Policy Perspectives 1

Upland peat – there are still a lot of burning questions to be answered

Key perspectives:

- There is one area of the debate on the impact of burning moorland flora on underlying peat on which all agree; there are considerable knowledge gaps.
- A recent Defra project[i] stated that "*Long-term monitoring would..increase our process-level understanding of the environmental and ecological controls impacting the functioning .. of these nationally and internationally important ecosystems, and provide strategic underpinning evidence for both government policies and practical measures in relation to sustainable management and restoration of … peatland …".*
- Given there is insufficient evidence of the causes of degradation, a lack of knowledge of peatland functioning and a lack of a standard peatland definition, the logical conclusion is that it is difficult to legislate for policy that delivers the best possible future environmental outcomes at this point.

Background: Upland vegetation is managed by both livestock and grouse managers to regenerate nutritious growth, create different heights and types of habitat for cover and to reduce the risk of wildfire. Three management tools are used: grazing, controlled burning or cutting (mowing). Different ages of heather support different stages of the life cycle of red grouse and other ground nesting birds (hen harriers and merlin as well as waders such as dunlin, golden plover and curlew). The UK's Heather Burning Codes provide rules and guidance on burning during the prescribed season (1 October - 15 April in the uplands). At this time of year the vegetation is dry but the soil surface is damp encouraging 'cool burns', the heat of which do not penetrate the surface of the litter or peat layer. Achieving 'cool burns' is a skilled operation requiring training and an experienced assessment of how wind speed, quantity of heather, slope angle and fuel moisture will affect the safety and quality of the burn. The aim is to remove the canopy whilst little affecting the underlying litter or moss layer. A small proportion, typically 5-10%, of the overall area is burnt annually, thereby creating the beneficial patchwork of heather.

Distinguishing between types of burning is important: There are many terms applied to heather burning: rotational, managed, prescribed, controlled, cool and wildfire. The one common feature of deliberate burning of moorland habitats is that **grouse managers aim not to burn the underlying peat**. They wish only to manage the *surface biomass* (heather and other plants). This is a key distinction with **wildfire, which can through lack of control, become very hot and burn the underlying peat**. It is thus very important to differentiate between types of burning (for more detail please see p7 of GWCT Peatland Report https://www.gwct.org.uk/media/1127842/GWCT-Peatland-Report-2020-lr.pdf).

The carbon focus: Just focusing on Carbon is a risk for two reasons. Firstly focussing on any single ecosystem service such as carbon storage could lead to poor policy because moorland management practices such as burning also affect biodiversity. Secondly research knowledge is still very limited and often counter-intuitive. Carbon sequestration research on upland peat has studied the effect of prescribed burning at only a limited number of sites and for only a short time after each burn. Increasing amounts of carbon are stored the longer vegetation has to re-grow so the overall net balance of carbon gain/loss needs to be researched over longer timescales than those to date. Furthermore, the estimation of GHG emissions from peatlands under any management - burning, rewetting or tree planting - is currently an imprecise science due to the challenge of measuring the variables[ii].

Peatland condition: Degraded peatland condition is cited as a reason for banning controlled burning. Yet a 2007 Defra review[iii] found that climate change was the over-riding threat to the continued existence of blanket bog, with wildfire as the second major threat, whilst "*Prescribed burning on "active" blanket bog does not generally occur*..". Re-establishment of hydrological function is (universally) seen as fundamental to the recovery and restoration of blanket bog. In our view, controlled burning is an essential tool in preventing and mitigating the risk of wildfire. Despite this, the current Common Standards Monitoring guidance implicitly assumes controlled burning is damaging, stating that "*to be in good condition…. there should be no observable signs of burning …*". Furthermore this guidance is given when the current approach to assessing peatland condition fails to identify the relative contributions of other historic influences such as atmospheric pollution, drainage, wildfire and grazing. Such influences are important in allowing a better understanding of the effects of climate and management on peat development and C cycling[iv]. Consequently "*an agreed methodology for defining different peatland states*"[v] is needed.

Drainage impacts: Often drainage is confused with burning as a cause of blanket bog converting to drier heathland habitat. Drainage channels were dug in response to post-war Government policy to dry out moorlands and improve grazing and livestock productivity, **not** usually for grouse production. In fact in the last 10 years grouse moor managers have been blocking drainage channels to re-wet the peat as this has positive outcomes for grouse productivity (grouse chicks feed on the insects emerging from these waterlogged areas).

Cutting: Much is made of the role that cutting could play under a no-burn policy. But the *long-term* effects of such a management change on encouraging 'active' bog vegetation, wildlife, wildfire mitigation and other ecosystem services are not yet fully understood (see Policy Perspectives 2).

Wildfire: The inability to use controlled burning to create fire breaks risks large-scale uncontrolled burning (or wildfires) which can destroy the peat causing huge carbon losses. In America, a move to no-burn policies is now seen as near disastrous on similar fire-prone ecosystems. Wildfire is likely to increase due to climate change. Evidence from other fire-prone ecosystems suggests this will require a reduction in surface biomass, not just re-wetting, particularly ***during transition*** between vegetation communities.

Lack of definition: Finally there is no standard definition for peatland. Natural England, the Soil Survey and ecologists for example all apply a different depth; and the IPCC has no definition. This is of concern if the legislative route is to be taken. Simply applying a depth of peat is indicative of conditions many thousands of years ago, not necessarily what can be achieved now and risks unintended outcomes.

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[i] Heinemeyer *et al* Defra project BD5104 final report p224.
[ii] FAO. 2020. *Peatlands mapping and monitoring – Recommendations and technical overview*. Rome.https://doi.org/10.4060/ca8200en
[iii] O'Brien *et al* Review of Blanket Bog Management and Restoration. Technical report to defra project No. CTE0513 April 2007
[iv] Heinemeyer A, Swindles GT. Unraveling past impacts of climate change and land management on historic peatland development using proxy- based reconstruction, monitoring data and process modeling. *Glob Change Biol*. 2018;24:4131–4142.
[v] IUCN UK Peatland Programme v.2 updated March 2020

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