

POSITION STATEMENT: Burning and Peatlands

The IUCN UK Peatland Programme (IUCN UK PP) is a partnership of environmental NGOs, statutory agencies, land managing bodies' and scientists collectively working for the conservation and restoration of peatlands. Our work brings together strong science, sound policy and effective practice by creating a platform for information exchange and providing briefings.

The topic of burning was a key consideration in the IUCN UK PP [Commission of Inquiry on Peatlands](#) (Bain *et al.* 2011) and led to a summary briefing on [Burning on Peatbogs](#). A more recent IUCN UK PP publication, [Briefing Note No. 8: Burning](#), summarised the scientific evidence from an ecological perspective, following Natural England's [Upland Evidence Review: Managed Burning](#) and RSPB's commissioned assessment of [Peatbogs and Carbon](#).

KEY POINTS:

1. The available evidence indicates that burning on peatland can result in damage to peatland species and habitats, peat soils and peatland ecosystem functions.
2. Healthy peatlands do not require burning for their maintenance.
3. Restoration management of peatlands is widely achieved without burning. Restoration is also achieved in situations where previous burning management has been stopped.
4. Inconsistent approaches in scientific methodology for assessing impacts of burning management on peatlands has led to confused interpretation of the results.
5. Where there is uncertainty around the benefits of burning for peatland restoration, application of the precautionary principle would require that burning should be avoided.
6. The most effective long term sustainable solution for addressing wildfire risk on peatlands is to return the sites to fully functioning bog habitat by removing those factors that can cause degradation, such as drainage, livestock management and burning regimes.

IMPACT OF BURNING ON PEATLAND HABITAT AND FUNCTION

1. There is a consensus amongst the publications listed above that burning is, or has the potential to be, damaging to peatland habitat. There is a well-established basis that burning can degrade bog habitats, leading to reductions or loss of key bog species (plants and animals), reduced structural diversity and increased dominance of non-peat forming vegetation such as heathland species.
2. The impacts of burning on bog habitat, and particularly the main peat forming *Sphagnum* species' ability to recover, depends on the frequency and intensity of the burn along with other factors such as prevailing soil water levels, intensity of livestock trampling, climate, altitude and the starting condition of the peatland.
3. Rotational burning on peatland leads to drier vegetation communities (wet heath and dry heath communities) or a shift towards their dominance (e.g. *Molinia*) (Bruneau, 2014). This is associated with changes to the ecosystem (e.g. increased erosion rates and reduced availability of soil moisture) that can result in significant adverse impact on peatland biodiversity, carbon emissions, drinking water quality and flood management (Brown *et al.*, 2014).

DEGRADED PEATLANDS AND PEATLAND RESTORATION

4. The majority of UK peatlands are in a degraded state as a result of various factors including drainage, burning and livestock numbers. Compared to intact peatlands, degraded peatlands generally show:
 - a higher proportion of dwarf shrub and graminoid (grasses and sedges) abundance
 - reduced *Sphagnum* bog moss abundance and diversity of typical bog species
 - vegetation structural changes such as loss of bog moss hummocks and pools
 - a lowering of the water table.
5. One of the sources of confusion around the impact of management activity on peatland is the misunderstanding as to what constitutes degraded and favourable condition, and failure to assess the management trajectories. This is also reflected in some academic studies, which have inconsistent approaches to describing peatland vegetation, the state of peatland or the management objectives for the peatland. Indeed, many published journal papers do not adequately describe, or take account of, the current condition of the peatland under investigation.
6. The majority of peatland restoration projects across the UK are able to achieve relatively rapid development of blanket bog vegetation (c. 5-10 years in many cases) to such an extent that the undesirable vegetation, such as dominant heather cover, dies back naturally to be replaced by *Sphagnum*-dominated conditions associated with peatbog habitat (Cris, 2011). Effective restoration of peatlands has been widely achieved across Scotland without the need for burning: for example, there are over 105 [Peatland Action](#) restoration sites in Scotland that are delivering good practice restoration and have not required burning as part of this process.
7. Burning has been advocated by some land managers as a tool in peatland restoration to remove rank, leggy heather (*Calluna vulgaris*) (Yorkshire Post, 2017). Burning does however carry a risk of causing more serious damage, further degradation and restricting the onset of peatland recovery. The substantial plant biomass load and the often dry nature of the underlying peat beneath the heather, are susceptible to uncontrolled or hot burns that can damage peat forming *Sphagnum* species, peatland seedbanks and underlying peat soil. The role of 'cool burns' as a means of reducing risks has not been assessed in the peer reviewed scientific literature and in view of the large number of successful peatland restoration schemes that do not use any form of burning, the need for or ability to secure a 'cool burn' on peatlands is untested. **Successful restoration of blanket bog on numerous upland sites around the UK, without the use of muirburn or any other form of burning, demonstrates that burning is not a necessary tool for peatland restoration.**
8. A number of recent studies have presented conclusions leading to the mistaken interpretation that burning is beneficial for peatland restoration. Common factors presented in academic literature that can lead to confusion include:
 - a. Inconsistent approaches to the definition of peatland vegetation and its condition; of particular concern are studies that do not consider whether the vegetation recorded is typical of bog habitat or representative of more dry habitats. (It is overly simplistic to report only on the abundance of moss species or generic *Sphagnum* species, as these can also be associated with poor-fen or dry heath conditions rather than bog formation).
 - b. Inadequate assessment of baseline conditions or summary of any potential confounding effects such as drainage, subsidence, grazing pressure, historic burning regime and surrounding land use pressures such as forestry plantations.
 - c. Failure to consider the impact of land management regimes in relation to trajectory for a habitat. Simply comparing burned areas with unburned areas is unhelpful if the aims of the site are to restore functioning peatland habitat. Burning of a heavily degraded heather dominated peatland may simply produce a constrained, degraded peatland state, retaining vegetation associated with drier conditions, such as *Calluna* that could limit further recovery towards the near natural state.
 - d. Comparing the burned to unburned state can produce data that shows a change in vegetation including an increase in *Sphagnum* species. However, in burned plots, consideration should be given to the type of *Sphagnum* species and whether these are typical of bogs, as well as the likelihood of reversion of the degraded peatland back towards abundant heather.
 - e. A distinction also needs to be made between on the one hand, studies of a single burn, compared with, on the other hand, frequent managed burns on a cycle of 30 years or less. The latter can give

rise to substantial cumulative impact due to long recovery times of blanket bog *Sphagnum* species.

9. In addition to the failings to accurately describe peatland vegetation and condition described above, studies can also lead to the mistaken view that burning is inconsequential or even beneficial for both the ecology and the carbon store of a bog if they do not fully account for:
 - the negative long-term carbon trends associated with atypical plant species abundance
 - damaged state of the acrotelm (thin living surface layer of peat-forming vegetation)
 - consequent impacts on the catotelm (permanently waterlogged peat store under the acrotelm)
 - loss of microtopography and overall reduction in environmental resilience.

HEALTHY PEATLANDS SUPPORT UPLAND MANAGEMENT GOALS

10. Bogathon and Sphagathon (Moorland Association & Heather Trust, 2015) have demonstrated that there is support for maintaining and restoring peatlands to a healthy condition. It has also demonstrated recognition among land managers that healthy peatlands support driven grouse shooting and economic stock grazing.

“Landowners and grouse moor managers appreciate that raising the water table builds resilience into their land to provide protection from the impacts of climate change and the increasing risk of damage from wildfire – ‘wetter is better’.” (BASC & Moorlands Association, 2016)

WILDLIFE AND PEATLANDS

11. When examining the evidence on wildfire impacts it is important to distinguish between studies based on dry heath/grasslands on shallow soils, as opposed to deep peat sites. Concerns over wildfire risk do not generally apply to wet blanket bog habitat where there is naturally minimal dry biomass load and high water levels prevent burning of the peat mass.
12. Degraded peatlands with heather abundance have been described by some managers as a fire risk where naturally high water tables are absent, but there is no scientific study into these risks or the best methods for mitigating them.
13. Wildfires on peatland are not commonly experienced outside of situations where people have been a vector in the origin of the fire, whether as a result of out of control managed burn, arson or carelessness.

AREAS FOR FURTHER CONSIDERATION THROUGH THE IUCN UK PP COMMISSION OF INQUIRY UPDATE 2017/2018

- An agreed methodology for defining different peatland states should be developed for use in academic studies along with protocols for describing peatland vegetation.
- Instigate a number of long term monitoring and survey plots for peatlands under different management conditions to determine the impact of burning on the trajectory towards peatland restoration.
- Review the response of peatlands following restoration under different management treatments.

**IUCN UK Peatland Programme,
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Any comments or queries relating to this position statement should be directed to info@iucn.org.uk.

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