

3.2 Controlling Purple Moor-grass (*Molinia*)

The Starting point

If purple moor-grass cover is greater than 50-75%, controlling it can restore wet heath or blanket bog, increasing its range of palatable forage and its diversity at the same time.

Purple-moor grass grassland can be:

- Mixed with dwarf shrubs like heather, bilberry and cross leaved-heath
- Mixed with cottongrasses
- Mixed with mat grass and other grass species, plus sedges
- And sometimes contain much bogmosses (*Sphagnum*)

What are your objectives?

If :

- There are more dwarf shrubs and little cottongrasses, then restore purple moor-grass to wet heath
- You have grass-dominated moor on shallow peat (<0.5m deep), then restore to wet heath or a more diverse sward (both structurally and/or compositionally)
- There are more cottongrasses and the site is on peat more than 0.5m deep, then restore to blanket bog

What methods you choose will depend on whether you have seed of desirable species still in the seed bank,¹ the mixture of species present when you start, and the reasons why *Molinia* has become dominant.

Options for Grazing Management

Use this option where dwarf shrubs and other desirable species are still present but suppressed or in small populations. *Molinia* competes with dwarf shrubs for space and for resources (light, nutrients *etc.*). For dwarf shrubs to increase, the grazing strategy needs to enhance the vigour of the dwarf shrub and reduce that of purple moor grass. Note that a single regime may do one or the other but not necessarily both simultaneously. Thus, flexibility in grazing regime and regular recorded observations of vegetation change may be needed to achieve the objective of increased dwarf shrub cover.

¹ See how to sample the seed bank in The Vegetation Overview fact sheet

- Removing grazing animals or grazing sheep at <1.0 ewes/ha all year (with a 25% reduction in stocking rate during the late autumn and winter months: November – February), will enhance the vigour of dwarf shrubs, but will not reduce the vigour of purple moor grass
- Cattle selectively graze purple moor-grass reducing its vigour. Two months summer grazing with cattle @ 0.75 cows/ha can suppress *Molinia* sufficiently to enable heather to out-compete it. This high stocking density is likely to be most effective in areas where *Molinia* is dominant (>40% top cover or >60% frequency) and where heather is present in the understorey and/or the seed bank. Increase in heather cover is likely to be slow, and significant change may not be observed for 5-10 years
- Mature heather is vulnerable to cattle trampling, so consider a lower stocking rate on *Molinia*-dominated sites where significant patches of mature heather remain. Such sites might include patches of vegetation with >25% top cover of mature heather which, when totalled together, exceed 15-20% of the area of the site. Note too, that a cattle stocking rate of 0.75 cows/ha should not be attempted on blanket bog as this is likely to result in significant poaching and breakdown of the fragile peat substrate
- Cattle grazing @ <0.5 cows/ha for 2 months will remove a significant biomass of *Molinia* and may reduce its rate of increase in the long term (ie >10 years). Where *Molinia* is dominant, this low stocking rate is unlikely to be sufficient to control it. Where *Molinia* co-occurs and is co-dominant with heather, then this low stocking rate should be sufficient to enable heather to thrive and eventually overtop *Molinia*. In such co-dominant areas, a rotational (e.g. grazing 1 year in 5) cattle only grazing regime using 0.75 cows/ha, may achieve the same effect
- Note that independent of their effects on vegetation species change, the removal of *Molinia* biomass by cattle will open up the sward and increase the structural variation present on the site. This may increase the suitability of the site for moorland birds and invertebrates
- While cattle are effective in reducing the vigour and cover of *Molinia* in areas where it is abundant or dominant, they have little effect in grass/sedge-dominated areas where *Molinia* top cover is <10%. Such areas should not be ignored, as *Molinia* can increase significantly within them over a 5 year period, due to its effectiveness in out-competing other grass species. Such areas should be monitored regularly and a grazing regime chosen, such as summer only grazing with sheep, that can enhance the vigour of any dwarf shrubs present (which can otherwise out-compete *Molinia*)

[see grazing regime, dwarf shrubs inverts and birds fact sheets]

Options for control of purple moor-grass

It is essential to create or have small scale bare ground in order for heather and other species to establish. The project trialled rotavation and trampling using cattle or a ridden horse. Other methods may be equally suitable.

- Create bare ground in the *Molinia* vegetation, aiming for 10-15% bare ground finely intermixed in the vegetation. Undertake this operation in late summer for autumn seeding
- Where the dwarf shrub seed bank is likely to be absent, add seed. Clean heather seed can be sown at as low a rate as 8gms/ha (heather seed is very small, there being about 33-40,000/gm). Mix seed with a filler if necessary to be able to spread evenly. If using uncleaned seed collected in pods, the rate is nearer (17kg/ha) depending on the amount of seed and age of plants. Fresh heather seed may not establish for up to a year
- Take the opportunity to add other seed such as deer sedge and cross-leaved heath (or other species that suit your site) to augment the heather and diversify the vegetation
- Better results occur where grazing is removed for 2-3 years whilst seed establishes

Other Options and Information Sources

Burning

- Do not burn purple moor-grass on short rotations, as this increases its dominance and spread
- Do not burn purple moor-grass - heather mosaics, especially if heather is mature or degenerate, as this results in more purple moor-grass and less dwarf shrubs
- Do not burn purple moor-grass when growing in mixed plant communities
- If purple moor-grass is burnt, summer growth can be controlled by light sheep grazing, but only if the sheep are kept on the area if there is more desirable forage elsewhere in the hefts

Use of herbicide

Herbicides can be used to control purple moor-grass

Where purple moor-grass is dense without significant quantities of other species, and is accessible for machine use:

- Use a complete herbicide like glyphosate. A rate of 6 litres/ha in 2-300 litres water sprayed in July has been used successfully in the Peak District. Graminicides are not cleared for use on open moorland
- Remove the dead material by very careful burning in September before the untreated areas die down in autumn (out of season licence required). Only burn if you are sufficiently experienced at this

- A possible alternative is to burn the purple moor-grass in the winter prior to herbiciding. This leaves less litter after treatment
- If you do not burn the litter, treat it by smashing the tussocks with a heavy duty flail or similar when they have died. This requires a heavy duty tractor and therefore good access and firm ground. The dead material can be windrowed and will disappear in a few years
- Unless there is a good seed bank (see above), then heather and other seed will need to be added

Cutting

- Cut the purple moor-grass in spring and autumn, preferably during dry weather (the plants are more susceptible then) if access permits, with no herbiciding
- Graze regrowth with cattle for two months while there is some regrowth if necessary. Sheep may flock onto a cut site and graze the regrowth as well
- Add heather and other seed of desirable species, but remove stock first, and for 2-3 years whilst the dwarf shrubs establish

Other

Wet heath or bog should not be drained as *Molinia* is likely to increase at the expense of species such as hare's-tail cotton-grass (*Eriophorum vaginatum*), bog-mosses (*Sphagnum* spp.) and cross-leaved heath (*Erica tetralix*).

Other Sources of information:

[English Nature Upland Management Handbook: Chapter 6. Moorland](#)

[Heather & grass burning code for England and Wales](#)

[Defra funded ADAS workshop report on *Molinia* management \(2000\)](#)

[Defra funded ADAS Technical Guideline: No. 2. Controlling *Molinia* and other competitive grasses](#)

[Defra funded Heather Trust/University of Liverpool project report on *Molinia* control and dwarf shrub re-establishment](#)

Anderson, P., 2002. Diversity from *Molinia* Moorlands. *Enact*, **10**, No.4.

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