Wildlife and Countryside LINK

Burning vegetation on upland peat: Review of current protections
Link Policy Paper – June 2022

Executive summary

- The burning of heather and grasses on top of upland peat turns causes significant environmental damage, contributing to the transformation of these habitats, formerly carbon stores, into net emitters of carbon.
- New data suggest that regulations introduced in 2021 to reduce this damage on protected sites have failed to prevent burning on them, due in part to varying levels of protection creating unhelpful complexity.
- A simple, comprehensive ban on all burning on upland peat is required to shield protected sites more effectively and to better protect all upland peat habitats.
- These improved measures are essential to delivering Environment Act targets and net zero.

Introduction

England contains around 355,000 hectares of upland deep peatland habitat (an upland area where peat forms the soil to a depth of more than 40cm) with a particular concentration of the habitat being found in the Pennines.[1] This habitat is also known as blanket bog but is referred to as upland peat in the remainder of this briefing).

These high value upland peat habitats are subject to rotational burning. This practice sees vegetation on top of peat (usually heather and grass) set alight at regular intervals, in order to create better conditions for the rearing of large amounts of grouse for the shooting industry.

Upland peat habitats are a significant carbon store[2] and burning heather and grass within them releases carbon. Natural England has calculated that around 260,000 tonnes of CO2 are released every year from rotational burning on peat in England.[3] Rotational burning also reduces the biodiversity value of upland peat habitats, drying them out from their natural wet state.[4] Burning can also incinerate the animals caught within a burn area and often releases large amounts of smoke, impacting air quality and effecting drinking water supplies in some locations.

In response to these concerns, the Government introduced new regulations for upland peatlands in May 2021, building on regulations brought forward in 2007. One year on, this paper reviews these protections and assesses the extent to which they are restricting damaging burning on upland peat.

[1] http://publications.naturalengland.org.uk/publication/30021 This figure is also used by the Climate Change Committee, see p16 of https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-England-National-Summary-1.pdf
[2] https://www.theccc.org.uk/wp-content/uploads/2013/07/ASC-2013-Chap4_singles_2.pdf
[3] http://publications.naturalengland.org.uk/publication/30021
[4] https://www.wildlifetrusts.org/what-we-do/natural-solutions-climate-change/peatland-solutions

The protections currently in place

The protections afforded to upland peat vary according to site of the burn:

Sites not in a protected area, under 10 hectares in size

These small sites have no protection from burning during the burning season, which runs from 1 October to 15 April in upland areas.

Exceptions apply when the burn:

- Will take place over more than 0.5 hectares on a slope steeper than 45 degrees or on rocky or scree areas.
- Will expose more than 0.5 hectares of bare soil (where no more than 2% is covered by plant material).
- Will expose bare soil that stretches for more than 25 metres along the banks of a watercourse (any channel with flowing water apart from pipes) and is more than 1 metre wide throughout.
- Will leave soil smouldering for more than 48 hours.

If any of the above apply, the person wishing to burn must apply to Natural England for a licence under The Heather and Grass etc. Burning (England) Regulations 2007.[5]

Sites not in a protected area, over 10 hectares in size

These large sites require a licence from Natural England, under The Heather and Grass etc. Burning (England) Regulations 2007.

A license will be granted if the burn can be shown to be for one of the following purposes:

(a) the conservation, enhancement or management of the natural environment for the benefit of present and future generations; or
(b) the safety of any person

Sites in a protected area*, of any size

*Land designated as a site of special scientific interest (SSSI), a special area of conservation (SAC) or a special protection area (SPA).

These sites require a licence from Defra, under The Heather and Grass etc. Burning (England) Regulations 2021.[6]

A licence will be granted is the burn can be shown to be:

[5] https://www.legislation.gov.uk/uksi/2007/2003/regulation/6/made
[6] https://www.legislation.gov.uk/uksi/2021/158/contents/made

(a) for the conservation, enhancement or management of the natural environment for the benefit of present and future generations;
(b) for the safety of any person;
(c) to reduce the risk of wildfire; or
(d) because the specified vegetation is inaccessible to mechanical cutting equipment and any other method of management is impracticable.

To assess how effective this mosaic of protections has been in preventing environmentally damaging burning, we set out below the available data for 2021/22, the first season when all of the protections have applied.

Burning in 2021/22

On sites in non-protected areas, under 10 hectares in size

A Link Freedom of Information (FoI) request to Natural England revealed that no licences for sites under 10 hectares of size were granted in 2021.

This means that all burns on these small sites in the burning season would have been outside of any protection, and therefore would have been legal but officially unrecorded.

On sites not in a protected area, over 10 hectares in size

A Link FoI request to Natural England revealed that 1 license to burn was granted in 2021, for a site 50 hectares in size. The data for February to 15 April 2022 was not available at the time of the FOI request, it is possible that other licences may have been granted in this ten-week period.

On sites in a protected area, of any size

In response to a Link FOI, Defra declined to give figures for licences granted under The Heather and Grass etc. Burning (England) Regulations 2021, saying that this data would be made public in May 2022.

This information was given in response to a parliamentary question in June 2022, when Environment Minister Rebecca Pow MP stated: ''The Secretary of State received and refused one application for a licence pursuant to The Heather and Grass etc Burning (England) Regulations 2021 during the 2021/22 burning season (October 2021 - April 2022).''[7]

Monitoring data

Over the past year, environmental groups have run detailed monitoring programmes to assess the scale of burning.

[7] https://questions-statements.parliament.uk/written-questions/detail/2022-06-13/17014

Data collected by the Wild Moors campaign group shows 1,203 reports of fires in the 21/22 season.[8] This is an increase of 67% compared to their data from the previous season. Wild Moors have worked with Greenpeace's Unearthed project to cross reference these reports with satellite data, resulting in an estimate of 251 peatland burning incidents – instances of at least one fire – between 1 October 2021 and 15 April 2022.[9] A separate data gathering exercise from the RSPB resulted in a similar estimate of 272 incidents in the 21/22 season.[10]

Both datasets suggest a significant proportion of this burning took place in protected sites, in breach of the Heather and Grass etc. Burning (England) Regulations 2021. The Wild Moors and Unearthed data suggested that 51 burns (20%) took place on protected sites, the RSPB data suggested 70 burns (26%) took place took place on protected sites.

Conclusions

In January 2021 the Government acknowledged ''the consensus that burning of vegetation on blanket bog is damaging to peatland formation and habitat condition'' and in five months later introduced new regulations intended to reduce that damage. In December 2021 Ministers made a commitment to review how well the new protections are working.[11]

From the information now available, we can confirm that the new protections are neither working well nor delivering their intended purpose. **The disparity between the official number of zero burns on protected areas in 21/22 and the observed data suggesting 50-70 burns in protected areas during the same time period suggests that the new regulations are being breached on a significant scale**. Even if only 50% of the monitoring reports are accurate, this would still mean that the official data on burns in protected areas is wrong by a factor of 25 or more. Clearly, there is a problem.

The complexity of differing protections and exemptions covering upland peat is a key contributory factor. It allows landowners and managers with a deliberate intent to breach the rules to claim ignorance of the category of protection/exemption the site being burnt falls into. The complexity of the rules is also such that genuine mistakes could well be made. Ben Clutterbuck of Nottingham Trent University, as reported by Unearthed, highlights that the complexity of the rules can make them difficult to comply with for landowners.[12]

The fact that the majority of upland peat falls outside of the 2021 regulations and is largely unprotected in the burning season creates a further problem, as reports of fires can be ascribed to this majority of peatland, discouraging investigation. With limited resources, authorities can understandably choose not to ascribe some of those resources to investigate burning reports as there is a majority chance of these burns being legal. Under this cover of permitted activity, illegal burning appears to be flourishing.

[8] https://www.wildmoors.org.uk/shocking-new-statistics-show-over-1200-fires-set-in-englands-nature-sites-by-grouse-moors/
[9] https://unearthed.greenpeace.org/2022/05/30/satellites-fires-burning-england-peatland-grouse-shooting/
[10] https://community.rspb.org.uk/ourwork/b/rspb-england/posts/protecting-england-s-peatlands-what-this-year-s-burning-reports-tell-us?CommentId=f40fd662-5f96-412b-a68e-b4098bfa96da
[11] https://questions-statements.parliament.uk/written-questions/detail/2021-11-29/83526
[12] https://unearthed.greenpeace.org/2022/05/30/satellites-fires-burning-england-peatland-grouse-shooting/

We predicted these issues when the 2021 regulations were introduced, setting out how 60% of upland peat would remain largely unprotected and how the exemptions within the regulations would hinder enforcement.[13]

A comprehensive ban would provide a solution and protect upland peat more effectively. By applying a ban on burning on all upland peat, the complexity in the current system would be removed, preventing both intentional and inadvertent rule breaches. A clear rationale for investigating reported burns would also be established. There is widespread public support for a such comprehensive ban, with a 2021 YouGov poll commissioned by Link finding 60% of people in favour.[14]

The need for such effective measures to stop burning on upland peat urgent. Our peatlands, including upland peat, should be a carbon store. Instead, due to damaging human activity, UK peatland 2019 GHG emissions were estimated at 23.1 million tonnes carbon dioxide equivalent, adding 3.5% to total UK carbon emissions. Only 13% of peatlands in England are considered to be in a near natural state and storing rather than emitting carbon.[15] The continued burning of vegetation on upland peat is one of these causes of this decay in a crucial natural asset and the consequent transformation of a tool for climate change mitigation into a net contributor to climate change.

Having accepted that burning on upland peat is contrary to its environmental goals, the Government has the choice between relying on the 2021 measures, which the evidence of the 21/22 season now shows to have failed, or moving to a comprehensive ban. The latter policy is the only one capable of halting the further degradation of upland peat, contributing to the delivery of Environment Act targets and securing progress towards net zero.

[13] https://www.wcl.org.uk/docs/The%20Heather%20and%20Grass%20etc.%20Burning%20(England)%20Regulations%202021%20-%20Link%20Policy%20Briefing.pdf
[14] https://www.wcl.org.uk/weak-ban-could-leave-englands-peatland-burning.asp
[15] https://researchbriefings.files.parliament.uk/documents/POST-PN-0668/POST-PN-0668.pdf

Appendix – assessment of claims made by advocates for burning on upland peat

Game shooting businesses have a financial stake in the perpetuation of rotational burning, as it is a practice that increases breeding success amongst gamebird populations. [16] This provides an unnaturally high population of gamebirds on shooting estates, increasing the supply and allowing for more shooters, thereby increasing income from shooting fees. Advocates for game shooting businesses frequently advance a number of arguments about the need for continued burning on upland peat. Link responds to each argument in turn, with thanks to RSPB for research input:

The science is incomplete – shouldn't we delay action on burning until more research is undertaken?

The argument that the science isn't clear enough 'yet' has been used for decades to hold back environmental progress in many areas of policy.

On burning vegetation on peat, the science is clear. In the words of Lord Goldsmith, responding for the Government in a Lords debate on the Heather Burning regulations 2021 ''there is now an established scientific consensus that burning of vegetation on blanket bog can be damaging to peatland formation and habitat condition, making it difficult or, in some cases, impossible to restore these habitats to their natural state and to restore their hydrology''.[17]

This follows the Committee on Climate Change conclusion (January 2020) that burning is 'highly damaging to the peat…so the practice should be banned across the UK'.[18] In November 2020 Natural England concluded that 'the body of evidence [shows] that burning on blanket bog is damaging to peatland across a range of environmental outcomes and ecosystem services'.[19]

In 2020 IUCN also reviewed the available evidence on burning on upland peat and concluded:
''The current body of available scientific evidence indicates that burning on peatland can result in damage to peatland species, microtopography and wider peatland habitat, peat soils and peatland ecosystem functions…Where there is uncertainty around the benefits of burning for peatland restoration, the precautionary principle should be applied and burning avoided.''[20]

Claims that a 2022 paper indicates that burning can boost carbon storage have been shown to be based on a misinterpretation. As RSPB have clarified ''the paper focuses largely on savannah, grassland and forest biomes of little relevance to UK moorlands which are subject to burning. Indeed, the paper states

[16] https://bioone.org/journals/wildlife-biology/volume-2017/issue-SP1/wlb.00227/Does-rotational-heather-burning-increase-red-grouse-abundance-and-breeding/10.2981/wlb.00227.full
[17] https://hansard.parliament.uk/lords/2021-03-18/debates/3770C9D8-040C-4B7F-A305-E9BD27B88B63/HeatherAndGrassEtcBurning(England)Regulations2021#contribution-681D0297-33DF-4960-B6D4-7B77852F8D0B
[18] https://www.iucn-uk-peatlandprogramme.org/news/committee-climate-change-report-land-use-policies-net-zero-uk
[19] http://publications.naturalengland.org.uk/publication/6647144950005760
[20] https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2020-04/IUCN%20UK%20PP%20Burning%20and%20Peatlands%20Position%20Paper%202020%20Update.pdf

that the way in which fire affects the stability of carbon in soils differs across ecosystems – in other words, the results are not automatically generalisable across ecosystems.''[21]

Rotational burning burns heather, not peat. What's the problem?

Whilst the aim of rotational burning is to remove heather, fire is a destructive and carbon-releasing activity which affects every part of the upland peat habitat, leading to an overall increase in carbon emitted. Burning directly adds emissions into the atmosphere, as well as contributes to the peat underneath the heather drying out, degrading, and releasing carbon. It can take around 10 years for the water table to regain its former level in a burned peatland.[22] Furthermore, just the presence of such large quantities of heather on these landscapes is unnatural and is detrimental for the peat soils.

A landmark rotational burning study conducted by Garrett et al in 2000 compared burnt and unburnt upland peat habitats in the Pennines over decades and found 'after 30 years there was significantly less C (carbon) stored in the blanket peat in plots which had been burned every ten years'.[23] A recent study of a wildfire on upland peat in North East Scotland demonstrated the destructive impact that burning vegetation has on carbon storage in upland peat habitats — this one wildfire emitted carbon equivalent to 6.2 days of 2017 daily average greenhouse gas emissions in Scotland.[24]

This accumulation of evidence has led Natural England to their calculation that 260,000 tonnes of CO2 are released every year from rotational burning on upland peat habitat in England. We need to ban burning, with this being the first step on the path to fully restoring these landscapes to their natural wet & boggy state – a condition that is better for nature, better for the climate and better for fire prevention.

Doesn't rotational burning provoke the growth of carbon capturing mosses such as sphagnum?

A 2018 paper from Noble et al, drawing on decades of data, suggests a nuanced picture. The paper concluded that *'in some cases fire has a negative impact on sphagnum, and this can persist for several decades'*.[25] The paper did find that repeat burning could, along with other circumstances like a change in pollution levels, help damaged sphangnum recover from the impact of the original burning. Burning's possible role under certain circumstances as a partial mitigation agent should not obscure its proven role as a cause of sphagnum loss. The partial mitigation role could also be more effectively delivered by habitat restoration.

[21] https://community.rspb.org.uk/ourwork/b/science/posts/vegetation-burning-in-the-uk-uplands-the-danger-of-importing-science-from-other-biomes
[22] https://www.researchgate.net/publication/227739660_The_Effects_of_Peatland_Restoration_on_Water-Table_Depth_Elemental_Concentrations_and_Vegetation_10_Years_of_Changes
[23] https://www.researchgate.net/publication/29813355_Effects_of_burning_and_grazing_on_carbon_sequestration_in_a_Pennine_blanket_bogUK
[24] https://www.wwf.org.uk/sites/default/files/2019-11/Carbon%20loss%20and%20economic%20impacts%20of%20a%20peatland%20wildfire%20in%20north-east%20Sutherland.pdf
[25] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6211700/

Isn't burning the only way to prevent wildfires?

Wrong. Controlled burning can often become out of control wildfires – and the vast majority of fires that become wildfires, are started intentionally or accidentally by individuals, rather than occurring naturally. But more importantly, burning is only done to re-grow the easily flammable heather vegetation, which the land manager has put there to begin with - these landscapes would not be dominated by heather in their natural state – they would be bogs. When you burn the heather, you get locked into an ever-smaller cycle of the heather continually growing back quicker and thicker, which maintains this heavy fuel load on the peatland.

The only way to truly reduce the risk of wildfires in the long term is to move away from these moorlands being heather dominated landscapes, by restoring the peatland hydrology, raising water levels (re-wetting), and transplanting peat-forming mosses back onto the bog surface – and moving the peatland back towards something that is actually a bog – I.e. muddy pools of stagnant water, which clearly don't catch fire! This restoration should be undertaken in tandem with targeted vegetation cutting (if needed). Particularly with the impacts of ever worsening climate change and biodiversity loss, the pressures on our peatland will increase, so we need to start restoring and re-wetting now in order to build up the long-term resilience of these landscapes.

The basic common sense of more water = less fire risk applies. In the words of Rewilding Britain:
''This isn't rocket science. If you stop the regeneration of a wide mix of natural vegetation on peat bogs and maintain it as a heather moor and then periodically burn that heather to expose bare peat, you will cause that peat to retain less water. It will then desiccate and thus burn more easily, longer and deeper. Conversely, rewilding is about the restoration of healthy, functioning ecosystems towards the point where natural processes prevail and nature can take care of itself. With peat bogs, allowing natural recovery enables them to retain more water for longer, both in the vegetation and the peat below, and thus be less flammable.''[26]

Wont re-wetting be very expensive?

Not compared to the climate cost of inaction. The Office for National Statistics estimates fully restoring the UK's degraded peatlands could cost between £8bn-£22bn over the next 100 years, but would save £109bn in terms of reduced carbon emissions.[27]

Re-wetting is essential to restoring peatlands to their natural state and in making carbon stores. In the words of the Parliamentary Office of Science and Technology: ''Re-establishing a waterlogged state should halt the loss of peat and reduce emissions. Evidence suggests raising water levels is the single most important measure for reducing CO2 emissions, protecting carbon stores and restoring peat formation.''[28]

[26] https://www.rewildingbritain.org.uk/blog/wetter-is-better
[27] https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalforpeatlands/naturalcapitalaccounts
[28] https://researchbriefings.files.parliament.uk/documents/POST-PN-0668/POST-PN-0668.pdf

Burning is used as a land management practice in Australia/California, so should be used here too?

They are totally different types of landscape (mainly woodland) so the comparison is irrelevant and is unable to be made with how we should manage the UK's upland peatland.

Isn't it the case that there are no feasible alternatives to burning?

Wrong. For decades, the RSPB (and others) have been managing their own blanket bog reserves through a mixture of cutting and re-wetting. The 2020 IUCN report concluded ''Healthy peatlands do not require burning for their maintenance. Restoration management of peatlands is widely achieved without burning. Restoration is also achieved in situations where previous burning management has been stopped.''[29]

Doesn't burning creates important habitat for curlew and other wading birds?

By intensively managing the land through practices like burning, as well as the widespread culling of ground predators (such as foxes) and birds of prey (such as hen harrier), in order to rear large populations of red grouse, land managers have created what is essentially an unnatural flashing beacon to which certain species are attracted to.

These practices are unsustainable and hugely damaging to both the local ecosystem and climate change, and are done with the aim of rearing gamebirds; the presence of other species is a side effect. This system of land management creates ecosystems that are unnatural and distorted, with huge numbers of game birds alongside populations of a very small number of other species – rather than a truly biodiverse ecosystem and landscape. The nature and climate impact, as well as increased risk of flooding and reduced air quality, clearly outweigh the very small and site-specific benefit for the local population of a handful of species.

There are many alternative ways of creating habitat for curlew and other species of wading birds which are ecologically sound and sustainable – like re-wetting through ditch blocking and planting sphagnum mosses.

Isn't it the case that management of upland peat for game birds provides a net gain for carbon storage, due to industry-led restoration work?

Whilst this restoration work is welcome, its scale compares poorly with the scale of rotational burning. We understand that the game bird industry has restored around 8,000 hectares of upland peat habitat in England. This compares to 27,660 hectares of upland peat habitat burning, observed by a 2015 study by Douglas et al.[30] The overall amount of land burnt is likely to be even larger than that, as the 27,660

[29] https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2020-04/IUCN%20UK%20PP%20Burning%20and%20Peatlands%20Position%20Paper%202020%20Update.pdf
[30] https://muirburncode.org.uk/wp-content/uploads/2016/08/Douglas-et-al-Burning-for-Game-Management-2015-1.pdf

hectares only relates burning in SSSI, SAC or SPA sites. A ratio of over 3 hectares burnt for every hectare restored does not represent a net positive for upland peat habitats.

Does this mean the end of grouse shooting?

No. Shooting would need to be undertaken in a less intensive way in bogs managed for nature, but it could still continue – and it would be compatible with then nature and climate crises.

For questions or further information please contact:

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Wildlife and Countryside Link (Link) is the largest nature coalition in England, bringing together 65 organisations to use their joint voice for the protection of the natural world

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