

Pennine PeatLIFE

The Pennine PeatLIFE project is being led by the North Pennines AONB Partnership in collaboration with Yorkshire Wildlife Trust and the Forest of Bowland AONB Partnership. The project is co-financed by the Environment Agency, Northumbrian Water, United Utilities, Yorkshire Water and European Union LIFE Programme.

Pennine PeatLIFE is restoring 1,353 hectares of blanket bog, working across 16 sites within the protected landscapes of the North Pennines, Yorkshire Dales, Forest of Bowland and Nidderdale. The project is demonstrating new restoration techniques suited to the harsh climate of Northern England. It is also demonstrating the viability and affordability of using unmanned aerial vehicles (UAVs) to monitor vegetation change after restoration. The results of the project are being shared locally, nationally and internationally.

Sphagnum

Sphagnum is a genus of specialist mosses found in waterlogged, acidic and nutrient-poor conditions such as those in bog ecosystems. There are around 30 different species of *Sphagnum* moss in the UK varying in colour and size, but all have the same long, branched structure featuring stem leaves and a round capitula, or head, at the top. Most of the structure of a *Sphagnum* plant is below the ground surface, with only the capitula and top few centimetres visible.

1 capitulum
2 branches
3 stem



www.penninepeatlife.org.uk

Email: info@northpenninesaonb.org.uk

Facebook: <https://www.facebook.com/penninepeatLIFE/>

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Cover image: *Sphagnum medium*

Pennine PeatLIFE delivery partners



Pennine PeatLIFE is funded by



Sphagnum Reintroduction



Species of *Sphagnum*

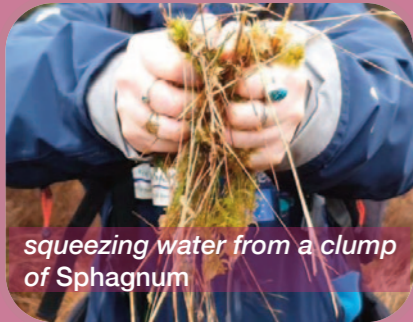
Sphagnum mosses are the primary peat-forming plants and are important species in bog ecosystems. These plants play a key role in the formation of peat which leads to significant carbon sequestration. This peat-based carbon sequestration process in the Pennines started about 8,000 years ago and has been storing carbon since then.

Sphagnum mosses also alter the conditions of their environment, lowering the pH and making it more suitable for other characteristic bog plants to colonise.

Sphagnum mosses can also absorb and hold significant amounts of water — up to 20 times its own

weight. The benefit of this is the moderation of water flow in the landscape during periods of high rainfall. By absorbing excess water and releasing it more slowly into watercourses the risk of downstream flooding reduces.

Sphagnum species grow in most bog environments and vary from common to extremely rare. They all have unique characteristics; some form carpets and tussocks while others cover the surface of pools. In the north of England you are most likely to see *Sphagnum fallax*, *S. papillosum*, *S. capillifolium* and *S. palustre*.



How we reintroduce *Sphagnum*

Reintroducing *Sphagnum* to degraded areas of peatlands where it is absent or scarce is a relatively new area of peatland restoration with limited existing research. One of the main objectives of Pennine PeatLIFE is to demonstrate *Sphagnum* inoculation techniques on 16 heavily damaged blanket bog sites. Five methods are being tested in Pennine PeatLIFE:

1 Brash

Sphagnum-rich heather brash is cut as close to the restoration site as possible. Bags of brash typically contain heather, cottongrasses, feather mosses and *Sphagnum* moss. Bags, weighing up to 200 kg, are airlifted to the restoration site and the brash is spread by hand at about 300 bags per hectare covering all the bare peat.



2 Clumps

Taking clumps from 'healthy' donor sites is done with the proper permissions and undertaken carefully to ensure the impact of removal is minimal. Clumps are harvested by hand at a low density and then replanted by hand at the restoration site in shallow indentations at about one plant every 2 square metres.



3 Plugs

Sphagnum plugs are grown by nurseries on contract. Plugs are planted by hand at about one plant every 2 square metres.

A typical *Sphagnum* species mix used by Pennine PeatLIFE is made of 5 of the main peat builders.



4 Clay pellets

Clay pellets are supplied by peatland contractors. The *Sphagnum* spores are coated in clay pellets so they can be easily transported and spread on site. Pellets are usually spread on the damaged peat by hand at a rate of 10 kg per hectare.



5 Gel

Sphagnum fragments are suspended in a water-based solution and supplied by specialist contractors. The gel is diluted with water taken to site and spread usually by hand. The rate of spread depends on the severity of damage to the site.



As part of the Pennine PeatLIFE project, trials are underway on restoration sites across the North Pennines Area of Outstanding Natural Beauty (AONB), the Yorkshire Dales, and Forest of Bowland AONB. In trial plots, each *Sphagnum* inoculation technique is applied and monitored annually to find out which is the most effective. Donor areas from which clumps have been harvested are also closely monitored to assess any impact on healthy peatlands. The results of these trials will be shared with other peatland restoration organisations and used to inform future restoration decisions.