

Sphagnum monitoring – summary

As the climate warms, it's important to understand whether current methods used to restore peatlands are effective in the long term. One key method is to speed up revegetation by inoculating greenhouse-grown *Sphagnum* moss to bare peat, along with increasing the water table level in the landscape. While some *Sphagnum* mosses are known to be natural colonisers, we still don't have much data on how successful greenhouse-grown mosses are when used in the wild. With rising global temperatures and more droughts, it may be better to choose moss species that can handle climate change, to make restoration efforts last.

To explore this, we studied how *Sphagnum* moss grows over time on upland peatland soil in the Nidderdale National Landscape. We used BeadaHumok™ (or "Humok") — clumps of greenhouse-grown *Sphagnum* with many strands a few centimetres long. After 9 months, Humoks made with a mix of moss species (the "Yorkshire Mix": *S. capillifolium*, *S. subnitens*, *S. medium*, *S. papillosum*, *S. palustre*) covered 18 times more ground than when they were first planted. In comparison, Humoks made with just one moss species grew to 2.5 times their original size after 80 months. No matter what kind of plants were growing nearby (whether heather or grass-like plants), most Humoks were dominated by thicker moss species like *S. palustre* and *S. medium* after a year. Moss like *S. subnitens* seems to help Humoks settle in during the first year. Our findings suggest that using a mix of larger, chunkier moss species is a good way to create a strong and lasting moss layer on damaged peatlands.

Even though more research is needed, the current method of adding *Sphagnum* to damaged peat seems to work well for quick regrowth (less than a year). The Yorkshire Mix works well in heather-dominated peatlands, but could be improved for areas with cotton grass, to get even better results. Future work could focus on testing different moss combinations to create custom mixes for different habitats.

