

'Peatland restoration in Scotland – where are we now?



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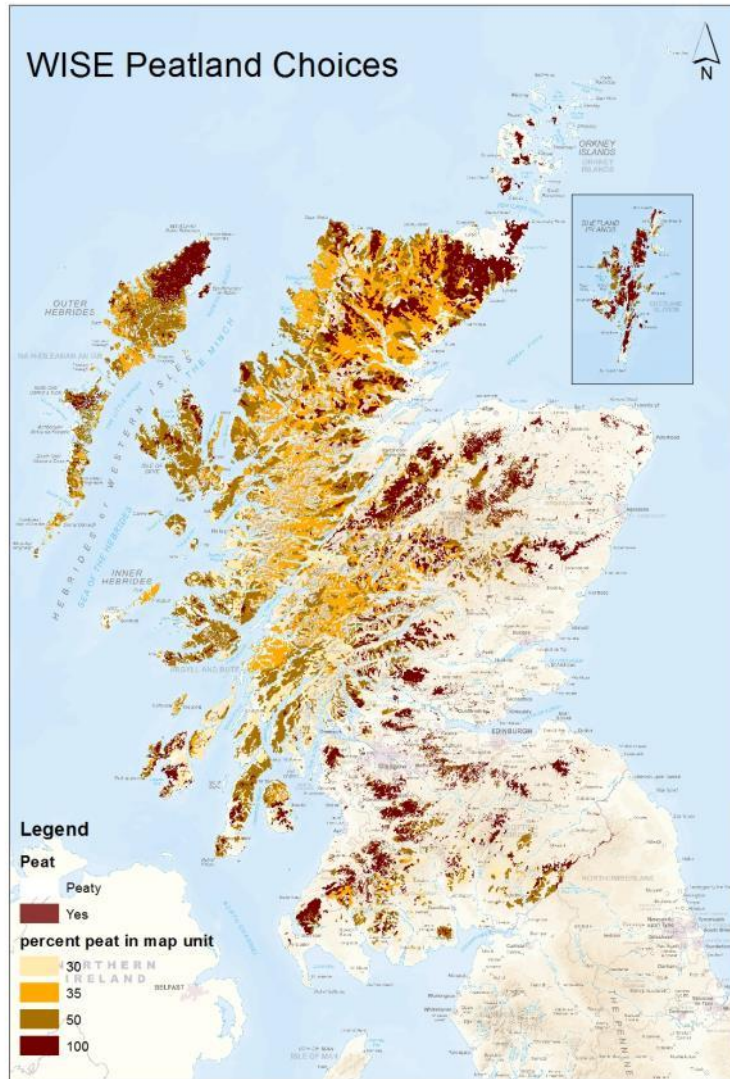


We know why we are doing this

- **Climate Change Act (Scotland) 2009**
- 80% reduction in GHG emissions by 2050, 42% by 2020
- Target of 21,000 hectare of peatland restoration per annum (June 2013)
- **2020 Challenge for Scotland's Biodiversity (2013)**
- Supports 'a major restoration programme'
- To be delivered, at least in part/interim, by The Scottish Rural Development Programme, the £15m Green Stimulus Peatland Restoration Project (Scottish Natural Heritage) and the Peatland Code

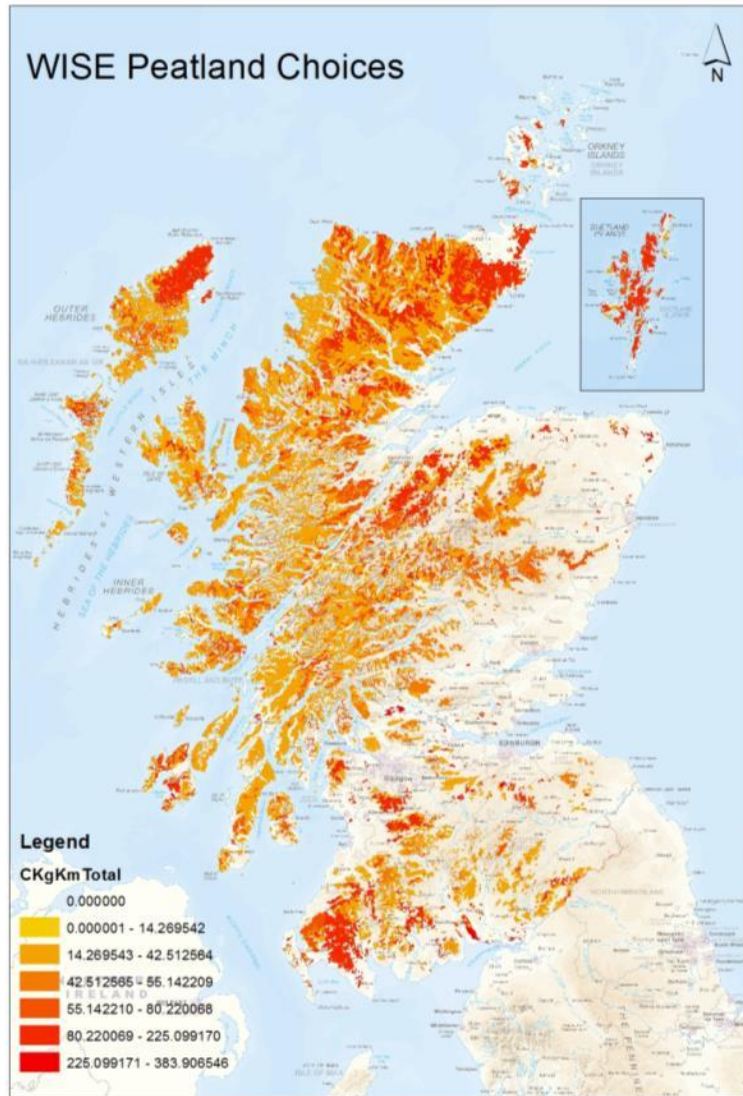


We 'know' where the peatlands are



- 1.7 million hectare = 22% of the land area
- Mostly blanket bog (1.1 mi ha), some semi-confined peat (valley peats on mountains, 0.5 mi ha), upland (0.04) and lowland (0.03) raised bog
- Scottish peatlands contain 1620 Mt of C (56% of total soil C)
- Much of this resource is eroding, drained, harvested or converted to other land uses (90% of raised bog, >50% of blanket bog)
- Only 6.6 % is under designation. Target of 600,000 ha to be restored (UK Biodiversity Action plan)

We 'know' the areas with the highest peat soil carbon



We know some of the restoration benefits

- Potential GHG emissions abatement achievable through peatland restoration
- Actual GHG emissions abatement achieved since 1990
- AFOLU accounting: Implications for implementing peatland restoration (costs and benefits, inclusive of potential offsets due to methane production)
- Economic cost:benefit analysis of peatland restoration
- An assessment of the proposed IPCC “2013 Supplement to the 2006 guidelines: Wetlands” for use in GHG accounting of Scottish peatland restoration



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Carbon Savings from Peat Restoration



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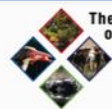
Research Summary

Potential Abatement from Peatland Restoration

Artz, R.R.E., Chapman, S.J., Donnelly, D. and Matthews, R.B.

Key points

- Net potential abatement benefits from peatland restoration, give natural and damaged sites, could range from 0.6 to 0.3 Gt CO₂e ha⁻¹ yr⁻¹.
- Values at the lower end represent restoration savings to the extent achievable within a 10 year time frame after restoration efforts. In addition, damaged bogs also prevent further progression to a more damaged, and near the upper end apply to the restoration benefits of severely damaged, stabilize (20 to 50 years) and temporarily high methane emissions may limit.
- A precise figure for the area in Scotland that has the potential management or active restoration is not available but is likely to be in excess of 100,000 ha. The severely damaged category is previously to cover, peatlands that would require active efforts to restore.



The Economics
of Ecosystems
& Biodiversity

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Economic merits of peatlands restoration in Scotland



Geneva 16 January 2014

Restoration of degraded peatlands in Scotland can generally be justified in economic terms on the basis of GHG emission savings alone.



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AFOLU accounting: implication for implementing peatland restoration – costs and benefits



WISE Peatland Choices

A decision support tool for peatland restoration in Scotland

Rebekka R.E. Artz, David Donnelly, Matt Atkinson, Bedru Balena and Steve Chapman

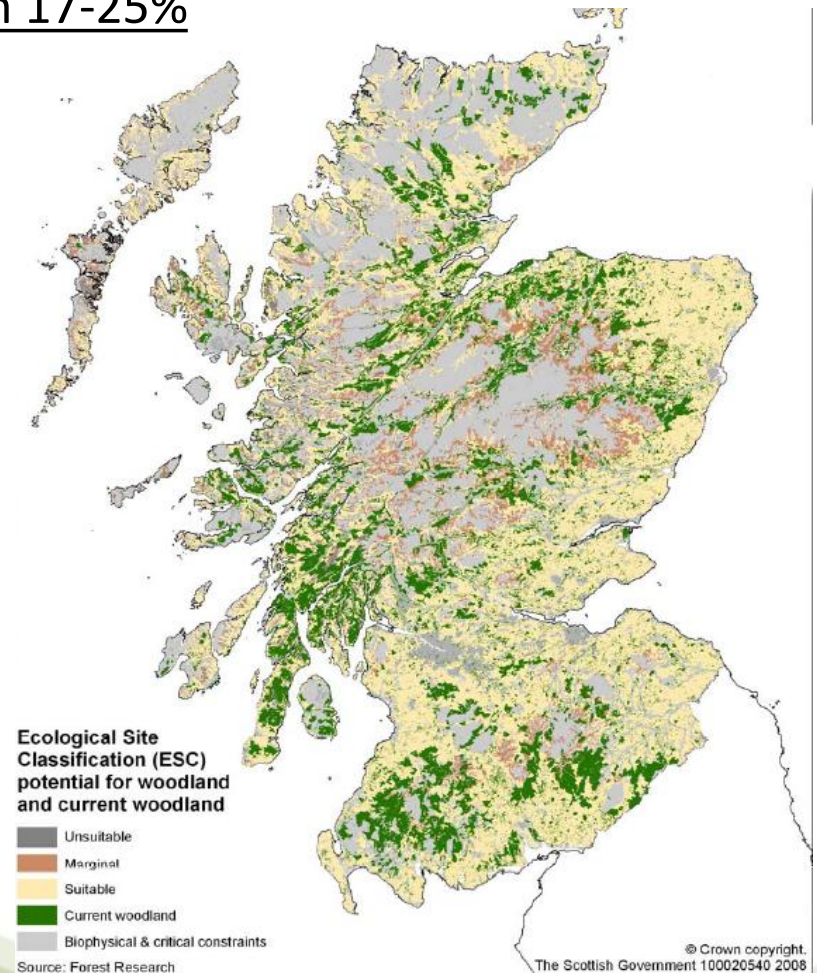


December 2013

We know that peatland restoration is not the only tool in the box

Forestry Strategy: Increase of forestry from 17-25%

- Current forest area: 1,347,001 ha
- 2050 target: 1,969,300 ha (+622,299 ha)
- Assume sequestration rate is $11 \text{ t CO}_2 \text{ ha}^{-1} \text{ yr}^{-1}$
- Abatement potential: $6.8 \text{ Mt CO}_2 \text{e yr}^{-1}$ (12.5%)

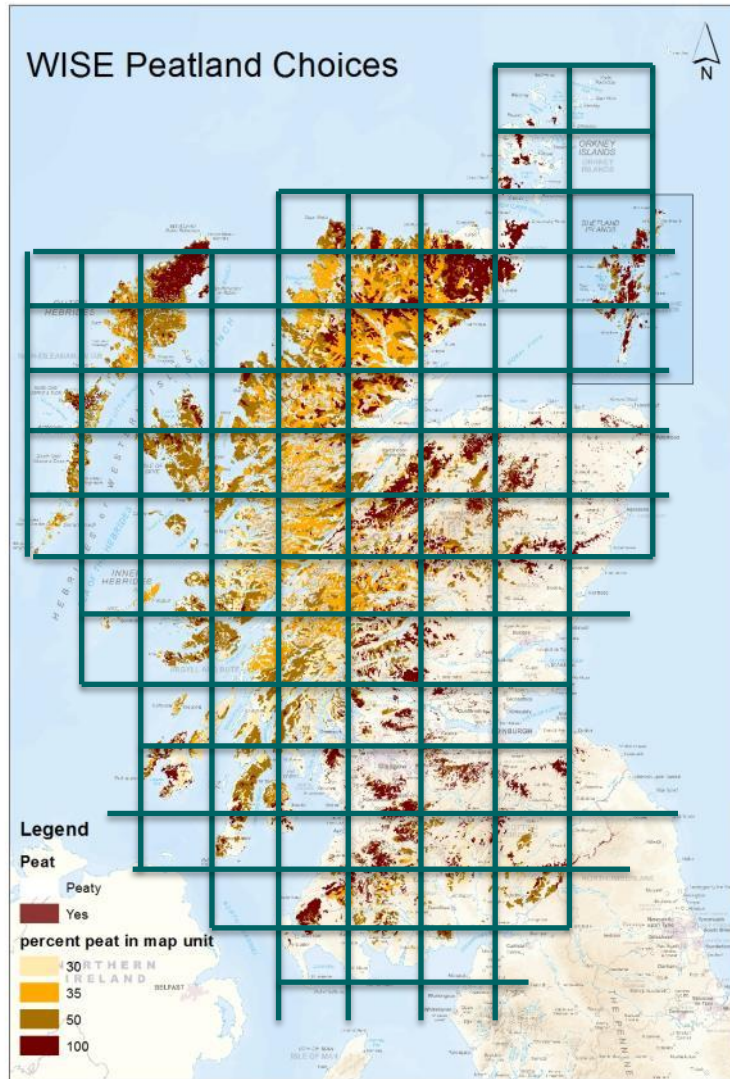


So where, and how, do we restore peatlands?

- We need tools to identify good candidates
- We need to understand the technical and long-term challenges
- We need to teach good practice and exchange success stories as well as failed projects



Tools: WISE Peatland Choices

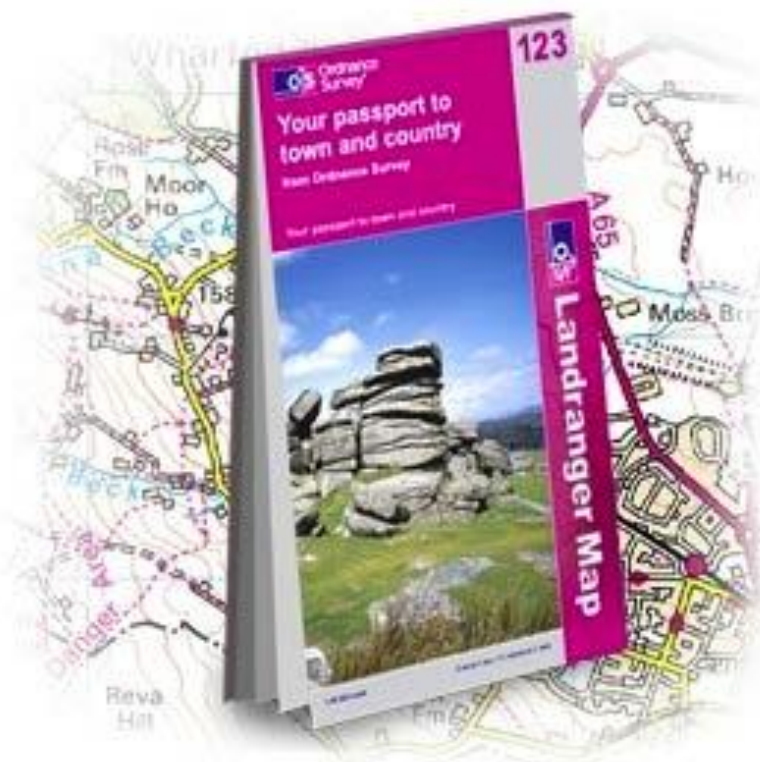


Information to aid decision making on where to focus restoration efforts

Based on vast quantities of data gathered since the 1940s!

- Location of archaic peat deposits
- Current land cover
- Various degradation measures (e.g. erosion, peat cutting, burning)
- Land ownership
- Potential competing or complementary developments (e.g. renewables)
- Climate sensitivity

A map is not the territory (Alfred Korzybski)



GIS maps are still just maps, not the peatlands themselves!

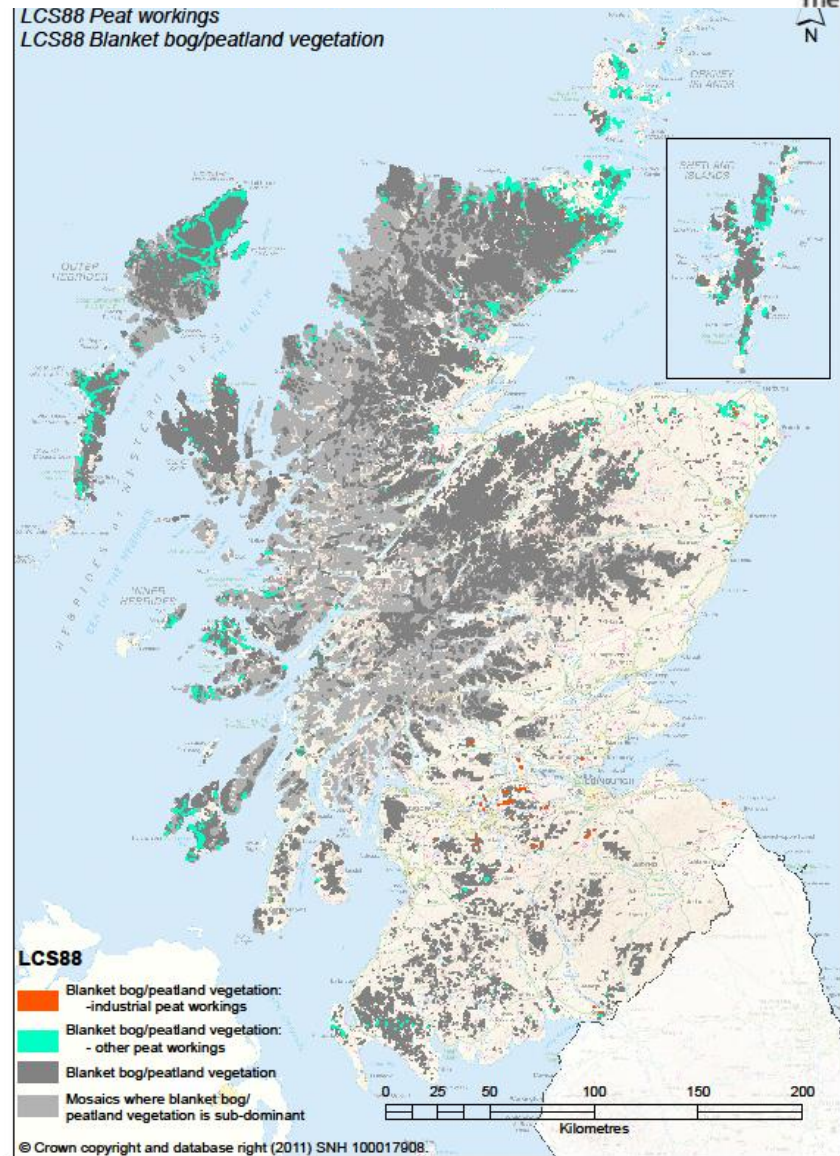
Such tools may indicate potential candidate sites, but verification of restoration potential must be assessed on the ground.

Understanding the challenges: an example

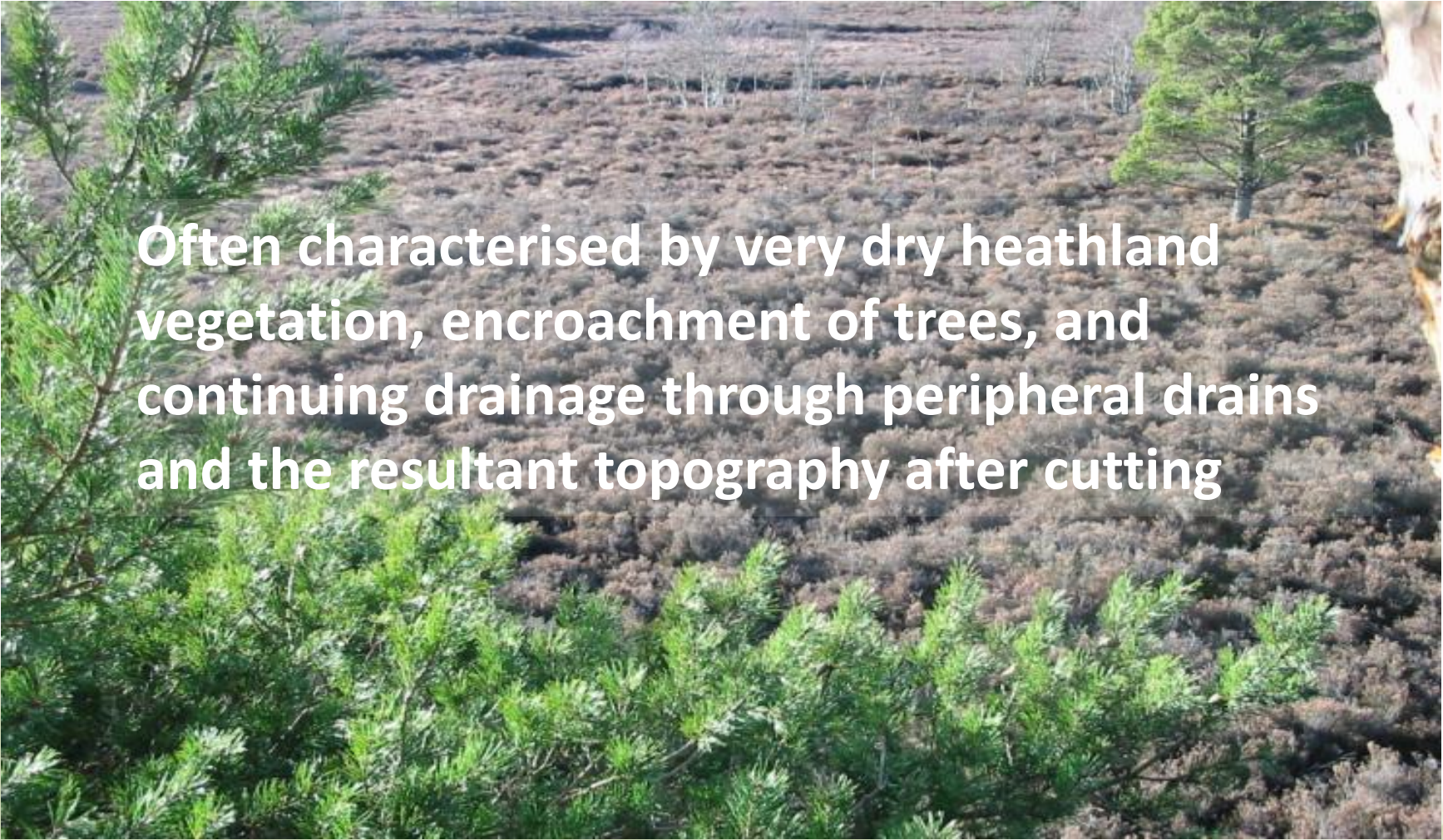


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- Peat harvesting in Scotland has taken place for centuries and affects large parts of the total area.
- Often (of course) in highly carbon dense peatlands
- The resulting landscape is difficult to restore



Bogs affected by domestic peat cutting



Often characterised by very dry heathland vegetation, encroachment of trees, and continuing drainage through peripheral drains and the resultant topography after cutting

2nd example: eroded peatlands



Bare peat loses up to $10 \text{ t CO}_2\text{eq ha}^{-1} \text{ yr}^{-1}$

The next required steps:

- We need to summarise our current understanding of the technical and long-term challenges of restoring peatlands, inclusive of 'difficult' sites
- We need to teach good practice and exchange success stories as well as failed projects