IUCN National Committee United Kingdom

Peatland Programme

Peatland Restoration

An introduction

© Montgomeryshire Wildlife Trust

IUCN UK Peatland Programme

IUCN National Committee United Kingdom

Peatland Programme

The IUCN UK Peatland Programme was created in 2009 to meet an overwhelming need to raise awareness of peatland restoration in the UK. Improving the understanding of peatland functions such as greenhouse gas emissions, promoting knowledge exchange between the peatland community, informing policy and legislation up to EU level and promoting good practice are some of the core objectives that the programme champions.

The work of the IUCN UK Peatland Programme is overseen by a coalition of environmental bodies including John Muir Trust, Scottish Wildlife Trust, Yorkshire Wildlife Trust, RSPB, North Pennines AONB Partnership, Moors for the Future and the University of East London.

Monitoring the Flow Country © Norman Russell

INTRODUCTION

What is peatland restoration?

Peatlands are special environments that hold a wide array of unusual and threatened wildlife as well as being important carbon stores and sources of drinking water. A waterlogged habitat, past management for agriculture, forestry and commercial mining activity, has often resulted in large scale draining, which has left most of our peatlands in a damaged and deteriorating condition.

Peatland restoration aims to return damaged peatlands to a stable state where they are able to function naturally and support their typical wildlife. This is mainly achieved by providing the right stabilised, water level conditions to support the key peatland vegetation that is responsible for laying down and protecting the peat carbon store.

Rewetting and restoring damaged peatlands is a proven technology that has been well developed in projects across the UK and internationally (see IUCN UK PP: UK Peatland Restoration Demonstrating Success). Different techniques exist for the variety of peatland conditions with the most important principle being to reverse the drainage and reduce grazing or burning to ensure the right water saturation and growth of peat forming plants. In extreme cases where widespread erosion has led to gullies and bare peat, then re-vegetation may be required. Peatlands damaged by conifer planting or encroachment by trees and shrubs requires their removal.

Why is peatland restoration needed?

Peatlands are a unique and valuable habitat of which only 4% remain undamaged in the UK.

Healthy peatlands sequester carbon but damaged peatlands become a carbon source through the release of CO_2, dissolved organic carbon and particulate organic carbon. The UK's damaged peatlands hold over 3 billion tonnes of carbon and if only 5% of that is lost it would equal the total annual greenhouse gas emissions of the entire country from fossil fuel use.

Particulates from eroding and damaged peatlands enter watercourses, affecting drinking water quality and aquatic biodiversity, whilst the more rapid flow of water from these areas can create flooding problems.

The species that inhabit peatlands are often specialised and unable to survive when conditions alter. Archaeology degrades as it is exposed by peat erosion and the upland landscape changes as underlying mineral is exposed and vegetation is unable to establish.

Peatland restoration has been shown to bring benefits for carbon, water and biodiversity. Unless urgent action is taken to prevent further deterioration of our damaged peatlands the costs to society could reach £billions, far outweighing the cost of repair now.

The Peatland Challenge

A Commission of Inquiry into the UK's peatlands set a challenge for 1 million hectares to be in good condition or under conservation management by 2020.

This work was supported across a wide range of public and private bodies, land managing organisations, farmers, sporting estates as well as community groups and environmental organisations. Farmers recognise that eroding peatlands with deep gullies are a threat to livestock, and grouse moor managers have supported peatland restoration as part of good management of sporting estates.

Across the UK there have been many examples of peatlands being restored in our most important wildlife sites where the statutory conservation designations have enabled large scale restoration with the support of EU and UK government funds. Elsewhere public funds have helped land managers and community groups to repair and manage damaged peatlands. However if we are to tackle the full enormity of the problem further resources are required with the help of the private sector.

The Peatland Code has been developed by the IUCN UK Peatland Programme as an initiative to support private funding through quantifying the carbon gains and providing standards ensuring genuine environmental benefits.

A. Dove Stone
B. Exmoor Mires Partnership
C. Falklands
D. Flow Country
E. Keighley Moor
F. LIFE Active Blanket Bog, Lake Vyrnwy
G. Marble Arch Caves, Cuilcagh Mountains
H. May Moss
I. Migneint
J. MoorLIFE, Moors for the Future Partnership
K. North Pennines AONB Partnership's Peatland Programme
L. Pumlumon
M. SCaMP, Forest of Bowland
N. Whitelee
O. Yorkshire Peat Partnership
P. Blawhorn Moss
Q. Humberhead Peatlands
R. Lancashire Mossland
S. Langlands Moss
T. Malham Tarn
U. Red Noss
V. Great Fen
W. Somerset Levels and Moors
X. Anglesey and Llyn LIFE project

Location of partner organisation peatland restoration projects. Some projects comprise more than one site or extend over a much larger area not depicted.

Research, monitoring and survey

An important part of any restoration work is to carry out baseline surveys and to monitor changes in order to improve our understanding of the peatland processes and further quantify the benefits for climate, water and biodiversity. Experience gained through such work has already proven useful not just in the UK but in helping peatland nations across the world.

Grip blocking

Wooden dams in Yorkshire © IUCN UK Peatland Programme

Grips (man-made drains) have been dug across much of our peatlands. Many have become badly eroded and the impact of drainage combined with other factors has led to the development of large eroding gullies in many areas. Blocking these grips can help to restore the water table and prevent further peat erosion.

Grip blocking techniques vary depending on the condition of the grips, so they are surveyed prior to restoration. Some grips have been blocked by vegetation and require no work. The grips that are still able to flow are categorised according to size. Smaller grips that are up to 2m wide and where less erosion has occurred can be fitted with dams, usually made from peat, that are installed to restore the natural hydrology and prevent continued erosion.

Peat is gathered from the base of the grip or alongside it and is used to create a wedge-shaped dam that is wider than the grip either side to prevent water flowing around it. Dams are built higher than the surrounding ground level to account for subsidence as they age. A small, crescent-shaped overspill channel is created on the down slope side of the dam to ensure excess water is dispersed without causing surface erosion. Dams are spaced between 6 and 10m depending on gradient and vegetation conditions. Bare peat, including the top of the dam, is revegetated using previously set aside vegetation to prevent oxidisation of the peat. Timber dams can also be used.

Stone dams are used in grips measuring between 1m and 2m wide or in smaller grips where erosion is down to the mineral layer. Heather bale dams can be used as an alternative where peat is shallow.

Gully management

Some of the grips, particularly on sloping ground, have become so badly eroded that they have become large deep gullies. Other factors such as pollution, burning and grazing exacerbate the impact of drainage and lead to gully erosion.

The objective in repairing gullies is to reduce water flow to enable trapping of sediment or, in larger gullies, stabilisation and revegetation of the eroding, 'hagged' sides to prevent further collapse and widening of the channel.

Peat dams, as used in grips, are effective in gullies up to 1m wide. Stone dams are used in gullies measuring between 1m and 2m wide to slow the flow of water and trap peat sediment.

Gullies wider than 2m are too large to dam so, where diggers can access, the eroding sides are reprofiled to a moderate angle of 33-45°. The newly angled slope is revegetated with the previously undermined vegetation. Turves adjacent to the gully can be used to fill small gaps. Where there is insufficient existing vegetation, heather brash can be spread in the same way as on bare peat. This reprofiling technique is also used on isolated peat hags not associated with gullies.

Reprofiling © North Pennines AONB Partnership

Bare peat restoration

Exposed bare peat is caused by a number of factors including livestock movement and overgrazing, vehicle damage, peat extraction for fuel use and the most widespread cause: wild or badly managed fires.

Bare peat without a vegetative cover is exposed to the erosive forces of wind, water and livestock, resulting in the rapid stripping off of peat, often down to the subsoil, mineral or bedrock. Eroded peat is usually washed into watercourses along with silt from any mineral base material that has become exposed as the peat is removed.

One of the most commonly used techniques to revegetate bare peat is to spread heather brash that is rich in mosses, that grow naturally on wet heath or drier peat bogs, with moorland seed, lime and fertiliser added as required. The brash stabilises the peat surface and creates microclimates for bog vegetation to establish.

Brash spreading © North Pennines AONB

Sphagnum propagation

Sphagnum is the most important species both biologically and structurally in the restoration of peatland. If Sphagnum is found locally to a degraded site and the bare peat treated so that it is less hostile to plant communities then it is possible for it to recolonise. However, on sites where there is no longer any source of Sphagnum a restoration method growing in importance and popularity is that of propagating Sphagnum offsite, transporting it in and inoculating the degraded sites.

Several methods of Sphagnum inoculation are being trialled at present, with promising results. These trials will inform a set of clear guidelines for practioners in the future.

Once the Sphagnum has established a moorland plant community starts to build up and water is retained on the peatland.

Providing access and public enjoyment of nature

On first appearances, peatlands may seem lonely and desolate places, but look a little closer and you will find a home for rare and threatened wildlife, and a tranquil place where people can unwind and relax.

Peatland restoration safeguards these habitats for people and wildlife. Several restoration projects also involve the local community with surveying, monitoring and restoration work, making them a part of work going on in their local area.

Tourism can also be an additional benefit of peatland restoration and ongoing its management as tourists are attracted to these often remote rural areas, bringing both employment and economic benefits.

Visitors to a peat bog © Norman Russell

Contact us

For more information about peatland restoration techniques please contact us:

IUCN UK Peatland Programme,
Harbourside House,
110 Commerical Street,
Edinburgh
EH6 6NF

Website: www.iucn-uk-peatlandprogramme.org

We are currently working on a detailed guide on good practice for peatland restoration, which will be available online in early 2016.

Thank you

Thank you to Yorkshire Peat Partnership, a partner of the programme, for informing the content of this leaflet. Thanks also to North Pennines AONB and Yorkshire Wildlife Trust for their contribution.

Yorkshire Peat Partnership

The Wildlife Trusts — Yorkshire Wildlife Trust

North Pennines Area of Outstanding Natural Beauty — Geoparks

This guide and associated material can be downloaded from

www.iucn-uk-peatlandprogramme.org

The International Union for the Conservation of Nature (IUCN) is a global organisation, providing an influential and authorative voice for nature conservation. The IUCN National Committee UK Peatland Programme promotes peatland restoration in the UK and advocates the multiple benefits of peatlands through partnerships, strong science, sound policy and effective practice.

IUCN National Committee United Kingdom

Peatland Programme