

The grazing value of mires: How might restoration affect agricultural productivity?

- The nutritional quality of purple moor grass (*Molinia caerulea*) declines between spring and autumn whereas species characteristic of intact mires (bilberry (*Vaccinium myrtillus*), heather (*Calluna vulgaris*) and bog asphodel (*Narthecium ossifragum*)) maintain relatively high nutritional quality.
- Population densities of the sheep tick, a vector of economically important livestock diseases, are significantly lower in mires than in drier habitats on the same sites.
- Cattle spend little time in either degraded or restored mires, and so restoration should have a negligible effect on the area used for grazing.
- Restoration should have a minimal impact on the overall grazing value of a site.

Restoration is expected to drive change in the vegetation communities of Exmoor's mires, and as these lie within areas used for grazing it is important to establish what effect these changes might have on the productivity of livestock farming.

This study¹ assessed the grazing value of degraded and restored mires, as well as other typical upland vegetation communities, such as rush pasture and bracken-dominated valley sides. The value of each vegetation type was based on three key factors: nutritional quality, prevalence of sheep ticks (vectors of livestock disease) and level of use by grazing cattle.

The nutritional quality of a plant is determined by a number of different measures, but particularly important from a grazing perspective are crude protein and digestibility, which affect, among other things, how rapidly an animal can gain weight. Levels of crude protein and digestibility were measured in 17 species of moorland plants associated with habitats of varying wetness (Figure 30). There was little difference in the overall nutritional quality of habitats, but there were seasonal changes in the relative quality of individual plant species, including purple moor-grass (*Molinia caerulea*) – the dominant species of degraded mire – which

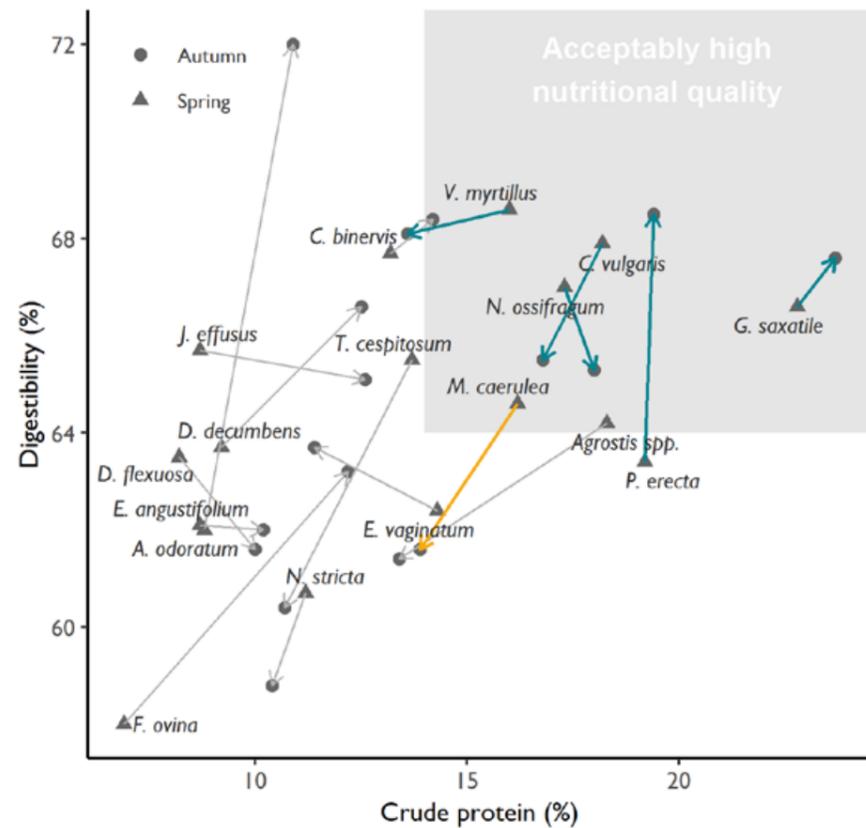


Figure 30 Changes in digestibility and crude protein (%), measures of nutritional quality, in the spring and autumn for a range of moorland plants grazed by livestock.

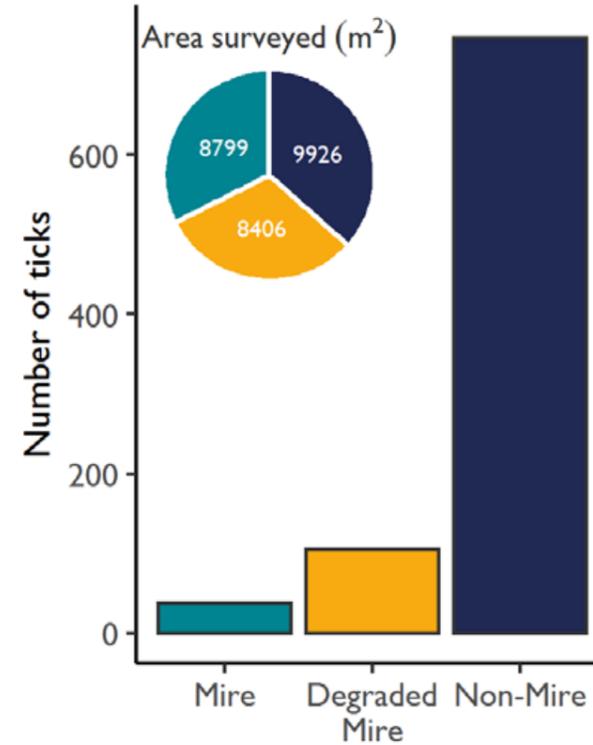


Figure 31 Number of ticks found within grouped habitat types and proportion of the surveyed area assigned to each habitat type, where 'Mire' consists of transitional and blanket bog, 'Degraded Mire' for areas dominated by purple moor grass (*Molinia caerulea*), and Non-Mire for areas including bracken, dry grassland and rush.

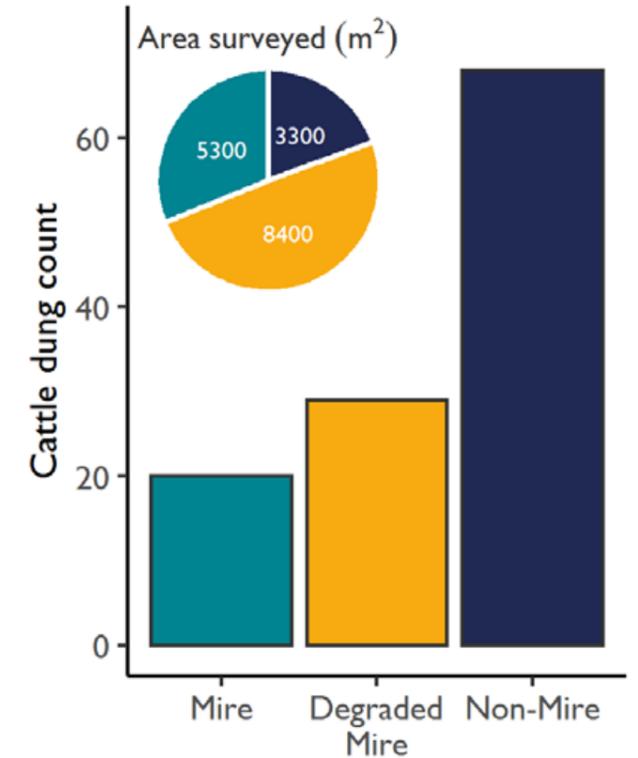


Figure 32 Number of cattle dungs, a proxy for level of use by cattle of each grouped habitat types and proportion of the surveyed area assigned to each habitat type, where 'Mire' consists of transitional and blanket bog, 'Degraded Mire' for areas dominated by purple moor grass (*Molinia caerulea*), and Non-Mire for areas including bracken, dry grassland and rush.

showed a sharp decline between spring and autumn. In contrast, the quality of species such as bilberry (*Vaccinium myrtillus*), common heather (*Calluna vulgaris*) and bog asphodel (*Narthecium ossifragum*), which are characteristic of recovering and intact mire, remained relatively high in both seasons. This suggests that rewetting areas of mire could increase the value of a site for livestock, as the associated increase in plant diversity ensures that the animals have access to vegetation of acceptably high nutritional quality throughout the grazing season.

Neither prevalence of sheep ticks (Figure 31) nor level of use by cattle (Figure 32) differed significantly between degraded and restored mires. Grazing cattle generally

avoided areas of mire and instead showed a strong preference for drier, partially improved grasslands (Figure 32), although the value of these was diminished by the fact that they support far higher densities of sheep ticks than areas of mire (Figure 31). However, as the effects of rewetting are concentrated on areas of degraded mire, these findings would suggest that restoration will have a minimal impact on the overall grazing value of a site.

REFERENCES

The appendices are available to view at www.exeter.ac.uk/creww/research/casestudies/miresproject

1. Freeman, G. Assessing changes in the agricultural productivity of upland systems in the light of peatland restoration. (University of Exeter, 2017).

