Restoring rewetted peat extraction sites near Hannover with Micropropagated Sphagnum Moss

Project Summary

Partners	Conservation Authority Region Hannover; Leibniz University Hannover; BeadaMoss Ltd.
Delivery Period	Autumn 2022 – 2025
Project Size	10–20 hectares per year
Species Mix	*Sphagnum medium, S. papillosum*, *S. molle*, *S. rubellum* (micropropagated from local site samples)
Delivery Type	80,000 BeadaHumok® plug plants

Background

This government-supported project **“Insekten beleben Moore”** (“InsMoor” – *Insects Enliven Bogs*) investigates methods to accelerate the restoration of cut-over raised bogs, with a strong emphasis on promoting insect biodiversity. Restoration measures include the creation of pools to introduce structural habitat diversity and the re-establishment of heathland and Sphagnum moss species across formerly intensively exploited peat extraction areas.

The project combines large-scale restoration zones with smaller, closely monitored experimental plots to support scientific evaluation of restoration success.

This project is funded until June 2026 within the Federal Programme for Biological Diversity by the Federal Agency for Nature Conservation with resources from the German Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety.

Challenge

Despite rewetting measures, the sites experience highly variable water tables throughout the year, largely due to their location within an area still surrounded by active peat extraction. This variability made identifying suitable planting locations particularly challenging.

Additionally, the bog lies at the topographical margin of where raised bog establishment is only just feasible, owing to comparatively low annual precipitation. These conditions significantly increased the risk of plant loss due to both drought and prolonged period of flooding.

Our Approach

Between 2022 and 2025, BeadaMoss® supplied 20,000 BeadaHumok® plug plants annually, totalling 80,000 plugs. Each plug contained *Sphagnum* mix including *S. medium*, *S. papillosum*, *S. molle*, and *S. rubellum.*

All cultivation material originated from rare samples collected directly at the project site, Totes Moor (Region Hannover, Germany), ensuring strong local provenance. Species selection focused on resilience across a broad range of hydrological conditions.

Implementation

Similar to the planting of six heathland species used elsewhere in the project, the *Sphagnum* plugs were installed by several landscaping and ecological restoration contractors under close scientific supervision.

Plantings followed an experimental design and were carried out across a range of substrates, from highly to slightly decomposed peat, either with existing pioneer vegetation (primarily *Eriophorum angustifolium*) or on bare peat surfaces. Some plugs were positioned along the waterline of newly created pools, while others were planted in clusters of three to promote faster coalescence into larger *Sphagnum* patches.

Early Results

High fluctuations in the local water table led to plant losses at several sites due to desiccation or long-term flooding. However, at more favorable locations, exceptional growth was observed, with some *Sphagnum* patches reaching diameters of up to 45 cm within two years (typical growth: ~10 cm).

The best performance was recorded where plugs were planted within sparse pioneer vegetation of *Eriophorum angustifolium*, with a vegetation cover of approximately 10–30%.

Impact Metrics

Metric	Value	Notes
Area Restored	17 hectares	Wide-spaced initial planting, including areas around newly created pools

Metric	Value	Notes
Plug Survival Rate	Variable	Strongly dependent on site conditions and annual rainfall following planting
Local Jobs Supported	4–8	Varied annually

Stakeholder Feedback

“With less than one percent of living yet degraded bog remaining at the project site, the BeadaMoss® plugs grown from local material have been invaluable in reintroducing *Sphagnum* species to former peat extraction areas.”
— Project Site Manager, *Insekten beleben Moore*