

## Information note:

# Moorland/ Hill Grazing

### Summary

- Grazing is vital to providing the patchwork of vegetation types and heights required by many upland birds.
- Inappropriate grazing can cause a simplification in vegetation types and heights, and reduced wildlife interest.
- Grazing regimes need to be specific to individual sites, and backed up with monitoring to determine their effectiveness in achieving outcomes.
- At appropriate stocking densities, sheep grazing can play a valuable role in vegetation management. Cattle grazing through the summer can be particularly beneficial in reducing competitive grasses and boosting structural diversity in the vegetation.

### Wildlife benefits

The semi-natural vegetation of the UK's hills and moorland support many birds that require open ground maintained by grazing. Some of these species are of very high conservation importance due to their scarceness or long-term declines.

Grazing livestock determine the value of open habitats for wildlife through their effects on the vegetation; in particular their impact on the types of plant species present, and the overall structure of the vegetation i.e. the relative amounts of tall and short vegetation.

Moorland birds such as golden plovers, curlews, ring ouzels, stonechats, wheatears and black grouse are known to benefit from a patchwork of vegetation types and heights at a small and large scale. Birds use different parts of this vegetation mosaic for nesting and feeding or at different times in the breeding season. For example, tall heather is particularly important for nesting merlins, but densities of their prey are highest elsewhere, such as grass/scrub mosaics.

A simplification in vegetation generally reduces the diversity of species. For example, simply maximising the amount of heather cover will not benefit a wide range of birds. Only the red grouse and stonechat show a preference for widespread heather cover, and their populations do not continue to rise once heather cover reaches around 50%. Conversely, the widespread conversion of heather to grassland will cause a decline in the majority of upland species, but can favour skylark.

Wildlife interest is likely to be maximised where heather and other dwarf shrubs remain as part of an interspersed mix with other vegetation types. Allowing space for appropriate areas to succeed to



Heavy grazing pressure simplifies vegetation structure

scrub, scattered trees, or woodland will boost the diversity of wildlife further. Greater habitat diversity will benefit all upland wildlife, from insects to reptiles and mammals such as the mountain hare.

Grazing livestock also benefit birds through increasing insect populations via their dung, and dead livestock providing food for carrion feeders.

## Practical management

### Interaction between grazing and vegetation

Livestock create differences in vegetation type and structure through their grazing, treading and dung/ urine patches. The first of these is the most important in influencing the vegetation types and structure available to wildlife. Animals grazing a hill or moor are free to move around and choose to graze from a wide mosaic of different vegetation types. They do not graze randomly, but select between different vegetation types, showing strong preferences and avoidance for different plant species through the seasons.

Grazing animals generally seek out the most nutritiously abundant plants available to them. As the quality and quantity of plants changes, so grazing animals alter their preferences. Livestock show a clear preference for relatively rich grassland communities, such as bent/fescue (*agrostis/-festuca*) swards. Grasses such as purple moor grass (*molinia*) and mat-grass (*Nardus*) decline quickly in quality from mid summer and are increasingly avoided. Cotton grass is an example of a plant that has low grazing value for the majority of the year, but is highly selected in early spring when it has high nutritional value. The nutritional value of heather and other dwarf shrubs is generally low. Typically, dwarf shrubs are only heavily grazed when there is a shortage of more preferred vegetation. This is most likely to occur when:



Sheep congregate on more nutritious grassy areas in the summer

- Grazing reduces the available grass to a level where livestock switch to feed on heather.
- Grass stops growing/ becomes low quality, i.e. through autumn/winter.

The palatability of different dwarf shrubs varies, with bilberry (blaeberry) tending to be favoured over heather, while heather is more favoured than cross leafed heath.

It is likely that some 'less preferred' plants are deliberately selected in low quantities for wider benefits such as high mineral concentrations, e.g. bilberry (blaeberry), or help reduce internal parasite burdens e.g. tannins in heather.

Most simply, in response to rising grazing levels, plants that are less preferred by grazing animals or more tolerant of grazing tend to increase at the expense of plants that are more preferentially grazed or less tolerant to grazing. On poorer soils, plants of low grazing value such as mat-grass, purple moor grass, deer grass and heath rush often come to dominate. Such changes not only reduce wildlife interest, but also the value of the grazing for livestock in the longer term.

### Maintaining heather and other dwarf shrubs as part of the vegetation mosaic

Maintaining heathland vegetation is of high conservation importance because the UK is responsible for around three quarters of the world's heather moorland habitat. The balance between heather and other vegetation types is highly sensitive to livestock grazing. As stated above, heather and other dwarf shrubs are most vulnerable to heavy grazing when more preferred vegetation types become scarce.

Heather is particularly vulnerable in areas where livestock concentrate. The use of hefted flocks adapted to the upland environment can help encourage a more even grazing pressure over large blocks of land. Winter feeding can accelerate the loss of heather with trampling adding to the effects of grazing. Stocking levels should be such that supplementary feeding is only carried out in extreme weather, rather than routinely (which means there are more livestock present than can be maintained by the vegetation). When supplementary feeding is carried out, regularly rotating feeding points, ideally on lower value vegetation such as acid grassland or bracken will help minimise damage.



Mosaic of grass, bilberry and heather

Heather will generally start to decline if more than 30-40% of the annual growth is removed by grazing. Utilisation rates need to be around 20% to maintain levels of heather, and this roughly equates to an average stocking rate of 1 to 1.5 ewes/ha/year.

Grazing levels on heath are highest where it abuts patches of preferred grassland. Thus, declines of dwarf shrubs are often visible as a retreating leading edge next to grassland.

### Restoring heather

Generally, heather re-establishment increases in proportion to reductions in stocking densities, with low grazing densities from the end of September until late spring particularly important. Trials have shown that where heather remains as a significant component of the vegetation, heather can increase quickly. However, where little heather remains, the relaxation in stocking rates can just result in grasses flourishing and restricting opportunities for heather to spread. In these instances, moderate levels of summer grazing with cattle have been shown to help reduce grass competition and encourage heather to re-establish. The creation of small pockets of bare ground can help accelerate heather re-establishment through providing an opportunity for heather seed to germinate. To aid heather re-establishment further, heather seed can be sown into bare ground in early spring or autumn.

### Livestock type

Different livestock types have different effects on sward structure and plant composition due to variations in their grazing characteristics. Semi-feral and wild grazing animals, such as ponies or deer also have a significant impact on habitat composition in some uplands.

**Sheep** are highly selective grazers, being able to select particular plant parts as well as specific plants.



Cattle can help boost vegetation structure

**Cattle** are not able to be as selective as sheep due their larger mouth size and greater food requirements i.e. as the availability of preferred vegetation types become less available, cattle switch to less preferred vegetation sooner than sheep would. Trials have shown that cattle more readily consume low quality vegetation types such as matt grass (*Nardus*) and purple moor grass (*Molinia*) than sheep. Cattle do not roam as widely as sheep, spending more time on higher fertility areas and near water supplies. Cattle are also generally more reluctant to graze heather, but when they do, they have a bigger impact through trampling, dunging and grazing more woody material.

**Horses** have a different digestive system to ruminants, relying on a high throughput of vegetation, achieved by long grazing times (horses can spend more than three quarters of their time grazing). Horses more readily graze low quality forage such as tall, fibrous grasses and sedges than sheep.



**Red deer** are similar to sheep, but include a greater proportion of heather in their diet, have a greater propensity to browse and range over much larger areas.

The use of larger herbivores such as cattle and ponies, particularly through the summer, can help prevent the spread of plant species that sheep tend to avoid. Matt grass cover on a Scottish upland decreased from 55% to 30% over five years under cattle grazing, whereas it increased to 80% under sheep grazing. They can also help break up stands of taller vegetation through their trampling. Cattle used to play a much more significant role in the grazing of hill pastures, and are likely to have been the main reason for pollen records indicating a higher abundance of heather relative to grassland prior to the mid 1800's. Mixed grazing is likely to improve sheep performance through enhancing the quality of the grazing, and reducing parasite levels.

Differences between breeds in their selectivity for particular vegetation appear to be relatively minor and largely related to differences in body size. There is some evidence that older animals and males are less selective than females or young animals. Through centuries of selection, some breeds are undoubtedly more suited to the challenges of severe weather and lower quality vegetation eg smaller body size and lower reproductive rate.

### **Developing an appropriate grazing regime**

Ensuring grazing maintains variation in vegetation type and structure is not an exact science - it is not possible to micro-manage large areas of open grazing. Most simply, it requires grazing regimes that are intermediate to the extremes, both of which typically cause a simplification in vegetation type and structure.

**Very high grazing pressure** reduces vegetation structure directly through increasing the extent of short vegetation and indirectly through reducing the variety of plant types. The individual growth habits of different plants is an important part of structural variety, so if heavy grazing causes plant species to become scarce or disappear, e.g. heather or scrub, it reduces the variety of niches for plants and animals to occupy.

**Very low or no livestock grazing** for a prolonged period would likely be negative for most widespread moorland bird species. Some open habitat species could benefit temporarily, such as the short-eared owl benefiting from increases in the vole population, or black grouse benefiting from a boost in seeds and insects. However, as vegetation became dense, mobility and access to prey would become compromised. Eventually, scrub/woodland and a different community of birds would be expected to develop, but the rate of vegetation change would vary greatly with altitude and how much feral herbivores, such as deer, compensated for reductions in domestic livestock.

It is possible to calculate an indicative maximum stocking rate for an upland area to sustain key plant species. This is calculated by multiplying the area of each habitat present by a given stocking rate - based on that habitats typical productivity (see box below). Such calculations can provide useful initial guidance, but in practice, the productivity of the vegetation will vary between different upland areas and from year to year due to differing underlying geology, latitude and altitude. Also, stocking density is just one aspect of how livestock impact on the vegetation. Others include the timing of the grazing, type of livestock, where livestock go to drink or for shelter etc. With so many variables, setting a grazing regime is often a compromise based on the areas most important features.

Stocking guidance needs to maintain a flexible approach that adapts in response to observed changes. Greater emphasis should be given to measurable outcomes, such as the condition of the vegetation eg its height, structure and the extent of different plant types; and surveying how

well particular species are doing. Effective monitoring is vital to assessing the outcomes of a particular grazing regime, and allowing it to be objectively adapted over time.

Typical carrying capacity (LU/ha) of three upland vegetation types of high conservation value	
<b>Upland heath</b> – dwarf shrubs, such as bilberry and heather	<b>0.075 to 0.225</b> Year round stocking rates vary with the condition of heath, altitude and wetness (reduced through winter)
<b>Blanket bog</b> - cotton grass, dwarf shrubs and <i>Sphagnum</i> mosses	<b>&lt; 0.075</b> Year round stocking rates vary with habitat condition. Ideally, no grazing in winter.
<b>Calcareous grassland</b> - a diversity of limestone-loving plants	<b>0.3</b> A period of reduced grazing pressure through the summer to allow more plants to flower and set seed.
A hill sheep & lamb is equivalent to 0.15 livestock units (LU), and a hill cow & calf equivalent to 1.0 LU	

Changes in plant composition are often slow, but grazing affects vegetation structure (the amounts of tall or short vegetation) over a much shorter time scale. Significant benefits for many moorland species can be achieved relatively quickly by adapting the grazing regime to increase the structural diversity of the existing vegetation.

Timing the majority of the grazing pressure when less preferred vegetation types are at their most productive and nutritious (late spring/summer) will help maintain more diverse and palatable vegetation over the long term, to the benefit of wildlife and livestock.

Some summer grazing with cattle can help keep coarser grasses such as molinia and nardus in check, and potentially help increase structurally variety.

Short-term grazing exclusion in targeted areas can help achieve objectives to recover certain vegetation types or boost vegetation structure.



Patches of scrub and trees are an important component of the upland mosaic

## Contact us

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