



Yorkshire Peat Partnership Technical Specification 4

Introducing sphagnum into existing degraded vegetation

1. Introduction

For a variety of reasons (e.g. pollution, burning, grazing, drainage) there are large areas of the Pennine blanket bog habitat that have lost the protective layer of *Sphagnum* mosses. Much of the area is dominated by heather. Without a protective layer the surface of the peat underneath the dwarf shrub layer may erode through surface run-off which washes significant amounts of dissolved organic carbon into receiving watercourses which has a substantial impact on water quality downstream. In addition, lack of a *Sphagnum* layer means reduced topographic variation which is known to play a part in reducing flood peaks and increasing floodwater retention on the bogs. Therefore, one of the objectives of YPP's restoration work is to restore *Sphagnum* to these areas.

2. Sphagnum introduction techniques

2.1. Site preparation

- 2.1.1. Existing wetter areas of bog where grips/gullies have been blocked and the hydrology has been significantly improved are suitable for *Sphagnum* introduction.
- 2.1.2. Introduction should take place where the competing vegetation has been recently removed. This is best achieved through cutting with low-ground pressure mowing equipment
- 2.1.3. The specific locations for *Sphagnum* introduction will be mapped by the nominated officer.

2.2. *Sphagnum* harvested from donor sites (See Figure 4.1).

- 2.2.1.1. Where appropriate donor sites are available, *Sphagnum* clumps can be harvested and transported to the restoration site for planting.

- 2.2.1.2. Clumps of *Sphagnum* are harvested (preferably by hand) from a suitable donor site approved by YPP staff prior to harvest.
- 2.2.1.3. The donor site must not suffer long-term damage as a result of harvesting.
- 2.2.1.4. YPP recommends that less than 10% of the donor site should be harvested and requires a bio-security risk assessment (see Technical Specification xx) to be made of any donor sites that are not within or adjacent to the site to be restored.
- 2.2.1.5. The donor site is surveyed by a suitably experienced botanist prior to cutting to determine the species composition which should be as close as possible to the ideal mix outlined in Table 1.
- 2.2.1.6. If there is suitable access the *Sphagnum* clumps can be harvested close to the restoration site and transported by low ground-pressure vehicles keeping damage to an absolute minimum.
- 2.2.1.7. For large areas or remote areas with difficult access and to avoid significant ground damage the *Sphagnum* must be delivered to the site by helicopter.
- 2.2.1.8. There is currently no evidence-based information on the best times to plant the clumps so YPP proposes planting in late winter spring to give them a full growing season before the next winter.
- 2.2.1.9. Clumps are heeled into the bare peat surface in wetter areas at a rate of 1 clump per m².
- 2.2.1.10. A number of contractors provide clumps of *Sphagnum* from regular donor sites.

2.2.2. *Sphagnum* grown under horticultural conditions.

- 2.2.2.1. Where there is a lack of a suitable donor site *Sphagnum* propagules are now available from a single horticultural supplier (Micro-propagation Services (E.M.) Limited) under the BeadaMoss® brand which have been grown using micro-propagation techniques from fragments of locally sourced material. All of the species listed in Table 2 can be provided in these products. These come in several forms for use in a range of moorland restoration conditions but for this purpose YPP currently uses BeadaHumok™ - micro-propagated *Sphagnum* grown to produce dense clumps containing many *Sphagnum* strands several centimetres long (See Figure 4.2). (We are trialling other methods).
- 2.2.2.2. BeadaHumok™ is supplied in ready-to-use rolls of 20 in plastic bags in returnable rigid crates (need to be planted within 7 days of delivery).
- 2.2.2.3. Planted by hand at a rate of 1 clump per m², ideally with a dibber but can also be heeled in. Must be bedded into the peat after planting.
- 2.2.2.4. Should establish immediately and show significant growth within a few weeks.

- 2.2.2.5. YPP have not used this product extensively in bare peat restoration but have had good initial results where planted into existing sparse vegetation (areas cut for brash in between blocked grips) .

Table 1 Sphagnum mix

	Species	%
Base composition	<i>S. capillifolium</i>	30
	<i>S. papillosum</i>	30
	<i>S. palustre</i>	30
	<i>S. subnitens</i>	10
Additional species depending on conditions (adjust base composition % accordingly)	<i>S. inundatum</i> *	5
	(<i>S. tenellum</i> **)	10
	(<i>S. magellanicum</i> ***)	5

**bare peat only. Adjust the content of other species to accommodate it.

***not for general use but may be worth adding in specific circumstances where it has been found on nearby moors. Adjust the content of other species to accommodate it.



Figure 4.1. Photo of planted Sphagnum clumps

Figure 4.2 Photo of BeadaHumok™



(a) Delivered



(b) Planted