MOORLAND, UPLAND AND IN-BYE

Blanket Bog and Blanket Mire

Without a doubt Blanket bog is the most important habitat in the West Pennine Moors (WPMs). This habitat develops over moorland plateaux and gently undulating hills in areas of high rainfall and comprises peat accumulated over thousands of years. Peat develops from dead plant remains in wet acidic conditions and extends over most of the WPMs moorland typically to depths of up to three metres, but locally up to five metres. It occurs from an altitude of 250 metre in the north west of the WPMs to above 450 metres on the highest hill.

Britain is recognised as having an international obligation for Blanket bog, our mild wet climate favouring the development of this habitat. However, blanket bog is important for more than biodiversity; it is a major store of carbon and water. In favourable condition blanket bog can help become a 'sink' for atmospheric Carbon dioxide and a 'sponge' helping to prevent flooding during high rainfall. Regrettably in the past much of Britain's blanket bogs have been drained and subjected to burning, over grazing and pollution, such that all is degraded to some extent.

The vegetation over the blanket bog is largely a function of management, past and present. Moorland areas may be dominated by Heather and Bilberry (locally known as Whinberry), Hare's-tail Cottongrass, Common Cottongrass, Purple Moor-grass or combinations of all. Other species include Cross-leaved Heath, Cranberry, Crowberry and Deergrass with rarer species comprising Bog Rosemary and Labrador-tea. A feature of the blanket bogs in the WPMs is the diversity of bog-mosses (*Sphagnum*). These are the 'bog builders' and valuable indicators of habitat quality; species include *Sphagnum papillosum*, *S. capillifolium*, *S. subnitens, S. cuspidatum* and recently discovered in the WPMs *S. magellanicum*.

Blanket bog is also important for breeding birds; in the WPMs these include Golden Plover, Dunlin, Curlew, Snipe, Red Grouse, Twite, Skylark, Short-eared Owl and Merlin. Hen Harriers are frequently seen over the WPMs.

<u>Biodiversity delivery</u>

The importance of re-wetting of Blanket bog through grip blocking is widely recognised, not only a means of conserving the habitat but for flood control and as a means to lock-up atmospheric Carbon dioxide. The latter is increasingly seen as an important component in a portfolio of measures to combat climate change.

The WPMs with its damp climate, relatively clean air, deep deposits of peat and its importance for water catchment combine to make the area ideally suited for targeted action. The vegetation and growth of bog-mosses (Sphagna) sets the area apart as being of national significance.

Biodiversity Action Plan (BAP) www.ukbap.org.uk delivery is also aimed at breeding birds and the WPMs are seen as an important area for expansion of the Hen Harrier breeding range in the Lancashire BAP. www.lbap.org.uk .

National funding for Blanket bog re-wetting is available through *Defra's High Level Stewardship (HLS)* www.defra.gov.uk/erdp/schemes/hls , other local funding sources are also available. Habitat management through HLS is available to conserve, achieve favourable condition and restore the vegetation and species associated with this habitat.

Springs and Flushes

Springs and flushes occur where there is ground water seepage, in the WPMs these are generally acidic (base poor) reflecting the underlying geology. However, locally base-rich flushes occur, particularly around Anglezarke Moor.

Flushes are often closely associated with blanket bog with their boundaries sometimes difficult to determine. They normally support a diverse range of species such as Bog Asphodel, Cranberry, Marsh Violet and Sundew, with the more base-rich types supporting Butterwort, Marsh Pennywort, Bogbean, Fen Bedstraw, Marsh Valerian and Marsh Hawk's-beard. One particular base-rich flush at nearly 300 metres supports a Reed bed and a Great Tussock-sedge swamp.

At lower levels swamps occur in the meanders of streams and along the flanks of upland cloughs. In such places additional species may include Marsh Cinquefoil, Yellow Iris, and Globeflower. The presence of Yellow Pimpernel may be assumed to indicate former Alder-Ash Wet woodland sites.

Flushes are also important for their invertebrate fauna and as feeding habitat for moorland birds such as Snipe and juvenile Red Grouse.

Biodiversity delivery

Habitat management is available nationally through Defra's High Level Stewardship www.defra.gov.uk/erdp/schemes/hls to conserve, achieve favourable condition and restore the vegetation and species associated with this habitat as a part of the overall moorland habitat.

Heath (Lowland and Upland)

In the WPMs much of the heath is perhaps best considered as Lowland and occurs on the moorland flanks or is locally associated with former quarrying activities on mineral soils or where peat is thin. Upland heath is rare owing to moorlands plateaux being covered in most parts by deep peat and the relatively low overall altitude. Areas of deep peat that are dry at the surface and covered by a dwarf-shrub vegetation have in the past been wrongly attributed to heath and resulted in an over estimate of this resource and conversely an underestimation of blanket mire.

In general terms the vegetation of both Lowland and Upland heath is similar comprising Heather, Bilberry, Crowberry with grasses such as Wavy Hair-grass and Mat-grass and the mosses *Hypnum jutlandicum*. Cowberry is now rare in the WPMs, a fact that probably reflects past management. Conversely Bell Heather, now thought to be absent, probably reflects the past scarcity of heath (as opposed to blanket bog) as well as management. Western gorse is a feature of some heathy areas around the moorlands. Formerly Dwarf Cornel, an arctic species, occurred at its most southern site in Britain on moorland in the WPMs. The population was lost as a result of fires and over grazing.

Where heath is unmanaged, particularly around quarries with no grazing, succession to Upland oak woodland may be observed in the colonization of Birch, Rowan and Oak.

Heath is also important for breeding birds; in the WPMs these include Curlew, Red Grouse, Twite, Skylark, Stonechat, Whinchat, Short-eared Owl and Merlin as well as a variety of invertebrates.

Biodiversity delivery

Habitat management is available nationally through Defra's High Level Stewardship www.defra.gov.uk/erdp/schemes/hls to conserve, achieve favourable condition, restore and expand the vegetation and species associated with this habitat. Dwarf Cornel is a Lancashire BAP species www.lbap.org.uk

Acidic Grassland (Lowland Dry)

In many areas heavy grazing has led to the development of acid grassland at the expense of heath; and is best referred to in the WPMs as Lowland acidic grassland rather than Upland. It occurs on thin mineral soils, typically on moorland flanks and in quarries, and comprises Sheep's-fescue, Wavy Hair-grass and Common Bent with large areas often dominated by Mat-grass. Heath Rush and Heath Woodrush are often present, as are Soft Rush and Purple Moor-grass in wetter areas. Flowering plants are often poorly represented in the grassland with Tormentil and Heath Bedstraw often the only two present. Other species include Sneezewort and Yarrow and occasionally Heath Milkwort and Lousewort.

Locally heather and bilberry may occur, and in steeper cloughs and moorland ravines Lemon-scented Fern and Greater Woodrush are often present. In addition beds of Bracken may dominate or replace acid grassland.

Where acidic grassland is un-grazed it may revert to heath, in situations where dwarf shrubs are able to spread, or be colonized by Birch, Rowan and Oak an early succession to Upland oak woodland may occur.

Acid grassland is important for breeding Skylark and Curlew, whilst bracken beds provide breeding cover for Stonechat, Whinchat and Merlin.

Biodiversity delivery

Whilst important in its own right, much Acid grassland has developed from degraded Heath and Upland oak woodland. This presents something of a dilemma in terms of delivering expansion of biodiversity resources in the latter two, as Acid grassland is the appropriate pre-cursory vegetation.

Generally, the expansion of heath over acidic grassland would represent a biodiversity gain, however, caution is necessary and the existing biodiversity value needs to be accessed beforehand to ensure there are no negative impacts. The expansion of Upland oak woodland may have negative impacts in terms of breeding birds and invetebrates.

Habitat management is available nationally through Defra's High Level Stewardship www.defra.gov.uk/erdp/schemes/hls to conserve, achieve favourable condition and restore the vegetation and species associated with this habitat.