

Peatland Condition Assessment

This guide will help you to assess the condition of your peatland, which is the starting point for informing any changes in management or restoration required to improve condition.

Key Points

- Peatlands are important for carbon storage, water regulation and biodiversity
- The main peat-forming species are *Sphagnum* mosses and sedges like cotton grass
- These species can be lost through drying of the peat surface as a result of natural and man-induced changes to drainage, burning and grazing regimes
- The primary aims of peatland restoration are: re-vegetating bare peat and re-establishing peat-forming mosses and sedges through re-wetting

What is peat

Peat is the dead, partially decayed remains of bog vegetation. Permanently water-logged conditions create the oxygen-free environment that prevents organic matter from completely decomposing, making peat an effective carbon store which can be preserved for millennia.

Why are peatlands important

Peatlands are the largest terrestrial carbon store in the UK. They provide us with multiple benefits extending from agricultural products to water regulation, known collectively as ecosystem services. Keeping peatlands in good condition is important if we are to minimise carbon losses and the impacts associated with these losses. Carbon is lost from peatland to the atmosphere as greenhouse gases, and to rivers both in its dissolved organic form and as solid particles. Whilst hill streams are normally peat-coloured, storm water from degraded peatland can be so peaty that it becomes undrinkable, clogging-up the filters in water supplies, and potentially damaging to river life including insects, fish and pearl mussels.



What degrades peatlands

Bog vegetation typically includes a mix of *Sphagnum* mosses, heathers, and a diversity of both common and rare specialised plants which are adapted to wet conditions. In contrast, damaged bogs have drier surfaces that are dominated by one or two species. These drier surfaces can be easily eroded, which ultimately leads to the development of peat hags. Because peatlands are wetlands, they are highly sensitive to processes that cause them to dry out. Drying can be caused directly by natural or man-induced changes to drainage, or indirectly through the long-term and often combined effects of burning and grazing by domestic and/or wild animals. Loss of surface vegetation, especially the moss layer, and the development of bare peat surfaces are common indicators of a degraded peatland. When peat surfaces lose vegetation cover they dry out and become susceptible to wind and water erosion. Plants find it difficult to re-colonise actively eroding peat surfaces and small gullies can gradually develop into a complex of eroding peat hags.

Determining peatland condition

This guide is designed for blanket bogs where **four categories of peatland condition** are recognised : **1) Near-Natural, 2) Modified, 3) Drained and 4) Actively Eroding**. This guide helps you to identify them on the basis of various indicators of condition including *Sphagnum* cover, extent of bare peat, and evidence of grazing and burning.



THE HEATHER TRUST
Promoting Integrated Moorland Management



Restoring Scotland's peatlands



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BRINGING ENVIRONMENTAL UNDERSTANDING TO ALL

Indicators of Peatland Condition



1 *Sphagnum* moss cover

- Squeeze test differentiates *Sphagnum* mosses from other moss species as they release lots of water
- *Sphagnum* mosses vary in colour, size and growing habits (please refer to Field Guide to *Sphagnum* mosses in bogs)
- Different species form hummocks and lawns, others grow in wet hollows and pools



2 Bare peat

- Bare peat is a sign of damage
- It can be found in small interconnected patches, larger expanses, and in hags and gullies



3 Drainage

- Drains cause peat to dry out by altering surface drainage and reducing the height of the water table
- Drainage can change vegetation composition and reduce *Sphagnum* cover
- Drainage can lead to further erosion

Indicators of Peatland Condition

4 Burning

- Frequent or severe fires can remove the moss layer and significantly alter vegetation
- Fires can also penetrate the peat leading to erosion and peat loss



5 Grazing and trampling

- Overgrazing and trampling can damage bog vegetation and create sites for erosion
- Evidence such as fence line effects
- Other grazers like deer, hares and rabbits are locally important
- Animals rubbing on hagsgs can accelerate erosion and prevent re-vegetation

6 Drying and peat loss

- Bare peat offers potential for accelerated erosion
- Drier conditions reduce *Sphagnum* cover and encourage non peat-forming vegetation



1) Near-Natural Condition

There is little pristine peatland left in the UK so achieving “Near-Natural Condition” is the most realistic target for most peatlands. Because of differing climatic conditions the potential end-point will also depend on where the site is. For example pool systems are uncommon in the peatlands of the south and east.

Key Features

- *Sphagnum* dominated
- No known fires (either prescribed or wild) within living memory
- Evidence of grazing and trampling impacts is rare or absent
- Little or no bare peat surface
- Heather (*Calluna vulgaris*) is **not** dominant



1 Key for near-natural condition is the dominance of peat-forming moss and sedge species



2 Natural pool systems may be present but not in all parts of the UK, mainly in the wetter north and west



3 *Sphagnum* moss is abundant. When squeezed *Sphagnum* moss will release lots of water, unlike other mosses



4 The surface will be undulating with *Sphagnum* hummocks and hollows

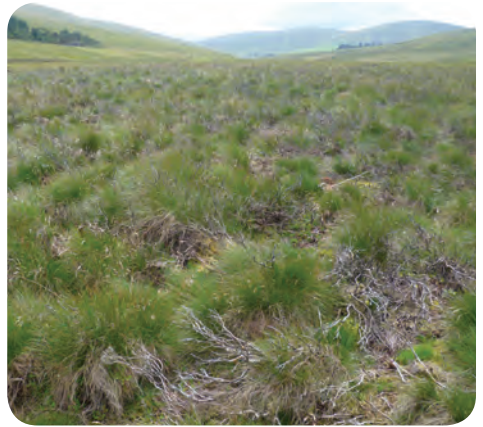
2) Modified

Key Features

- Bare peat in small patches
- Fires or fire history
- Frequent impacts of grazing and trampling
- *Sphagnum* mosses rare or absent
- Extensive cover of heather (*Calluna vulgaris*) or purple moor grass (*Molinia caerulea*)
- An undesirable level of scrub which is drying out the bog



1 Small discrete patches of bare peat (micro-erosion) may be common indicating significant impacts from livestock and wild herbivores



2 Peatland is more likely to be dominated by heather or purple moor grass



3 Grazing history and information on current management will help determine if the site has been modified due to grazing



4 Cover of peat-forming species (in most instances *Sphagnum* mosses) will be much lower than on a site in near-natural condition

3) Drained

Key Features

- Within 30m of either an artificial drain (grip) or a re-vegetated hagg/gully system

Pre-restoration



1 Typical drains on blanket peat pre-restoration

Post-restoration



2 Drains blocked using plastic piling dams showing significant *Sphagnum* regrowth. Other types of peat dams can also be very effective



3 Although re-vegetating, this gully system is still acting as a drain



4 *Sphagnum* mosses and sedges re-growing in pool behind a peat dam

4) Actively Eroding

Key Features

- Actively eroding hagg/gully system (most of their length having no vegetation in gully bottoms with steep bare peat “cliffs”)
- Extensive continuous bare peat surfaces (peat “pans”)
- Extensive bare peat surfaces at former peat cutting sites
- Restoration may require a period de-stocking and exclusion of wild herbivores

Pre-restoration



- 1 Actively eroding peat hagsgs with limited vegetation in the gully bottoms

Post-restoration



- 2 Re-profiling the gully sides (using an excavator) and replacing the vegetation has stopped erosion. Geotextiles and/or mulches can also be used



- 3 Extensive area of bare peat possibly due to a long history of overgrazing



- 4 Deer fencing and removal of sheep allows re-wetting and re-vegetation over time. This is approximately 25yrs after the fence was erected

Peatland Ecosystem Services

Ecosystem services are “the benefits people obtain from nature”.

Key Features

- Peatlands are not only important within the context of greenhouse gas emissions and climate change, they also support wildlife, food production and good water quality
- Bare peat is worth nothing; it has little value for grazing, game, wildlife, landscape or access
- Peat erosion is not only a direct loss of soil, but causes loss of greenhouse gases and contributes to global warming. Eroded peat can end up in watercourses with implications for water quality, fish and private water supplies
- The increased interest in peatlands is based on the growing global awareness of how important peatlands are for a range of ecosystem services
- Improving peatland condition can provide multiple benefits for a range of ecosystem services



“Revegetating bare peat – its an easy win. It improves the land and stops the ongoing erosion of the peat and the area getting worse.”

“I now understand that the status quo is not as it should be; it could be improved... the bare peat and hags don't have to remain as they are.”

“We knew ages ago that the drains weren't working, the ground just wants to be wet here so I was happy to block the ditches.”



“I love this landscape. It makes me feel proud that we can look after it. I like knowing that if it is well looked after, it will be good for many reasons.”



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www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/
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John Brown (Design for Business) www.design-for-business.com

Further information on *Sphagnum* mosses and UK peatlands:

Field Studies Council: www.field-studies-council.org/publications/pubs/sphagnum-mosses-in-bogs.aspx
IUCN-UK Peatland Programme: www.iucn-uk-peatlandprogramme.org/about-us/iucn-uk-committee