

Setting the scene – an overview of the current position

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Starter...

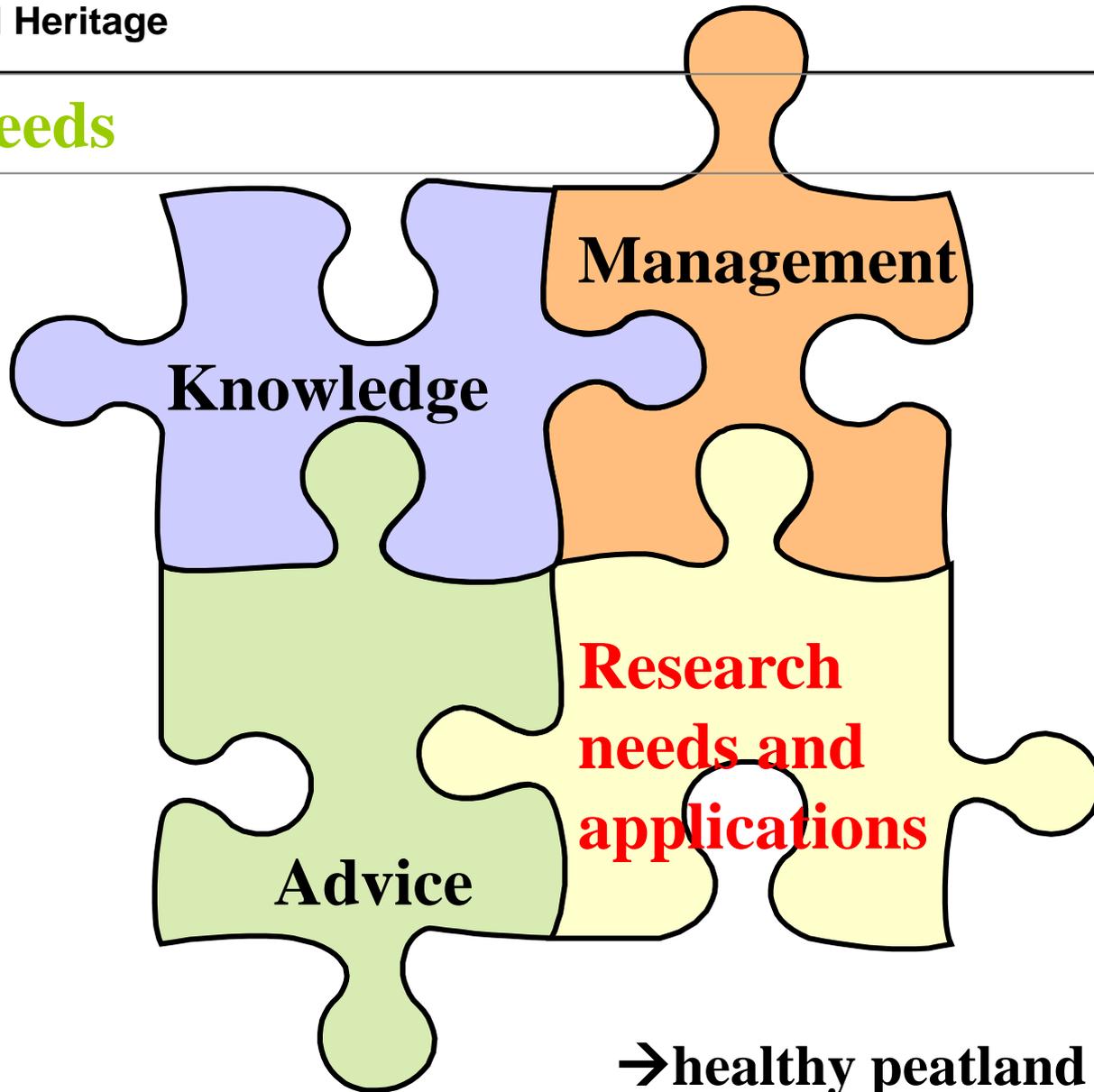
- **IUCN Peatland Programme Report, 2011**
- ***Peatland Action* active**
- **National Peatland Plan, June 2014... responses**
- **'Peatlands definitions' report, SNH 2014**



What do we need?



Peatland needs



→ healthy peatland resource



Nine research areas identified in Peatland Plan

- State
- Extent of restorable peat
- Impacts of net GHG from range of practices
- N and S deposition impacts
- Best practice
- Herbivore impacts
- Muirburn impacts
- Maximising ecosystem benefits
- How to get greater restoration



What do we know?

Huge effort has gone into pooling knowledge and experience, notably IUCN Peatland programme...major breakthrough on restoration



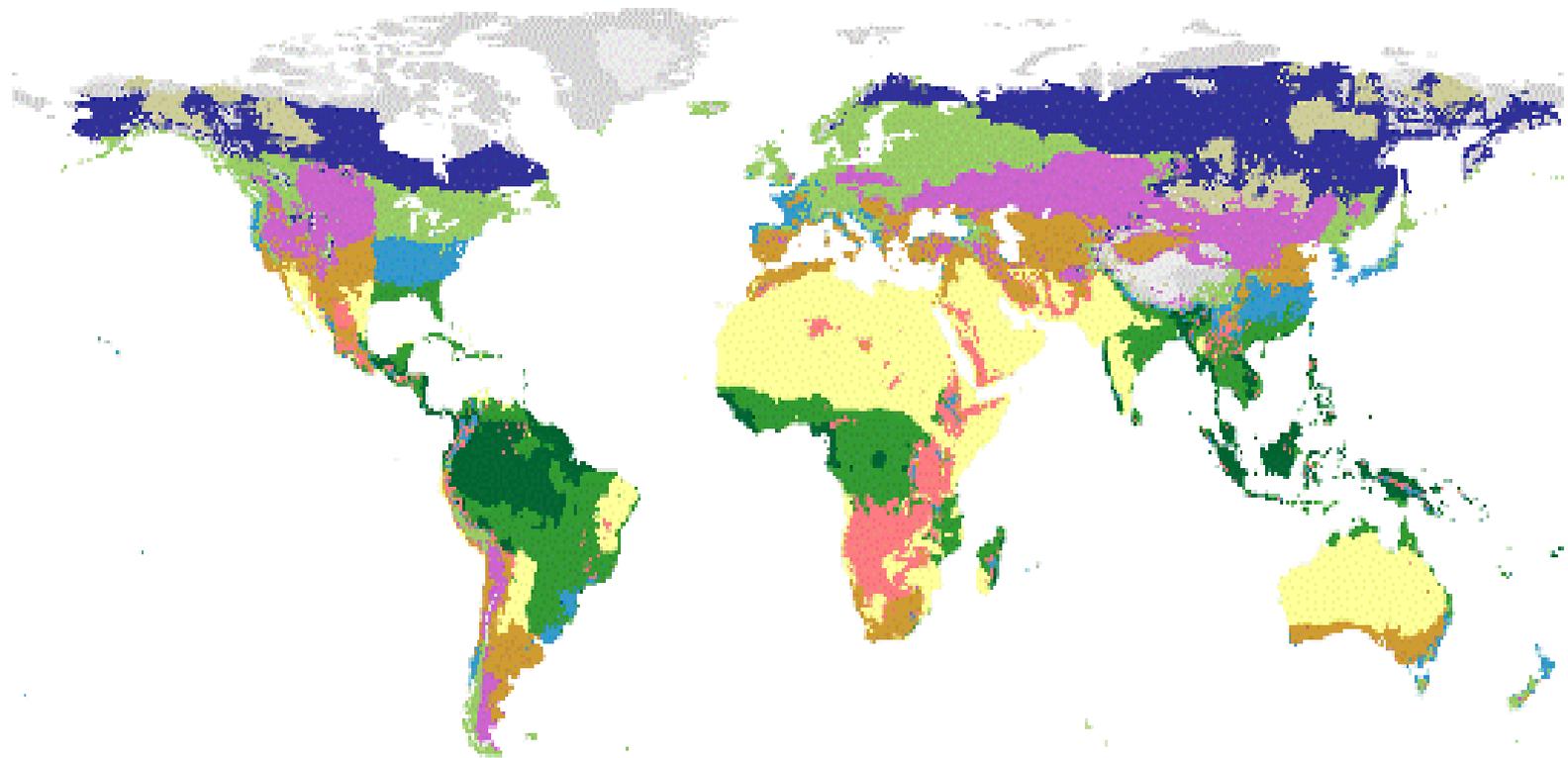
What do we know?

- Broad distribution and extent
- Have wide ambition to secure healthier peatlands
- Many values of healthy peatlands assessed
- Need to have good evidence base on condition, biodiversity, carbon and other benefits
- Have track record of peatland restoration and management



Ecosystems respond slowly to management

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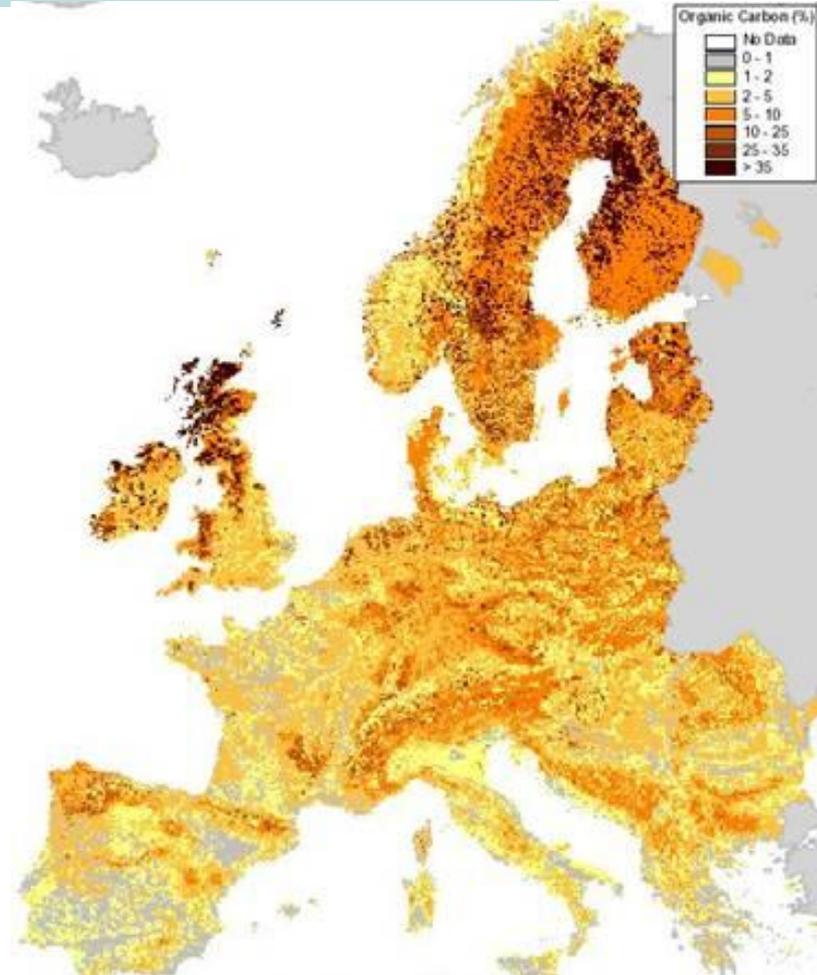
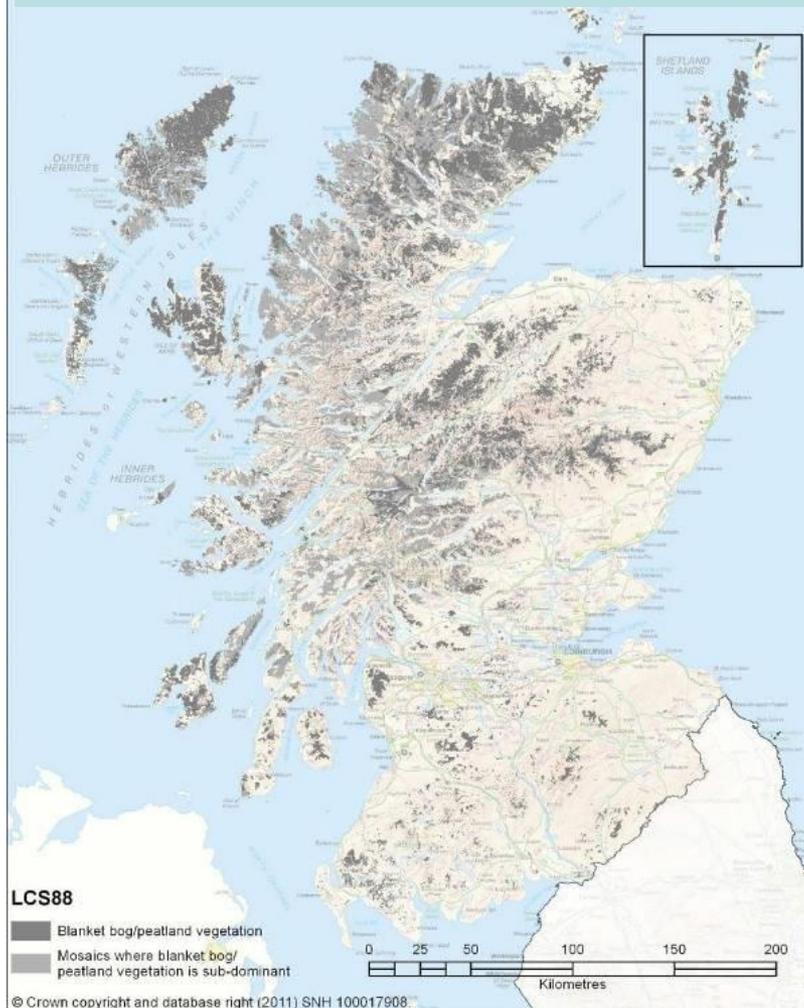


- | | | |
|---|---|---|
|  Tropical, montane |  Warm temperate, moist |  Boreal, moist |
|  Tropical, wet |  Warm temperate, dry |  Boreal, dry |
|  Tropical, moist |  Cool temperate, moist |  Polar, moist |
|  Tropical, dry |  Cool temperate, dry |  Polar, dry |



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Peatland distribution – Scotland and Europe



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What do we not know?



What do we not know?

- Extent of peatlands, except at broad level
- Extent of C rich soils – depth and condition
- Impacts on GHG, biodiversity, water etc of:
 - + Drainage
 - + Burning
 - + Plantation restoration
 - + Deer grazing/trampling
 - + Renewables
 - + etc



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Table 1. Comparison of full soil-based emissions based on a worked example using the equations and Tier 1 emission factors presented in the IPCC 2013 Wetlands Supplement (all values recalculated to t CO₂e ha⁻¹ y⁻¹). Positive values represent an emission to the atmosphere ie globally warming

Land use category	Soil CO ₂ emissions (includes CO ₂ from DOC as per eq. 2.2, Chapter 2, IPCC 2013 Supplement)	Soil CH ₄ emissions (includes emissions from site and ditches)	Soil N ₂ O emissions	Total soil-based emissions, inclusive of GWP conversion for CH ₄ and N ₂ O
Forest Land, drained	10.64	0.20	1.31	12.1 = ΔC-SO
Cropland, drained	30.06	1.46	6.08	37.6 = ΔC-LU
Grassland, drained, nutrient-poor	20.53	0.70 (assuming EF for shallow-drained grasslands)	2.01	23.2 = ΔC-LU
Peatland managed for extraction	11.36	0.82	0.14	12.3 = ΔC-LU
Rewetted organic soil	0.004	1.72	Assumed negligible	1.7 = ΔC-LU

ΔC-SO: soil-based emissions; ΔC-LU: net emissions from the land use category





Remove all the trees and have no further re-stocking?

What do we need?

- Extent and condition of resource
- Clarity and agreement on impacts
- Management tool to guide best practice
- + Carbon calculator
- + Biodiversity check sheet
- Land management advisory capability
- Monitoring as part of restoration



What else do we need?

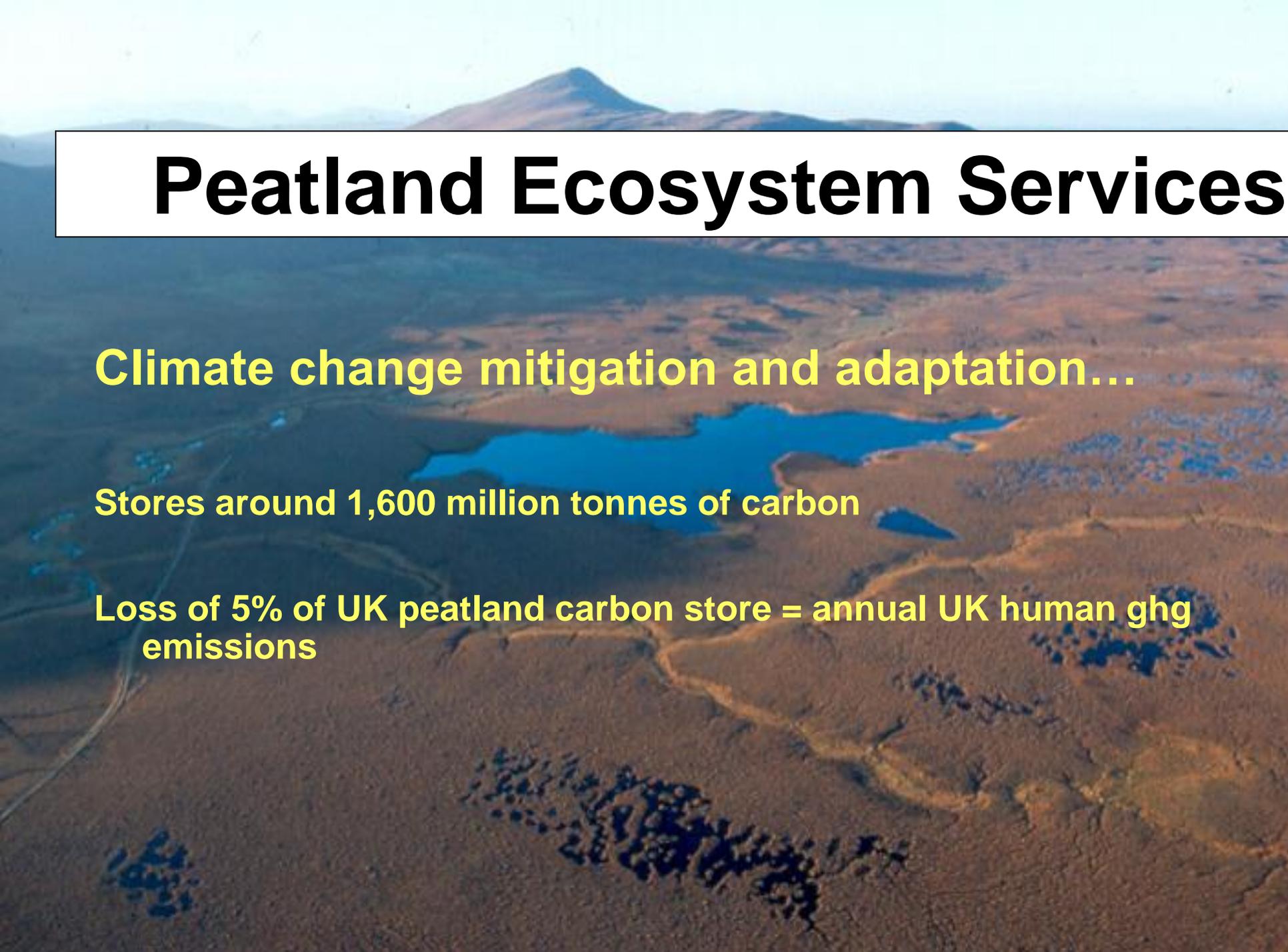
- Clarity on climate change impacts and mitigation
 - Rainfall changes, and impacts on erosion, peat growth and bird productivity
 - Deer trampling in past and current
 - Adaptive management through restoration
- End point – when is enough restoration sufficient?
- Rounded understanding of ecosystem services
- Understanding of economic and social constraints and drivers



Peatlands now increasingly valued for the 'services' they provide ...

- **Supporting – Soil formation, water and nutrient cycling**
- **Provisioning – Food (sheep, deer, cattle), peat, 70% of water from uplands**
- **Regulating – Flood prevention, climate regulation, carbon store**
- **Cultural – Fabric of cultural and community identity, enjoyment of nature**



An aerial photograph of a peatland landscape. In the foreground and middle ground, there are several small, irregularly shaped lakes and ponds, some of which are dark blue, while others are lighter. The surrounding peatland is a mix of brown and tan colors, with some areas appearing more saturated. In the background, a large, rounded mountain peak rises against a clear sky. The overall scene is a vast, open landscape with a mix of water and peatland.

Peatland Ecosystem Services

Climate change mitigation and adaptation...

Stores around 1,600 million tonnes of carbon

Loss of 5% of UK peatland carbon store = annual UK human ghg emissions

Can have large scale restoration through ditch blocking...



Even at the extreme end you can succeed



Woodhead estate, Bleaklow Moor....in time will improve



Still capable of improvements...



In time...



Funding – who pays for all of this work?



Coordination and communication

- Role of Research Group?
- Communicating best practice – how?
- Contribution of Citizen Science – who can help, and how?



Some challenging issues... massive erosion of mountain peatlands

- **Monadhliaths in the western Cairngorms are dominated by blanket bog, much of which is significantly eroded**
- **Area drains into the River Spey - important for salmon and other species**



- **River Spey drains through the Insh Marshes - important for fen communities**
- **We need to restore the plateau to help nature downstream...and we need to promote this through local communities**



Today...review...

- What is known
- What is required through research to meet 2025 ambition
- How best to achieve this

