

HABITAT NETWORKS IN THE NATIONAL PARK

PEATLAND

INTRODUCTION

Our mountain bogs are areas of peatland. Simply put, peatlands are areas where peat is found. Peat is the accumulation of undecomposed plant material that has built up over years and centuries.

Peat is formed on land that remains almost permanently wet from the remains of dead plants that are unable to decompose due to a lack of oxygen. Over time layers of this plant material build up with deeper layers being older than those above. As the layers of peat develop they compact the layers below preventing any further decomposition and so the peat keeps growing. On average peat grows about 1mm every year, and in Scotland we have peatlands that are over 10 metres deep.

The main builders of peat in Scotland are a group of mosses called Sphagnum which thrive in wet conditions and can hold over 10 times their weight in water.

The wet, wild mountains of the Loch Lomond and The Trossachs National Park are therefore the perfect place for this important habitat to form. One type of peatland that grows on many of our mountains has formed a layer so thick it smooths out the features of the land like a blanket on a bed - this is called a blanket bog.

In healthy peatlands, the living vegetation that is currently visible on the surface will form future layers of peat. Plants absorb carbon from the air to grow, and because this carbon is not released as the plants die (as they do not decay), growing peat actually removes carbon from the atmosphere and locks it up. Because of this the peatlands of the National Park store more than 20 million tonnes of carbon. They are the best carbon store we have, so it's vitally important we work with land managers to help protect and restore them.

Sphagnum moss growing in wetland



Peatland, Glenfalloch.



Photo © RJCooper LLTNPA / Peatland ACTION

OUR FUTURE NATURE PROGRAMME AND KEY PRESSURES

What is the future for nature in our National Park? We face a global biodiversity crisis and even in our most special landscapes, nature as a whole is still in real trouble. If we do not halt and reverse this decline, then our world and all of us will have a poorer and more uncertain future.

Our Future Nature programme aims to deliver a positive, exciting vision of this National Park as an exemplar where people can understand, experience and contribute towards a shared vision for restoring nature.

Future Nature

FUTURE NATURE IS CONCENTRATING ON THE FOLLOWING FOUR KEY PRESSURES:



WATER QUALITY

Negative impacts on freshwater and marine water bodies from problems such as pollution from surrounding land uses.



INVASIVE NON-NATIVE SPECIES

The spread of invasive non-native species, which displace our rich native wildlife.



HERBIVORE PRESSURE

Unsustainable levels of wild and domesticated grazing and browsing animals in some upland and woodland areas, leading to reduced tree cover and the erosion of soils, which are important carbon stores.



CLIMATE CHANGE

The impacts of climate change leading to warmer, wetter weather patterns and a subsequent increase in flood events, major landslides and rapid shifts in natural ecosystems.



PEATLAND

68,000ha of the land within Loch Lomond and the Trossachs National Park is covered by peatland making it just under 39% of the land area of the National Park. Healthy peat plays a vital role in carbon storage and combating the effects of climate change, and in maintaining Scotland’s water quality and rich biodiversity. Peatlands reduce flood risk and support farming and crofting.

They are also part of the wild landscapes that attract tourists to Scotland. As the extensive upland blanket bogs in the National Park occur in a mosaic with or in close proximity to the full range of upland habitats we have here, many actions that benefit peatlands will also provide benefits to other upland habitats and the species they support.

Peatland therefore has a prominent role in public understanding and national approaches to nature-based solutions as well as incorporating many key species and habitats across our upland, grassland and bog communities.

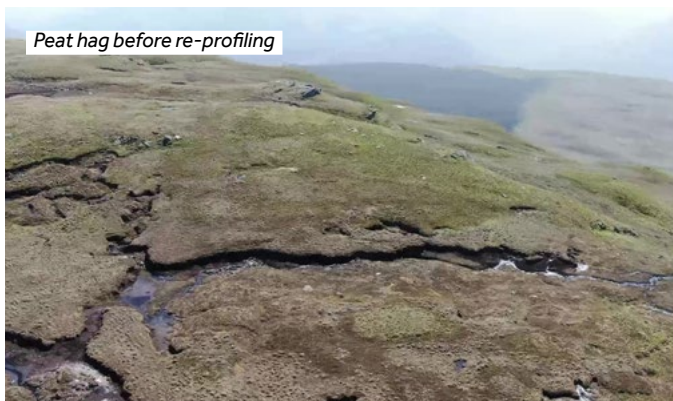
RECLAIMING OUR PEATLAND HABITAT

Historically, our mountains have been managed in a way that has caused damage to the blanket bogs. The peatlands have been drained in an attempt to make the land better for planting trees, or to allow animals to graze (including sheep and cattle). The drying of the peatlands combined with overgrazing by deer and livestock, inappropriate burning, or erosion through recreational use has caused the widespread degradation of the habitat. Damaged peatland is a less attractive home for wildlife.

As well as this, damaged peatlands not only stop absorbing carbon but also start to emit carbon in the form of Greenhouse Gases into the atmosphere as the peat decomposes. These gases contribute towards climate change. The peatlands also release organic matter including carbon into water, which turns it brown.

These particles can silt up fish spawning beds and reservoirs and reduce oxygen in the water, affecting the invertebrates and fish that live in the burns, rivers and lochs. Drier peatlands are more susceptible to wildfires.

However, by working together across large areas of the National Park management of our peatlands can be integrated with other land management activities to ensure the whole landscape is used in a sustainable way. This will involve working with private landowners to draw up and implement deer (and other grazing animals) management plans, forest plans, and peat conservation projects.



OBJECTIVES

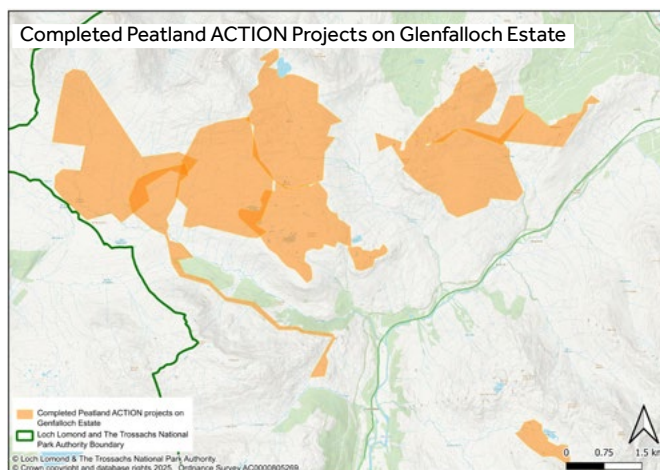
- Peatland recovery:
- Reduce carbon emissions, restore peatland habitats, and smooth water flows through putting peat bogs back on the road to recovery.
- Raise awareness of the value of peatlands in the climate emergency.
- Increase the public's understanding and appreciation of the value of peatland habitats by working in partnership to host public events, talks, and visitor displays

RESILIENCE

- Pilot the use and management of trees, woodlands, peatlands and waterways upstream to reduce the risk of downstream flooding.
- Promote the management of designated sites which move these protected areas towards favourable condition.

GLENFALLOCH CASE STUDY

Since 2018, over 1,000 ha of peatland has been improved on the Glenfalloch Estate. A total of 7 projects have been completed, working in partnership with the Glenfalloch Estate with a variety of different techniques being used.



These projects involved completing surveys across the damaged peatland areas on foot, and using a drone to capture aerial images. From these surveys, the team could then design a plan to restore the peatland that will help to re-wet the area and reduce the amount of carbon being released into the atmosphere.

To stop the peat from drying out any further, skilled contractors reprofiled eroding peat hags, locked historic drainage ditches, built peat dams and installed special, 'leaky' timber silt traps.

HAG REPROFILING

The most recent project, completed in 2025, saw just over 200 ha of peatland improved.

Part of this included the reprofiling of 11km of eroding hag faces. Peat hags are steep faces of bare peat and are vulnerable to erosion. To repair them, skilled operators peel back the layer of vegetation on top of the hag and then rework the peat until it sits at an angle between 30° - 40° and then cover this back up with the vegetation peeled off at the start.

Since the work at Glenfalloch started, the conditions for bog forming vegetation have improved, as have the habitats for birds and beasts! Pools that never existed are now teeming with frogs and dragonflies, and a recent study has found that numbers of greenshank – a rare bird that lives in wetland habitats – have increased since restoration work began.

PEATLAND ACTION

Loch Lomond & The Trossachs National Park Authority is a partner in the Peatland ACTION programme working towards reducing the impacts of climate change. By working with landowners and managers we hope to put on the path to recovery the areas of degraded peat that occur throughout the park.



MITIGATING AGAINST CLIMATE CHANGE

Alongside the long-term climate change and biodiversity benefits, there are indirect economic benefits to conserving our peatlands. Healthy peat bogs provide a vital function within the hydrological cycle, helping to store and release water slowly which reduces the impacts of both floods and droughts.

Peat bogs in poor condition on the other hand can erode during flood events, leading to a loss of water quality, and they do not have the same ability to slow the passage of water downstream. Conserving our mountain bogs helps to mitigate the impacts of flood events downstream and also help to maintain our water quality during these extreme weather events, which are becoming more common due to climate change.

As well as mitigating against climate change, restoring peatlands will also help reduce two of the key pressures in our Future Nature Programme.

- **Poor quality of some lochs & rivers**

Negative impacts on freshwater and marine water bodies from problems such as pollution from surrounding land uses.

By covering degraded peat and putting peatlands back on the road to recovery prevents particulate matter entering our waterways helping keep the waters clear and unchoked.

- **Invasive, Non-Native Species**

The spread of invasive non-native species, which displace our rich native wildlife.

Putting the peatlands back on to the road to recovery produces a habitat that is hostile to some of the invasive species that could dominate on degraded peatlands (e.g. Rhododendron).



Photo © RJCooper LLTNPA / Peatland ACTION

FUTURE PROJECTS

So far, the National Park Authority has worked on over 40 peatland restoration projects funded by Peatland ACTION, totalling over 2,580 ha of peatland restoration. The team are constantly working with landowners to design and deliver new projects, to meet the aspirational Future Nature target of 5,900 ha by 2030.

Peatland recovery – Glen Finglas



Photo © RJCooper LLTNPA / Peatland ACTION

QUESTIONS AND PUPIL ENQUIRY

- What past land use practices have contributed to the decline of healthy peatlands?
- Explain how peat can both store and release carbon.
- List the number of ways to improve the health of peatland.
- What are the economic benefits of a restored peatland?
- What are the biodiversity benefits of restoring a mountain bog?
- Why does there need to be a high water table for sphagnum moss re-colonisation to be effective?
- How old are the oldest Scottish peatlands? - Why are there none any older?

FURTHER READING

Online

- [Peatland Action – project resources](#)
- [Peatland Carbon fact and figures \(NatureScot Publication\)](#)
- [NatureScot Restoring Scotland's Peatlands](#)
- [Peatland restoration course \(SRUC\)](#)
- [Royal Highland Educational Trust: Education pack](#)
- [Royal Highland Educational Trust: Go with the Flow - Peatland Restoration lesson plan](#)

Videos

[Blanket Bog in a bottle experiment](#)

Podcasts

[Bogging Brilliant - Peatland Podcast](#)

Site visits

- Balmaha on east Loch Lomond is a great location to base a field visit, with the National Park Visitor Centre and Outdoor Classroom available for school groups. Conic Hill is a short hill climb accessible through the rear of the car park at Balmaha.
- Other sites suitable for field visits include the hills around Luss, west Loch Lomond.