

Practical Guide: Peatlands



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Peatlands

Peatland habitats are formed when waterlogged conditions prevent organic matter from properly decomposing. As a result, over thousands of years, organic matter builds up forming peat. Peatlands are characterised by colourful, spongy, sphagnum mosses, tufty white cotton grass, sundews and bog myrtle.

Accounting for over 20% of Scottish soils, and storing an estimated 1.7 billion tonnes of carbon, they play a crucial role in tackling the climate emergency. Healthy peatlands don't just sequester and store carbon, they also provide a wide array of other benefits, known as ecosystem services (Fig. 1).

Despite their importance, 80% of Scotland's peatlands are degraded actively releasing greenhouse gases. We therefore need concerted action to protect and restore these vital ecosystems.

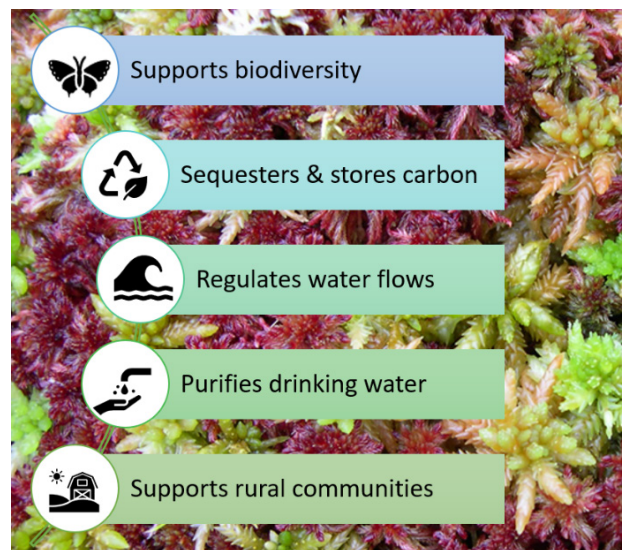


Fig 1: Ecosystem services provided by healthy peatlands

Economic benefits and restoration

The cost of restoring degraded peatlands varies considerably depending on the actions that are needed. Restoration may range from simply blocking up drainage channels to more expensive reprofiling of the land surface. To cover costs there is the potential to market the climate benefits derived from restoration via carbon credits. The Peatland Code is a voluntary verification scheme that uses accredited bodies to evaluate restoration projects to provide assurance that climate benefits have been achieved and are quantifiable. While restoration can seem like a daunting process, a range of organisations are available to guide landowners through the restoration and subsequent accreditation process. Following restoration, healthy peatlands can be carefully managed to provide additional financial returns (e.g. low intensity sheep grazing).

Wildlife associated with peatlands



Common toad



Golden-ringed dragonfly



Common cotton grass



Bog asphodel

Types of peatlands

Peatlands can be broadly divided into fens, raised bogs, blanket bogs and bog woodlands. Bogs are fed purely from rainwater making them nutrient-poor, acidic habitats. Fens, on the other hand, are also fed from ground and surface waters and their acidity largely depends on the underlying geology.

Lowland raised bogs are formed when a discrete area of standing water (e.g. pond or lake) gradually infills with silt and undecayed vegetation. This results in a dome shaped habitat which can be wobbly under foot. In addition to sphagnum mosses and cotton grasses, these habitats are characterised by bog rosemary and cranberry.

Blanket bogs are more extensive in nature, and typically form in upland areas where the water table is high due to a combination of high rainfall and poor drainage. These wide expanses are dominated by sphagnum mosses and cotton grasses with outcrops of heathers. Their nutrient poor status allows carnivorous plants such as sundews and butterworts to survive. Occasionally, scattered native trees grow forming stable open woodland habitats, known as bog woodlands. This habitat differs considerably from drained bogs where scrub and trees encroach and further dry out the habitat.

Fens develop in areas with poor drainage and a high input of water from surface and/or ground water. The resultant waterlogged habitats are characterised by a variety of sedges and rushes. They vary in size from small flushes to more extensive floodplains. A low level of disturbance (e.g. by grazing and/or mowing) will typically help to reduce scrub encroachment in fen habitats.



Peatland status

Healthy peatlands are consistently damp, even in summer, ensuring the organic matter locked in the peat is kept waterlogged preventing decay. Such peatlands typically have pools of open water and are dominated by sphagnum mosses. Throughout the UK peatlands have been degraded due to peat extraction, drainage works, nutrient enrichment, muirburn or inappropriate livestock grazing (with both over and under-grazing being problematic). Degraded peatlands lack standing water and areas of bare peat are clearly visible. When severely degraded deep gullies (known as peat hags) will form because of waterflow and erosion. The plant communities also change and this can act as an early warning of problems. As peat dries out sphagnum mosses decline and species that require drier habitats such as heathers, purple moor-grass, scrub and trees begin to dominate.



Degraded peat



Reprofiling peat hags



Wooden dam

Peatland restoration

The primary goal of peatland restoration is to restore the site's hydrology, raising the water level (known as re-wetting) by blocking drainage channels (e.g. by peat/gravel dams or plastic piling/bunds). In sites experiencing encroachment by shrubs (e.g. hawthorn) and trees (e.g. birch) mechanical removal will reduce further drying of the peatlands. To stabilise areas of bare peat, we can use matting, vegetation or even transferring sphagnum as plug plants. In more severely degraded sites where peat hags have formed, mechanical reprofiling of the soil will be required to level the habitat. Actions required will be site dependent and consequently seeking expert advice will help ensure that restorative actions will be successful.

Carbon credits

Many companies seek to purchase carbon credits to offset their greenhouse gas emissions. With peatland restoration projects resulting in a net gain of carbon, there is the potential to have the climate benefits quantified. The [Peatland code](#) is a voluntary certification scheme designed to assure carbon buyers that the climate benefits arising from restoration project are real, quantifiable, additional and permanent. There are a number of bodies approved to verify Peatland Code projects.



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