THE PEATLAND

Wansbeck Restoration for Climate Change

GROUNDWORK CHANGING PLACES CHANGING LIVES

LANDSCAPE ARCHITECTS

Peatland stores more carbon than woodland
The project aims to restore peat bogs on deforested land

Carbon Storage

Peatlands are among the most carbon-rich environments on Earth. In fact, peatlands' carbon storage accounts for twice as much as that of woodlands' despite only covering 3 % of the global land surface. However, 80 % UK peatlands are damaged due to peat extraction, drainage, burning and tree planting. This increases atmospheric carbon dioxide and escalates climate change.

Biodiversity

As the largest semi-natural habitat in the UK, peatlands boost biodiversity due to their waterlogged conditions and vegetation. Healthy peatland is important particulary for species at risk, such as curlews, golden plover and dunlins. This unique environment also enables us to observe the past changes in biodiversity as seeds from plants are preserved without decomposing. 1m of peat is worth approximately 1,000 years of history!

Flood Prevention & Water Quality

Restoring peatlands is a natural but radical way to manage flooding. Blocking drains to re-wet peatland reduces the amount and speed of the water reducing the likelihood of flooding downstream. Restoration of peatlands contributes to high-quality/affordable drinking water as well. A quarter of the UK's drinking water is sourced from peatlands, which is naturally purified when areas of peat are not damaged.

WRCC will restore mixed habitats, showcasing how different landowners can come together to address climate change, reduce greenhouse gas emissions and promote carbon storage, in a way that benefits nature and society. WRCC will create/restore 6 priority habitats over 10 sites across 3 estates totalling 144.1 ha of direct habitat improvement/creation in rural Northumberland restoring 6,303 ha of river catchment in the Mid-Northumberland national character area.

NATURAL ENGLAND · GROUNDWORK CHANGING PLACES CHANGING LIVES · Environment Agency · WOODLAND TRUST · Northumberland County Council · MIDDLETON NORTH · Northumbria University NEWCASTLE

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Part of the Nature-based Solutions for Climate Change at the Landscape Scale Programme led by Natural England in close partnership with the Environment Agency, Forestry Commission and RBG Kew, Wakehurst. This Shared Outcomes Funded Programme is sponsored by Defra and DESNZ.

National Trust · LITTLE HARLE FARMING PARTNERSHIP · Forestry England

SPECIES-RICH GRASSLAND (HAY MEADOW)

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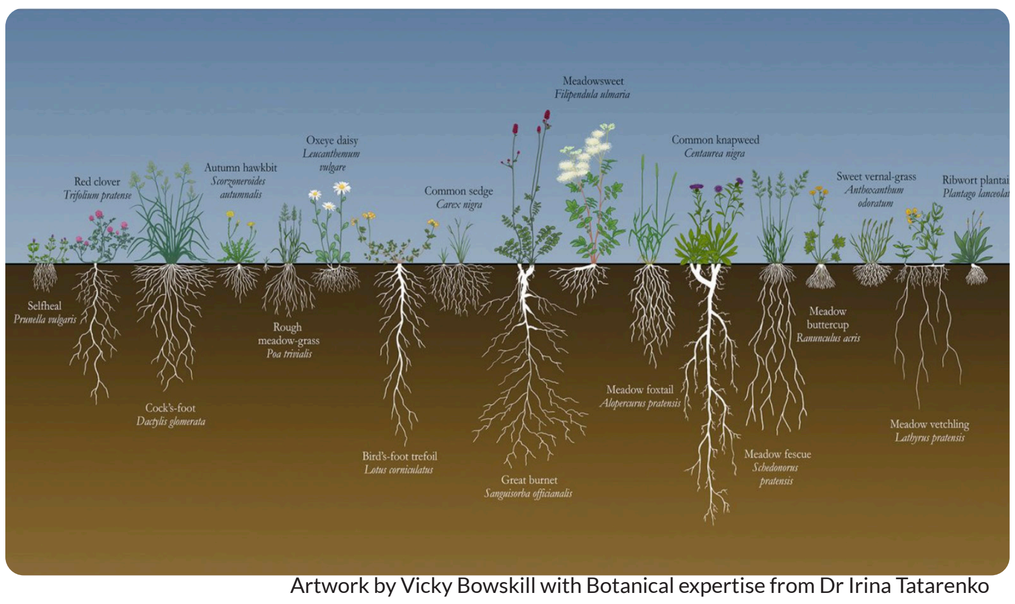
A diverse range of species in grassland habitats improves the whole local environment from the roots up

Soil Health

In species-rich grassland, soil health is continually improved by the plants' roots system. Having a range of species (50 species in 1m^2), creates a diverse rooting system with different root depths and widths, expands carbon storage potential and builds an active community of bacteria, fungi and insects in the soil. Well-structured and healthy soil below the ground will sustain the whole environment above the ground.



Artwork by Vicky Bowskill with Botanical expertise from Dr Irina Tatarenko

Biodiversity

As a traditional farming practice, hay meadows play an important role in the local environment throughout the year. Through the spring and early summer, the fields are left to grow naturally, attracting a wide variety of birds and insects to feed/nest on, as well as to pollinate. In late June/July, fields are cut back for haymaking to maintain species diversity in meadows as well as provide fodder for livestock.

Carbon Storage

Since the 1930s, 97 % of hay meadows in the UK have disappeared due to changes in agricultural practices. As a result, 14 million tonnes of carbon dioxide have been released into the atmosphere. When managed carefully species-rich grasslands can lock in carbon alongside boosting biodiversity. Hay meadows can form an important role in combatting climate change.

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Forestry England

SAMPLING METHODS

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Monitoring is a crucial part of the restoration project in order to gather a reliable scientific evidence base

Soil Monitoring

Soil monitoring involves measuring moisture and extracting soil cores. The soil samples are then sent to a laboratory for further analysis. This allows us to compare the carbon storage efficiency of different types of habitats and interventions and assess which are the most effective at addressing climate change.

Photo by Natural England

Vegetation Monitoring

Using a 2m x 2m quadrat square, the percentage coverages of bare ground, litter, grasses, herbs, reeds and sedges are measured and analysed. This will allow us to understand if the biodiversity of the habitat has increased/decreased following the project work and if the type and mix of plant species has changed.

Gas Flux Monitoring

Gas flux monitoring involves using an analyser machine to measure the flows of carbon dioxide that are taken in by vegetation and the carbon dioxide released from the soil in different habitats. This will allow us to assess the carbon storage efficiency of different types of habitats and interventions and therefore which are the most effective at addressing climate change.

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DECIDUOUS WOODLAND

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LANDSCAPE ARCHITECTS

Deciduous woodland provide huge carbon storage, and supports a rich biodiversity

Increases biodiversity

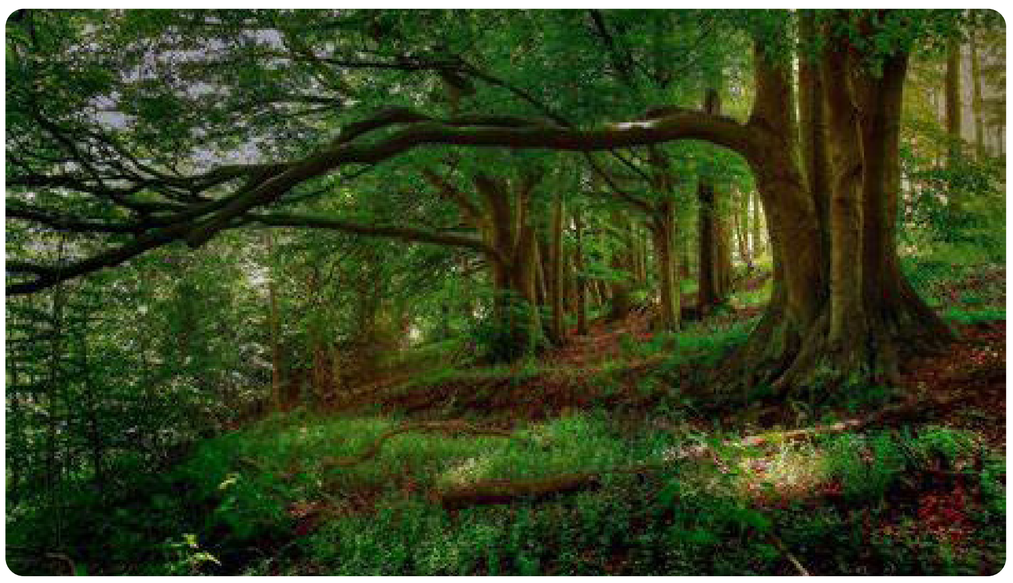
Deciduous woodlands are rich in wildlife indigenous to Britain. The wide variety of tree species found in a deciduous woodland supports a huge number of insects, birds and mammals. These native species depend on each other as part of an intricate, connected ecosystem. Planting new native woodland will form a key role in restoring Britain's natural environment.

Regulation of microclimate

Deciduous woodlands provide shade and regulate temperature in their surroundings, helping to create cooler microclimates. Deciduous trees have a unique seasonal cycle where they shed their leaves in autumn. During the winter months, when the trees are bare, the woodland floor reflects more sunlight, which can have a cooling effect on the local and regional climate. This is known as the albedo effect.

Great carbon capture

Deciduous trees absorb carbon dioxide from the atmosphere during photosynthesis and store carbon in their biomass, including roots, stems, leaves, and soil. As they grow, these trees accumulate carbon, helping to reduce the amount of carbon dioxide in the atmosphere. The woodland floor and soil beneath deciduous trees act as significant carbon store where leaf litter, fallen branches, and other natural materials decompose and become incorporated into the soil, creating a carbon-rich layer.



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HEDGES

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Hedges help to capture carbon, increase biodiversity, and improve connectivity

Biodiversity

Well-designed hedges provide habitat and food sources for various birds, mammals, and insects, promoting biodiversity. Landscapes rich in nature are more resilient to the impacts of climate change because they can contribute to maintaining healthy soil, water retention, and other nature's benefits. Hedges act as corridors for wildlife, connecting neighbouring habitats.

Water management

Hedges can assist in managing water resources by intercepting surface water and increasing the water that is stored beneath the soil. This helps maintain consistent water availability, especially in regions prone to drought or flooding due to climate change.

Soil health and erosion control

Hedges can help prevent soil erosion by stabilizing the soil on slopes and along river corridors with their root systems. In addition, healthy soils store carbon and support plant growth, which can help reduce climate change impacts.

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RIVER CORRIDORS

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Restored river corridors provide greater biodiversity and assist with natural flood management

Natural rivers

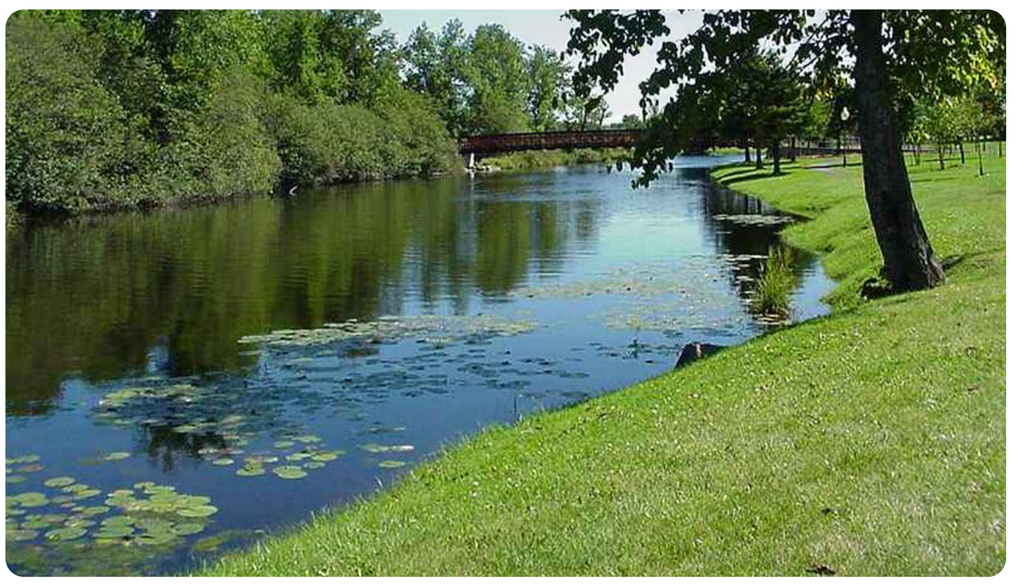
Restoring water courses by fencing to exclude lifestock helps river corridors function more naturally. Taller vegetation filters surface runoff and improves water quality allowing aquatic species to thrive.

Recreation and beauty

River corridors contribute to the well-being of local communities by providing recreational spaces, supporting well-being and enhancing the enjoyment of the landscape.

Natural flood management

Riverbank vegetation can also absorb and slow down stormwater runoff, reducing the impact of flooding and preventing pollutants from reaching the river. This natural stormwater braking system helps reduce the impacts of extreme rainfall.



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