MOORS FOR THE FUTURE PARTNERSHIP

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Best Practice Guide to

Increasing Heterogeneity

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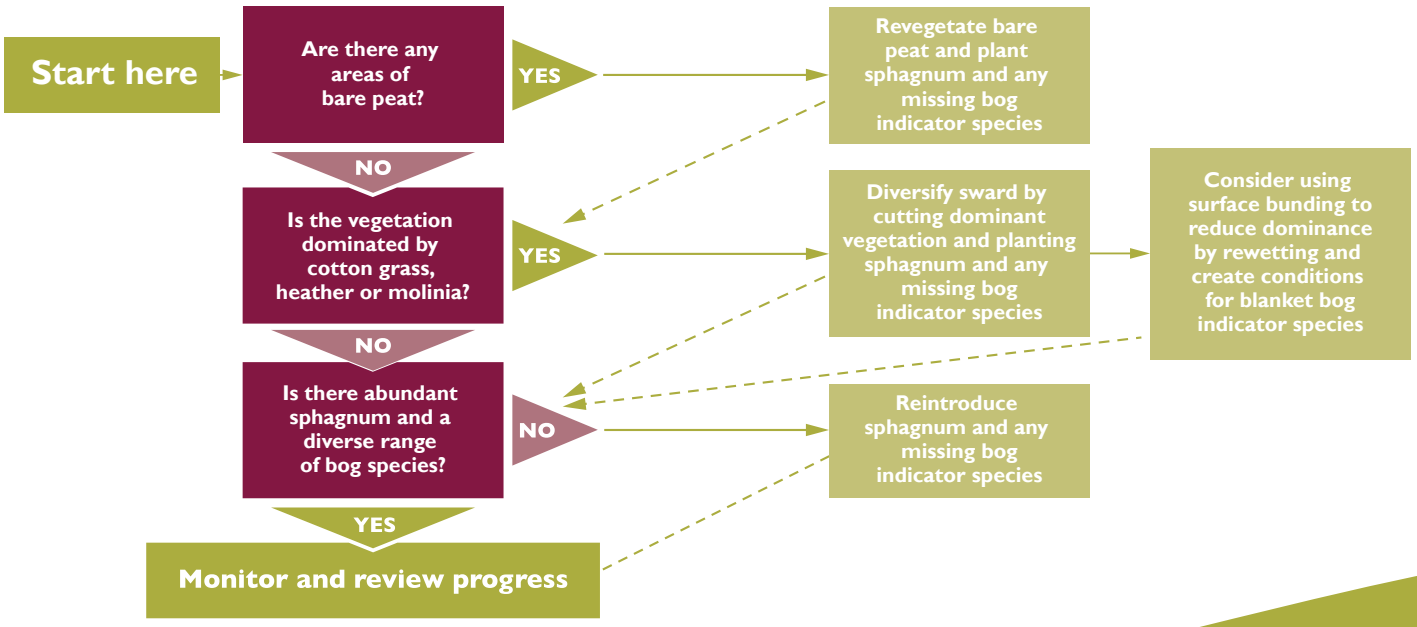
Contents

What state is the blanket bog in?

The six states of blanket bog are:

STATE 1	Afforested bog
STATE 2	Bare peat bog
STATE 3	Dwarf-shrub-dominated blanket bog
STATE 4	Grass- and/or sedge-dominated blanket bog
STATE 5	Modified blanket bog with high dwarf shrub cover but with sphagnum and other mire species
STATE 6	Active hummock/hollow/ridge blanket bog

- Use the *Blanket Bog Guidance Decision Tree* for your initial assessment of the site around you.
- Once you have determined the state of the blanket bog using the Blanket Bog Guidance Decision Tree, you can use the flow chart below to find guidance on how best to increase heterogeneity on the blanket bog.



Techniques for increasing heterogeneity

a. Revegetation of bare peat

- **The most important factor in revegetating the moors is the initial stabilisation of the peat. This process gives a period of breathing space that enables the moorland vegetation to come back. Initial stabilisation and a tolerable microclimate for seedlings are typically provided by a layer of chopped heather brash or geojute spread over the bare peat, followed by the application of a mix of lime, fertilizer and a nurse crop mix.** ***Bare-peat-revegetation-factsheet.pdf (moorsforthefuture.org.uk)***

b. Plug planting

- **An active blanket bog should contain these indicator dwarf shrub and grass species;**
  - *Calluna vulgaris* (common heather)
  - *Erica spp* (bell heather/cross-leaved heath)
  - *Empetrum nigrum* (crowberry)
  - *Eriophorum angustifolium* (common cotton grass)
  - *Eriophorum vaginatum* (hare's tail cotton grass)
  - *Vaccinium spp* (bilberry)
- **In order to increase heterogeneity of dwarf shrubs and grasses, identify the species you want to increase and plant them in suitable locations at densities of up to four plants per square metre.**
- **Further details on suitable techniques for each state of blanket bog can be found here:** ***Blanket-Bog-Guidance-Outcomes-and-Improvements-Factsheet.pdf (moorsforthefuture.org.uk)***

c. Sphagnum planting

- **An active blanket bog should contain these indicator sphagnum species;**
  - *S. fallax, S. subnitens*
  - *S. palustre, S. denticulatum*
  - *S. papillosum, S. squarrosum*
  - *S. capillifolium, S. medium*
  - *S. cuspidatum, S. tenellum*
  - *S. fimbriatum*
- **In order to increase heterogeneity of sphagnum, identify the species you want to increase and plant them in suitable locations at densities of up to four plants per square metre.** ***Sphagnum-Practitioners-Guide-2022.pdf (moorsforthefuture.org.uk)***

d. Cutting for diversification of swards

- Cutting is an effective method of reducing domination of a single species. Cuts in suitable locations open up the canopy, making more light available to moorland plants already established underneath and encouraging growth. Removing the canopy can be enough to create suitable conditions for reintroducing dwarf shrubs and sphagnum: *Heather-cutting-Factsheet.pdf (moorsforthefuture.org.uk)*
- Cutting dominant species such as *Calluna vulgaris* (Common heather) and *Molinia caerulea* (Purple moor grass) can also have positive effects on wildfire risk. This is achieved through strategic cutting of fire-breaks and cutting close to traditional, high-risk ignition points.
- Cutting Molinia has proved to be less successful than cutting heather for the goal of diversification because its vigorous growth rate does not allow time for competing species to establish. Repeat cutting or other ongoing management will therefore be necessary to keep on top of the sward. However, a study published in 2021, *Diversification of Molinia-dominated blanket bogs using sphagnum propagules*, concluded that introduced sphagnum can establish in and help to diversify Molinia-dominated swards: *Diversification of Molinia–dominated blanket bogs using Sphagnum propagules - Pilkington - 2021 - Ecological Solutions and Evidence - Wiley Online Library*

e. Bunding for diversification of swards

- **Changes in conditions and historical management practices may have led to the over-dominance of some species to the detriment of others. It may be possible in the longer term to reduce the dominance by altering the hydrological behaviour of the site through gully blocking and bunding.**

Appendix/ Useful Resources

- **Alderson, D.M., Evans, M.G., Shuttleworth, E.L., Pilkington, M.G., Spencer, T., Walker, J., & Allott, T.E.H. (2019). Trajectories of ecosystem change in restored blanket peatlands. Science of the Total Environment.**
  Diversification of Molinia-dominated blanket bogs using Sphagnum propagules - Pilkington - 2021 - Ecological Solutions and Evidence - Wiley Online Library
- **Upland Management Group (2019) Blanket Bog Land Management Guidance – Frequently asked questions. Edale: Moors for the Future Partnership.**
  www.moorsforthefuture.org.uk/__data/assets/pdf_file/0034/87568/Blanket_Bog_Land_Management_Guidance_Factsheet.pdf)
- **Upland Management Group (2019) Blanket Bog Land Management Guidance – Outcomes and Improvements. Edale: Moors for the Future Partnership.**
  Blanket-Bog-Guidance-Outcomes-and-Improvements-Factsheet.pdf (moorsforthefuture.org.uk)
- **(2015) A Practitioners Guide to Sphagnum Reintroduction. Edale: Moors for the Future Partnership.**
  Sphagnum-Practitioners-Guide-2022.pdf (moorsforthefuture.org.uk)
- **Factsheet: Bare peat revegetation. Edale: Moors for the Future Partnership**
  Bare-peat-revegetation-factsheet.pdf (moorsforthefuture.org.uk)
- **Factsheet: Heather cutting. Edale: Moors for the Future Partnership**
  Heather-cutting-Factsheet.pdf (moorsforthefuture.org.uk)

MoorLIFE 2020

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