata arquata</i>
Flat-sedge	<i>Blysmus compressus</i>
Lesser butterfly orchid	<i>Platanthera bifolia</i>
Derbyshire feather-moss	<i>Thamnobryum angustifolium</i>

Locally Significant Species in the Peak District

Sundew	<i>Drosera rotundifolia</i>
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NVC Communities

The principal vegetation types (and their associated sub-communities) included in this habitat are:

- M4** - *Carex rostrata* - *Sphagnum recurvum* mire
- M5** - *Carex rostrata* - *Sphagnum squarrosum* mire
- M6** - *Carex echinata* - *Sphagnum recurvum/auriculatum* mire
- M7** - *Carex curta* - *Sphagnum russowii* mire
- M8** - *Carex rostrata* - *Sphagnum warnstorffii* mire
- M9** - *Carex rostrata* - *Calliergon cuspidatum/giganteum* mire
- M10** - *Carex dioica* - *Pinguicula vulgaris* mire
- M11** - *Carex demissa* - *Saxifraga aizoides* mire
- M12** - *Carex saxatilis* mire
- M21** - *Narthecium ossifragum* - *Sphagnum papillosum* valley mire
- M23a** - *Juncus effusus/acutiflorus*-*Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community
- M25c** - *Molinia caerulea* - *Potentilla erecta* mire, *Angelica sylvestris* sub-community