

IUCN UK Committee Peatland Programme Briefing Note N°7



Grazing and Trampling

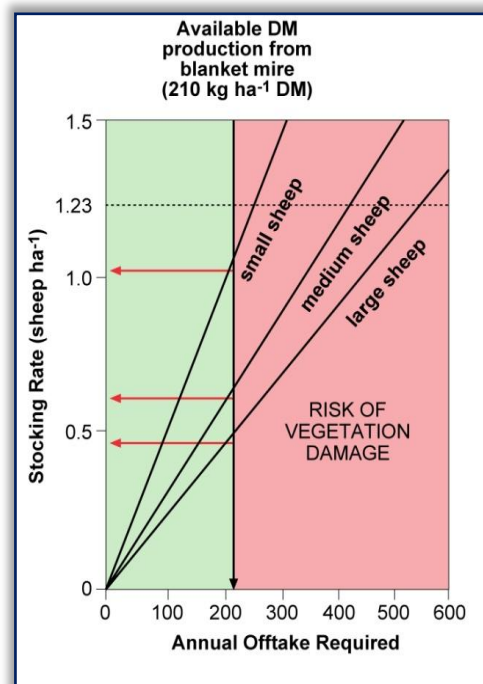
Grazing as part of the bog ecosystem

Grazing, browsing and trampling by native wild animals are **components of natural bog ecosystems** in the UK but unsustainable levels of grazing and trampling from grazing livestock (sheep, cattle and deer) can have adverse effects on the peatland ecosystem.

Defining sustainable levels of grazing

0.4 sheep per hectare

Research evidence suggests that **blanket bog vegetation can sustain wild and/or domestic herbivore at relatively low stocking rates (equivalent to around 0.4 sheep per ha or 1 sheep to the acre)**. Higher densities are not biological sustainable because the total available dry matter production from a blanket bog ecosystem is low relative to the food requirements of large herbivores. Trampling pressure also becomes significant. Consequently there is a risk of vegetation damage even at very low stocking rates, particularly with larger animals, even before taking wild herbivore numbers into account. The graph (right) shows the relationship between sheep stocking rate and annual animal off-take or dietary requirements.



Impacts of grazing animals



Immediate ecosystem impacts are associated with physical damage to the vegetation and bog surface through **trampling, grazing and urine/faecal returns**. These include the creation of tracks and small areas of bare peat surface that can act as the **focal points for erosion**. Indirectly over the long term, there may be a **reduction in the annual biomass that is retained in the living surface layer** (both above and below ground). This may ultimately lead to a decline in the thickness of the acrotelm, which would result in a

lowering of peatland resilience to change, making sites more susceptible to other damaging events (see *Biodiversity Briefing Note 2*).

Sensitivity to trampling

Even native Shetland sheep (above) – a typical small sheep breed – can result in such damage. This is because the **keystone Sphagnum species are particularly sensitive to trampling** with evidence suggesting that they cannot withstand more than 1 or 2 trampling events in a year, and the trampling damage may persist for several years.

The damage caused by grazing is nearly always a long-term (decades) process.

<p>Loss of peat-forming species</p> <p>Increase in bare peat</p> <p>Burning and drainage often accompany stock grazing</p>	<p>Ultimately it results in loss of peat forming vegetation and consequent drying out of the bog surface. In sensitive locations the end-result of persistent high stocking levels is that the acrotelm is lost completely, the drier surface is colonised by non peat-forming species, patches of bare peat appear and erosion-risk increases as a consequence.</p> <p>In the past, livestock grazing (including deer) has also been intimately associated with burning and drainage of peat bog systems, the former to encourage fresh growth and an 'early bite', the latter to encourage heather or grass growth at the expense of peat-forming vegetation and to minimise the hazard to stock (sheep in particular) posed by very wet ground. Burning and drainage have their own impacts (see Drainage Briefing Note 3 and Burning Briefing Note 8).</p>
<p><u>Trampling is also a major factor to consider when using fixed-point monitoring</u></p> <p>Raised platforms and snowshoes while monitoring</p> <p>Repeated visits kill Sphagnum or prevent recovery</p>	<p>One specialised but important aspect of trampling concerns the effects resulting from scientific or conservation monitoring at fixed locations. Bog vegetation is sensitive to trampling but <i>Sphagnum</i> species are especially sensitive. Repeated visits to monitoring points, even if only once a year, can kill the <i>Sphagnum</i> sward in the space of two or three visits, or prevent <i>Sphagnum</i> recovery at such locations on restoration sites. Raised platforms should be provided for such monitoring points, and snowshoes should be worn while in the vicinity of the monitoring point.</p> 
<p><u>Restoration following overgrazing</u></p>	<p>As grazing, with its associated trampling, is rarely the only factor involved in the degradation of a site, it is important to address issues such as burning and the presence of drains, but it would seem that a reduction in stocking rates to below 0.4 sheep per hectare or removal of grazing altogether will allow recovery of the vegetation to begin. Heavily-grazed areas which have been largely free from grazing for 10-20 years have been found to show clear signs of recovery in the absence of other pressures.</p> <p>Sites with a harsher climate, extensive bare peat and high levels of erosion will take longest to recover and may require greater levels of stock reduction and/or wild herbivore control. In all cases, grazing measures should be carried out in concert with other land management measures such as reduced burning and drain blocking.</p>

<p><u>Areas at risk</u> High stocking rates Burning Pollution</p> <p>Wild herbivores</p> <p>Low levels of stock management</p> <p>Importance of management history</p>	<p>Bogs which have a long history of high stocking densities of domestic herbivores combined with other uses such as drainage (see <i>Drainage Briefing Note 3</i>), domestic peat extraction (see <i>Domestic Peat Cutting Briefing Note 5</i>) or exposure to frequent burning (see <i>Burning Briefing Note 8</i>) and/or pollution (see <i>Erosion Briefing Note 9</i>) are particularly at risk of damage to the protective cover of peat-forming vegetation. High levels of stocking pressure date back to the early/mid 19th century or even earlier in some places. Furthermore during the 20th century in most places there has been a progressive move away from a seasonal mixed grazing system of sheep and cattle to a year-round system of sheep only, and a progressive increase in stock numbers during the latter part of the 20th century associated with headage payments.</p> <p>The risks increase if the bog also has historically high densities of wild herbivores, particularly red deer. Areas where the level and quality of stock management is low are also more at risk. For example, much of the blanket bog in the north and west of Scotland is managed under common grazing regulations and management inputs are generally low. It is important to note that management history is often more important than the present management in terms of grazing and trampling impacts.</p> <p>Where damage of various kinds mean that sites have lost a degree of their natural resilience, the additional factor of grazing, even at low intensities, can both stretch this resilience, sometimes to breaking point, and actively hamper any restoration efforts (e.g. continued trampling and grazing on an area of formerly burnt but regenerating peat surface can prevent re-establishment of fragile <i>Sphagnum</i> propagules).</p> <p>Restored areas on former bare peat surfaces can give rise to their own challenges. In some cases these areas are restored to grassland to prevent erosion of the exposed peat. This has sometimes prompted calls for grazing on the new grassland. The grassland phase is, however, but one step in the restoration process and careful management of grazing levels is needed to aid the transition from grassland to active bog.</p>
<p><u>Other benefits from addressing the issue</u></p>	<p>Reduced levels of grazing lead in turn to recovery of bog ecosystem functions, including bog species associations (biodiversity effects), increased carbon uptake and carbon storage, and improvements in water quality. There may also, depending on catchment context, be possible benefits in terms of flood mitigation.</p> <p>However, reducing grazing alone may not result in full recovery if other damaging activities are taking place and are not resolved.</p>
<p><u>Gaps in Knowledge</u></p>	<p>Identified gaps are:</p> <ul style="list-style-type: none"> • Improved understanding of the precise mechanisms of grazing impacts on natural and damaged bog vegetation and microtopography for a range of domestic and wild species. • Further research into how successful restoration efforts through grazing reductions alone could shed light on appropriate methods of restoration management. <p>A comprehensive review of the evidence of impacts of grazing and stocking rates in the uplands has been published recently by Natural England (see: http://publications.naturalengland.org.uk/publication/5976513). This provides a summary of published evidence and identifies a range of gaps in current knowledge.</p>
<p><u>Practical Actions</u></p>	<p>Practical actions:</p> <ul style="list-style-type: none"> • Reduction in overall stocking rates, both domestic and wild herbivores (if present). • Adoption of a seasonal grazing regime with all domestic stock removed in winter.

	<ul style="list-style-type: none"> • If reduction in stock numbers is not feasible then reduction in effective stocking rates may be achieved by changing to a smaller breed of sheep (Graph above).
<p><u>More Information</u></p>	<p>Underpinning scientific report: http://www.rspb.org.uk/Images/Peatbogs_and_carbon_tcm9-255200.pdf (low resolution) http://www.uel.ac.uk/erg/PeatandCarbonReport.htm (high resolution : downloadable in sections)</p> <p>IUCN UK Peatland Programme: http://www.iucn-uk-peatlandprogramme.org/</p> <p>Natural England Uplands Evidence Review: http://www.naturalengland.org.uk/ourwork/uplands/uplandsevidencereviewfeature.aspx</p> <p>Scottish Natural Heritage Report on peat definitions: http://www.snh.org.uk/pdfs/publications/commissioned_reports/701.pdf</p> <p>Peatland Action: http://www.snh.gov.uk/climate-change/what-snh-is-doing/peatland-action/</p> <p><i>This briefing note is part of a series aimed at policy makers, practitioners and academics to help explain the ecological processes that underpin peatland function. Understanding the ecology of peatlands is essential when investigating the impacts of human activity on peatlands, interpreting research findings and planning the recovery of damaged peatlands.</i></p> <p><i>These briefs have been produced following a major process of review and comment building on an original document: Lindsay, R. 2010 'Peatbogs and Carbon: a Critical Synthesis' University of East London. published by RSPB, Sandy. http://www.rspb.org.uk/Images/Peatbogs_and_carbon_tcm9-255200.pdf, this report also being available at high resolution and in sections from: http://www.uel.ac.uk/erg/PeatandCarbonReport.htm</i></p> <p><i>The full set of briefs can be downloaded from: www.iucn-uk-peatlandprogramme.org.uk</i></p> <p><i>The International Union for the Conservation of Nature (IUCN) is a global organisation, providing an influential and authoritative voice for nature conservation. The IUCN UK Peatland Programme promotes peatland restoration in the UK and advocates the multiple benefits of peatlands through partnerships, strong science, sound policy and effective practice.</i></p> <p><i>We are grateful to Scottish Natural Heritage, Natural England, Natural Resources Wales, the Forestry Commission RSPB Scotland and the Peter de Haan Charitable Trust for funding support.</i></p>
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