Position Statement

Trees and peat in the nature and climate crises

The Woodland Trust's view

Septemeber 2023

WOODLAND TRUST

Trees and peat in the nature and climate crises

Introduction

The question of whether trees are appropriate on or near peat in the context of the climate and nature crises is a pressing one. Peat soils cover 12% of the total land area of the UK; they store 3.2 billion tonnes of carbon and can support a range of unique open and wooded habitats and wildlife. Yet, due to degradation, net greenhouse gas emissions from peatlands account for approximately 4% of all UK emissions[1]. Furthermore, most peatlands that are protected for nature are in poor ecological condition. Trees on peaty soils can result in net ecosystem carbon loss through a range of soil-plant-atmosphere interactions such as drying out of peat and oxidation of organic matter. Our position balances emerging evidence on how trees interact with peaty soils alongside the importance of trees and peat for nature recovery.

Our position, applicable throughout the UK, is based on an assessment of the latest evidence, and aligns with our conservation principles. We recognise the potential need for evolution as new evidence comes to light. This position is supported in its practical application by the Trust's woodland creation guide and associated handbooks (including tree species handbook and site assessment handbook), and a technical advice note on trees and peat for operational delivery.

UK peatlands: characteristics and distribution

Peat is formed from partially decomposed vegetation that accumulates in anoxic, waterlogged conditions. Most of the UK's peat soil is located in upland areas, occurring naturally as blanket bog or having been drained and converted to forestry or grazing land. There are also tracts of lowland peatlands comprising raised bog and fens. These, too, are often drained and transformed for agricultural purposes.

Peat depth can vary, from shallow layers in peaty organo-mineral soils (with peat layers as thin as 5cm) to the deepest peats that reach 5-10m or even more. The definition of 'deep peat' varies, with different depth cut-offs set by national agencies in their policies and practices.

UK forestry guidelines and peat conservation

To adhere to the UK Forestry Standard (UKFS) guidelines[2], new forests should not be established on soils with peat exceeding 50cm in depth or on sites that compromise the hydrology of adjacent bog or wetland habitats. In England, newer guidelines[3] restrict planting on sites with peat deeper than 30cm, except when using 'low density trees' and with the Forestry Commission's approval. In Scotland, deep peat is defined as 50cm; however, ploughing to plant trees on peat deeper than 10cm is prohibited[4]. Grants for peatland restoration are available for peats exceeding 30cm depth if they are hydrologically linked to deep peat[5]. Wales and Northern Ireland adopt the UKFS definition (>50cm) for new tree planting.

ALAN BELTON / WTML

Throughout the UK, suitable native trees and scrub should be recognised as a valuable and often missing part of many peatland landscapes, especially where they complement existing priority habitats and species.

We advocate for public policies and definitions that prioritise safeguarding carbon stocks and peatland wildlife from the potential harms of plantation forestry on peat soils. It's essential that such policies and definitions don't overlook the protection of shallower peaty soils. Activities that might cause damage, like improperly planned and executed forestry and woodland creation schemes, especially those using densely planted trees on ploughed soils, should be avoided. In determining our position on these issues, we have assumed a definition of deep peat being ≥ 50cm and shallower peat as < 50cm. This position focuses exclusively on the potential role and suitability of open native wooded habitats on peat soils.

The Trust's view

- Across the UK, suitable native trees and scrub should be recognised as a valuable and often missing component of many peatland landscapes, especially where they complement existing priority habitats and species.
- The primary focus for all peat soils should be:
  - restoring natural hydrological functioning, for instance by blocking drainage
  - addressing the causes of degradation such as excessive grazing —particularly by wild deer and sheep, intensive burning as part of moorland management, soil erosion, pollution, plantation forestry, and agricultural intensification.
- By removing the causes of peat degradation, native trees and scrub may return naturally where conditions allow or be assisted via tree planting where appropriate. This includes where:
  - existing or historical native wooded habitats on peaty soils can be expanded or restored to recover nature,
  - the introduction of new trees will enhance other existing conservation priority habitats and species and lead to a net benefit for nature recovery,
  - the natural hydrology of nearby deep peat is protected and enhanced, such as through the stabilising effect of bog fringe woodland on deep peat caps,
  - the establishment of open wooded habitats can prevent further degradation to peaty soils, for instance by halting intensive grazing, burning, and ploughing,
  - trade-offs between biodiversity and carbon loss are reconciled by adhering to the most recent evidence-based guidance (e.g., the Woodland Trust's woodland creation guide and site assessment handbook), and by consulting with regulatory bodies and eNGOs.
- Regarding deep peat, trees should not be established via planting, replanting, direct seeding, or any associated ground preparation. The natural colonisation of native trees onto deep peat may be suitable if aligned with relevant guidance and regulations. We advocate for an update in these regulations to recognise natural colonisation of native trees and scrub on deep peat under the circumstances listed above.
- Carbon finance for both woodland creation and peatland restoration projects must be based on verifiable evidence of the carbon benefits in each situation.

The Trust will

1. Identify and protect all deep peat on our estate and aim to restore damaged peat, including through our outreach and partnership activity.
2. Only establish new native woods and trees on peaty soils in the scenarios listed above, and by following our woodland creation guide and best operational practice.
3. Ensure that carbon storage calculations are made using the best available evidence for all sites verified through the Woodland Carbon Code and Peatland Carbon Code and use this data to support our advocacy to improve the robustness of these Codes.
4. Ensure we use 100% peat free growing media for all trees that we plant and continue to work towards using more sustainable and bio-secure materials throughout the supply chain.
5. Advocate for a regulatory, policy and funding environment that empowers landowners and land managers to prioritise nature recovery and address climate change through appropriate peatland management and restoration, including suitable woodland creation.
6. Advocate for greater Government and private sector investment in applied research and monitoring. This will help refine, identify, and promote best practices, inform policy decisions supporting trees and peat, and enable us to periodically update our guidelines and methodologies.

Peatlands: context and importance

The UK has nearly 3 million hectares of peatlands[1], comprising about 12% of its total land area, placing it among the top ten nations globally for peatland area. Peat in the UK stores an estimated 3.2 billion tonnes of carbon and can support both open and wooded habitats essential for wildlife and nature recovery. Peatlands also support wider ecosystem services such as providing drinking water for 28 million UK residents as well as containing archaeological and paleo-environmental records. Notably, while healthy, ecologically functioning peatlands can indefinitely sequester carbon, albeit relatively slowly, only 22% of UK peatlands are in this condition[6].

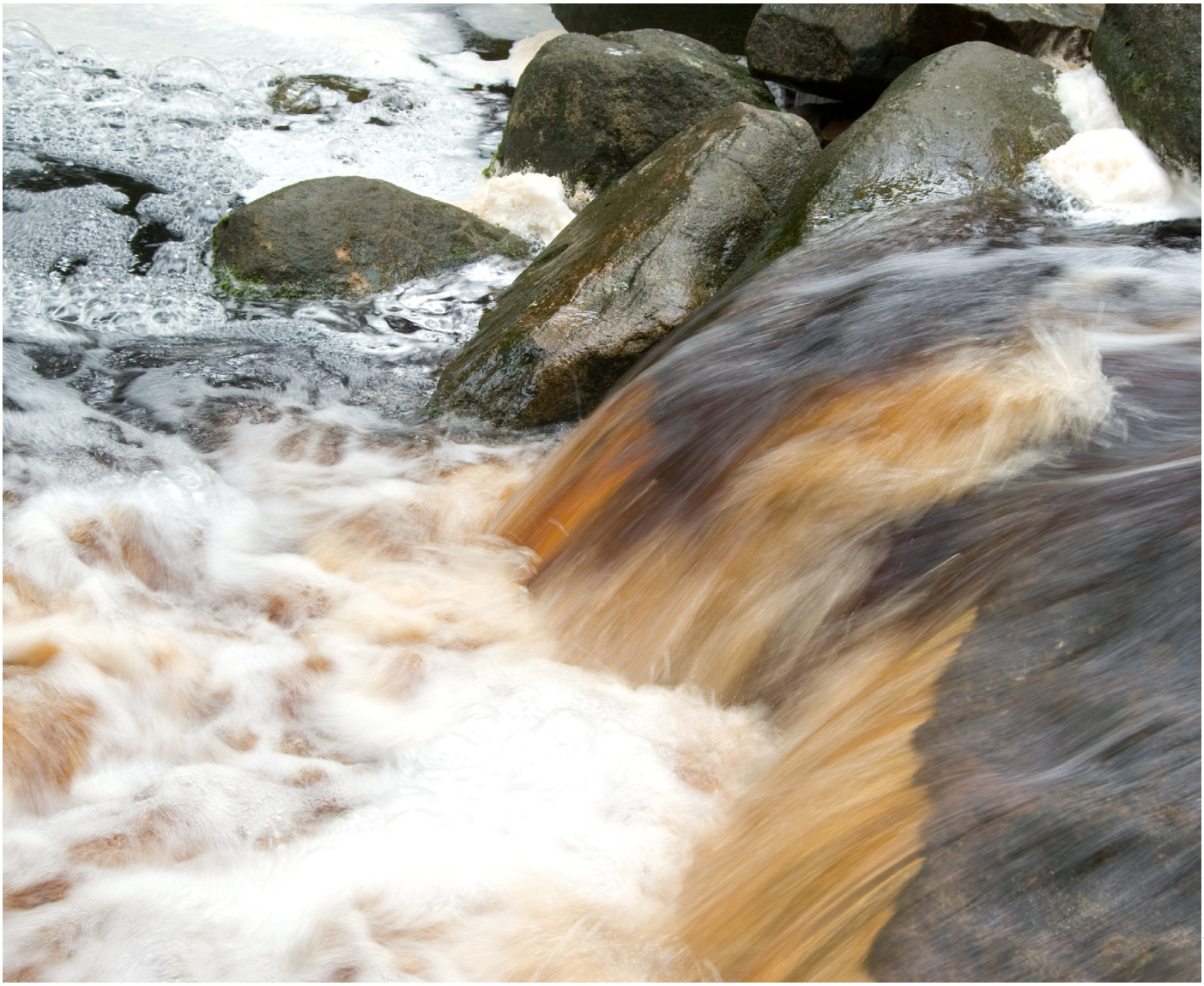
Native trees and peaty soils can combine to produce unique and intimate habitat mosaics which give peatlands their special character and importance for many priority species. The conservation and restoration of priority habitats on both deep and shallower peaty soils is essential to nature recovery. These include some wooded habitats which have become rare and highly fragmented, such as bog and wet woodland, native Caledonian pine woodland, and temperate rainforest, as well as open habitats like blanket bog, lowland fens, and wet heath.

Many peatlands and their habitats have been damaged and degraded over time by human activity such as drainage, livestock and deer grazing, burning for moorland management or wildfires, arable farming, and extraction for horticulture and fuel. Plantation forestry of large-scale, dense, non-native stands, with associated practices like cultivation, clear-fell harvesting and fertiliser application, can also result in severe degradation of peat soils and associated native habitats and wildlife. UK peatlands have lost much of their wildlife value and are now estimated to be a net source of greenhouse gas emissions to the atmosphere. Restoration of damaged peatland habitats (open and wooded) is urgent to support nature recovery and to reduce GHG emissions for climate change mitigation and adaptation.

Peatlands play a significant role in climate dynamics, particularly through the greenhouse gases they release and sequester. Naturally waterlogged and hydrologically restored peatlands emit globally significant amounts of methane (CH_4) into the atmosphere Methane is a far more potent GHG than carbon dioxide, however over long time scales the global warming potential of methane emissions from peatlands will be overtaken by the cooling effect of carbon sequestration from restoring peatlands. Increased methane emissions are a short-term negative consequence of rewetting peatlands, but it has been shown that the long-term trade-off to reduce carbon dioxide emissions is needed to address climate change[7]. Rewetting and restoring peatlands through blocking drainage, revegetating bare peat, bunding, reprofiling erosion, and removing plantation trees will also increase resilience of soil carbon to climate change.

New native woods and trees on shallower peaty soils are important for nature recovery yet may result in soil carbon loss[8,9]. This is an active area of research, with one study suggesting such soil carbon loss could not be recouped by gains in carbon stored in tree biomass over the 39 years of the study[10]. This suggests that tree planting may not result in a net gain in ecosystem carbon storage and may even decrease net ecosystem carbon stocks within the timeframes required to tackle the climate crisis and to meet net zero targets. Impacts to net ecosystem carbon balance are likely to vary considerably with local site conditions, species, and physical disturbance. As such, we advocate caution when making positive claims of net carbon sequestration in carbon-rich ecosystems. We will update our position and guidance as new evidence emerges.

Scrub and open wooded habitats on peaty soils are notably sparse in the UK's peatland landscapes. The benefits trees bring to peatlands are evident in various semi-natural ecosystems across northern Europe. This position statement underlines the need to champion such habitats within the UK's peatland ecosystems.



PAUL FOSTER /WTML

References

1. Evans, C., Artz, R., Moxley, J., Smyth, M-A., Taylor, E., Archer, N., Burden, A., Williamson, J., Donnelly, D., Thomson, A., Buys, G., Malcolm, H., Wilson, D., Renou-Wilson, F., Potts J. (2017). Implementation of an emission inventory for UK peatlands. Report to the Department for Business, Energy and Industrial Strategy, Centre for Ecology and Hydrology, Bangor.88pp.
2. Forestry Commission. (Last updated 2021). The UK Forestry Standard. https://www.gov.uk/government/publications/the-uk-forestry-standard
3. Forestry Commission and Natural England. (2022). Decision support framework for peatland protection, the establishment of new woodland and re-establishment of existing woodland on peatland in England. https://www.gov.uk/government/publications/decision-support-framework-for-peatland-protection-the-establishment-of-new-woodland-and-re-establishment-of-existing-woodland-on-peatland-in-england
4. Scottish Forestry. (2021). Cultivation for upland productive woodland creation sites. https://forestry.gov.scot/publications/1032-cultivation-for-upland-productive-woodland-creation-sites-applicant-s-guidance/viewdocument/1032
5. Nature.Scot. (2021). Peatland Action - Eligibility criteria. https://www.nature.scot/doc/peatland-action-guidance-eligibility-criteria
6. ONS (2019) UK natural capital: peatlands. https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalforpeatlands/naturalcapitalaccounts
7. Günther, A., Barthelmes, A., Huth, V., Joosten, H., Jurasinski, G., Koebsch, F. and Couwenberg, J.(2020). *Prompt rewetting of drained peatlands reduces climate warming despite methane emissions.* Nature Communications, 11(1), p.1644.
8. Matthews, K.B., Wardell-Johnson, D., Miller, D., Fitton, N., Jones, E., Bathgate, S., Randle, T., Matthews, R., Smith, P. and Perks, M. (2020). *Not seeing the carbon for the trees? Why area-based targets for establishing new woodlands can limit or underplay their climate change mitigation benefits.* Land Use Policy, 97, p.104690.
9. Hong, S., Yin, G., Piao, S., Dybzinski, R., Cong, N., Li, X., Wang, K., Peñuelas, J., Zeng, H. and Chen, A. (2020). *Divergent responses of soil organic carbon to afforestation.* Nature Sustainability, 3(9), pp.694-700.
10. Friggens, N.L., Hester, A.J., Mitchell, R.J., Parker, T.C., Subke, J.A. and Wookey, P.A. (2020). *Tree planting in organic soils does not result in net carbon sequestration on decadal timescales.* Global Change Biology, 26(9), pp.5178-5188.

WOODLAND
TRUST

The Woodland Trust, Kempton Way, Grantham, Lincolnshire NG31 6LL.

woodlandtrust.org.uk