

Mires: Bogs & Fens



STATUS & ECOLOGY

The term “mire” is a collective term used for all bog and fen habitats. These consist of the highly acidic, peatland habitats of blanket bog and raised bog and the more mineral rich, peaty fens and rush dominated meadows.

Raised bogs are areas of deep, wet peat, which receive their water supply from rainfall rather than surface ground water. Consequently, the system is nutrient poor and very acidic due to the humic acids produced by the major peat forming plants - sphagnum mosses. As new generations of mosses grow, the old, dead remains are preserved in the acid saturated surface of the moss. The accumulation of organic matter in this way progressively compresses its lower layers to produce a dense, amorphous peat through which water cannot flow. This “jelly” mound eventually produces a characteristic raised dome, usually in flat low-lying areas or water logged basins.

Because of the extreme nature of conditions caused by water logging, lack of nutrients and acidity, raised bogs are home to a range of very specialist organisms not normally found elsewhere. The main plant communities are bog pools, Sphagnum and crossed-leaved heath, and heather and cotton-grass with surrounding habitats of birch and willow woodland and marsh.

Intact lowland raised bog is one of Europe’s rarest and most threatened habitats and is identified as a Priority Habitat under the European Union’s Habitats and Species Directive. There has been a dramatic decrease within the UK in the extent and quality of the habitat since the early 19th century. The remaining sites are scattered throughout the country, Scotland being home to the largest and least damaged. Of the 27,000 hectares of raised bog peatland remaining in the UK, only 2,300 hectares (9%) is in a near natural state. The rest has been drained, cut for peat extraction or reclaimed for agriculture.

The Scottish Wildlife Trust’s Red Moss Wildlife Reserve near Balerno is the only raised bog in Edinburgh. This Site of Special Scientific Interest extends over 23.4 hectares but represents only 0.11% of land coverage within the local authority. It is a conservation priority because of the very restricted extent of the habitat and the unique plant and animal communities living there.

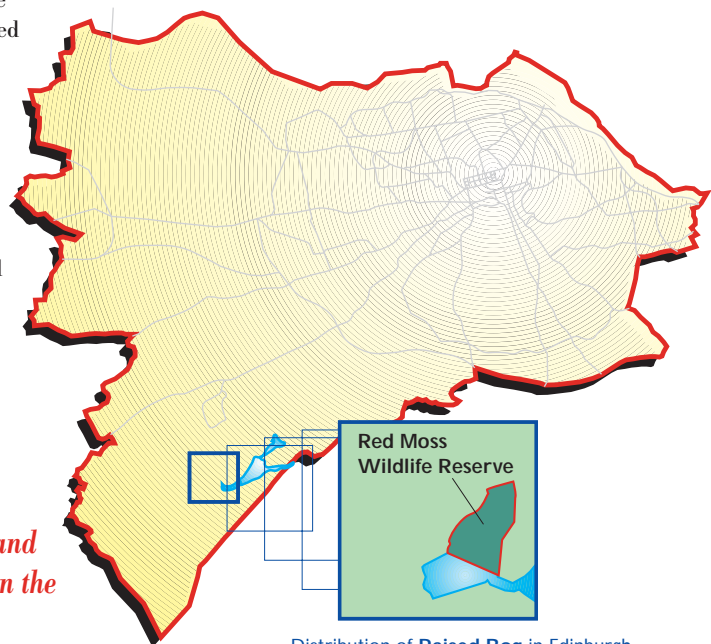
Blanket bog generally forms best in areas of high rainfall and at greater elevations than raised bog. Active blanket bog (ie where the peat is still being formed) is a rare habitat in the European and global context and can be found in various locations in the Pentland Hills. However, the majority is covered by heather, only small areas having the characteristic bog communities of sphagnum mosses and/or cotton grass.

Fens are mineral rich areas of peat with the water table at or just below the surface. Typically, plant communities are dominated by meadow sweet, yellow flag, angelica and reeds. In Edinburgh they are found around a number of water bodies, the most extensive and biodiverse being around Duddingston Loch.

The following Edinburgh Biodiversity Action Plan species can be found on bogs and mires:

Animals: reed bunting, common toad, large red damselfly, small pearl-bordered fritillary, hieroglyphic ladybird, *Ampedus balteatus* click beetle, *Criomorphus moestus* planthopper, *Tipula gimmerthali* (a crane-fly), *Lampronia fuscata* (a micromoth)
Plants: cranberry, bogbean, magellanic bog moss, adder’s tongue, hairy stonecrop.

Detailed distribution information on Edinburgh’s springs & flushes and rushy meadows is very limited. However, rushy meadows are known to be relatively common and a characteristic habitat of areas of impeded drainage on farmland, whilst very small areas of flushes dominated by small sedges and mosses are present in the Pentland Hills. These are important and rare communities, containing locally rare species.



Distribution of Raised Bog in Edinburgh

“Hope and the future for me are not in lawns and cultivated fields, not in towns and cities, but in the impervious and quaking swamps”

Henry David Thoreau

FACTORS CAUSING LOSS OR DECLINE

Impacts

All UK raised bogs have been damaged to some extent by man. Many have been substantially excavated for their peat or destroyed by agricultural and/or forestry activities. Partial, physical removal of peat through extraction distorts the shape of the peat mound and creates dried out areas as well as exposing the bare peat to the air and allowing it to oxidise. Drainage ditches put in to 'improve' the bog for sheep grazing or forestry increase the speed of runoff and can cut into the peat layers, with resultant drying out. In such cases birch and pine trees can colonise the drier ground and their roots can increase the oxidation of the upper layers of peat. In other sites burning, accidental or as a means to manage heather growth, can destroy the active sphagnum and reduce biodiversity. The deliberate planting of bogs with conifers has been common, with total destruction of ground vegetation resulting.

Traditionally, agricultural and forestry activities have also been the major culprit for the decline of blanket bog, fen, rushy meadows, springs and flushes. In addition to those impacts already mentioned, wetland habitats, particularly flush vegetation, are sensitive to enrichment from agricultural fertiliser runoff. Building development is also increasingly impacting on these habitats, whilst some upland habitats are beginning to be affected by recreational pressures.

Threats

The main threat to Red Moss is the effect of historic drainage ditches and peat cutting, with resultant growth of trees, particularly following intensive fires. There is minimal information on the other habitats and so the specific site threats to Edinburgh's blanket bog, fen, rushy meadows, springs and flushes are not known.

CURRENT ACTION

National Lowland Raised Bog, and Blanket Bog Action Plans have been prepared as part of the UK Biodiversity Action Plan. The lowland raised bog action plan seeks to maintain the current distribution and extent of primary near-natural lowland raised peat bog in the UK; establish, by 2005, appropriate management regimes at those areas which have been damaged but still retain nature conservation interest; and initiate improvement or restoration on significantly altered raised bog areas. Similarly, the blanket bog action plan seeks to maintain the current extent and overall distribution of blanket mire in "favourable" condition and improve the condition of degraded blanket mires through appropriate management.

Biodiversity objectives are contained within Red Moss Management Plan. The Scottish Wildlife Trust is responsible for regularly removing encroaching tree and shrub growth from the raised bog and blocking remaining ditches. A raised boardwalk has also been constructed outwith the main peat dome, allowing public access to, and interpretation of, this fragile habitat.

The reedbed swamp, wet grassland and fen habitats of Duddingston Loch are within the Bawsinch-Duddingston Wildlife Reserve and the prescriptions for their management described in the Management Plan.



ACTION PLAN OBJECTIVES & TARGETS

Objectives

To contribute to the UK Biodiversity Action Plan by securing the long-term conservation of Red Moss Nature Reserve and arresting the decline of mire habitats in Edinburgh.

Targets

To protect all raised bogs and mires in Edinburgh; enhance the biological value of Red Moss Nature Reserve; extend the interpretation of raised bogs and their conservation significance; and determine the nature, extent and distribution of the various mire types.

Actions

1 Implement the Red Moss and the Duddingston Loch Management Plans by Summer 2003.

(Actioned by: Scottish Wildlife Trust)

2 Complete the Red Moss walkway by Autumn 2002.

(Actioned by: Scottish Wildlife Trust)

3 Complete Phase I & Phase II habitat surveys to identify the location of mires in Edinburgh by Autumn 2002.

(Actioned by: City of Edinburgh Council City Development Department & Scottish Wildlife Trust)

4 Assess the extent, distribution and importance of Edinburgh's mire habitats by Summer 2003.

(Actioned by: Lothian Wildlife Information Centre,
Edinburgh Biodiversity Partnership & Scottish Wildlife Trust)

5 Identify appropriate conservation measures by Winter 2004.

(Actioned by: Scottish Natural Heritage, Scottish Wildlife Trust & Edinburgh Biodiversity Partnership)

6 Produce an Edinburgh peat conservation leaflet by 2003.

(Actioned by: Scottish Wildlife Trust & City of Edinburgh Council Recreation Department)

Key Contacts

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CHAMPIONS



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