Livestock Grazing & Nature Conservation
Introduction

This factsheet provides information on appropriate grazing by five types of livestock on five key farmland habitats. It can be used by farmers and other land managers to:

• Select the most appropriate grazing animal.
• Understand the impact of over and under grazing on five key farmland habitats: Wildflower grasslands; wetlands & water margins; upland & heather moorland; native woodland & wood pasture and coastal habitats.
• Recognise the signs of overgrazing and undergrazing.
• Identify management strategies that are beneficial to the environment and can reduce livestock disease risk i.e. win-win situations.
The ‘type’ of stock is very important to effective nature conservation grazing regimes. The five main livestock types in Wales are: cattle, sheep, horses, goats and pigs.

### Cattle

#### Beneficial effects

- Cattle are ideal for removing tall and coarse vegetation and re-growth of rush-infested pastures after cutting.
- Cattle are less selective grazers than sheep or horses.
- They do not selectively eat native wildflowers or fine grasses unlike sheep.
- Cattle can break up mats of dead litter, bracken and gorse stands.

#### Detrimental effects

- Cattle can spend 16hrs a day resting and sites can show signs of dung accumulation.
- Heather shrubs and stands of wildflowers can be trampled by cattle.
- Heavy poaching can be damaging, especially on marshy grasslands.
- Horned cattle can be particularly damaging to trees and shrubs.

### Sheep

#### Beneficial effects

- At low to medium stocking levels, sheep can maintain wildflower and invertebrate diversity.
- Sheep are good at keeping ragwort from flowering as they eat the rosettes in early spring without any detrimental effects.
- Sheep are particularly useful at managing conservation grasslands at low stocking density.
- Sheep are good at grazing steep and inaccessible sites.

#### Detrimental effects

- Sheep are highly selective grazers preferring to take flowering heads of plants.
- Sheep graze close to the ground (around 3cm), creating short swards.
- At high stocking levels, sheep can overgraze sites leading to swards of low conservation value.
- Sheep are less effective at grazing tall vegetation which can allow rushes and bracken to become dominant.
### Goats

#### Beneficial effects
- Goats can both browse and graze and are most useful conservation grazers in a habitat mosaic.
- Goats are good at accessing very steep, rocky, botanically diverse slopes that even sheep can’t access.
- Goats have the potential to control scrub which is invading grassland.
- Rushes can be targeted by grazing in spring.

#### Detrimental effects
- Goats are more selective grazers than sheep and typically graze to 6cm even sward height at ground level.
- They preferentially target the leaves and flowering parts of plants.
- Goats can kill trees by bark stripping.
- Goats may browse heather to a greater extent than sheep.

### Pigs

#### Beneficial effects
- At appropriate stocking levels, rooting can be beneficial on woodland areas subject to natural regeneration.
- Rooting can be localised but effectively targeted through fencing and stocking density.
- Rooting can kill unwanted invasive species.
- Pigs can take bracken rhizomes in the autumn thus reducing its vigour.

#### Detrimental effects
- Rooting can severely damage species rich grassland swards and woodland understorey. They should not be used on species-rich areas.
- Wetland areas and pond margins can become heavily poached in the search for molluscs and rhizomes.
- At high stocking levels, rooting can be highly damaging in most habitat types.
- Bark stripping and root chewing can occur which may lead to tree death.
## Horses

### Beneficial effects

- Horses are selective grazers and create vegetation mosaics.
- This structural diversity benefits invertebrates, small mammals and birds.
- Rare flowering plants can thrive in horse pastures.
- As summer progresses, sedges and rushes can form a greater proportion of the diet.
- Horses will eat gorse scrub, which helps to control encroachment.

### Detrimental effects

- Horses are strongly grass-based feeders preferring the more palatable finer native grasses.
- Some areas within fields are avoided by horses and become rank. This can be overcome by combining grazing with other livestock such as sheep.
- At the same time, horses can heavily poach other areas, especially on marshy grasslands.
- Horses use preferred dunging areas which can become dominated by weed species.
- Horses can have a highly damaging effect on trees by eating the highly nutritious buds and tips and by stripping and eating tree bark.
Recognising over and under grazing in different habitats

Wildflower grasslands
In Wales, there is a wide range in soil types. For calcareous, neutral and acid grasslands (including thin-soiled dry grasslands and grazed pastures, excluding hay meadows) grazing effects on the botanical mix and dependent species can be similar. If the dominant grass species are palatable, then grazing will increase biodiversity but if the dominant species are unpalatable, then grazing will reduce biodiversity. Generally, light year round grazing, which creates a range in sward heights between 5cm and 20cm is ideal for most flowers, birds, butterflies and beetles. The sward should be shortest in late winter and tallest in the summer to encourage flowering and seed setting.

![Distinctive areas of tall and short vegetation typical of horse grazed herb rich pastures.](image)

Signs of undergrazing in wildflower grassland
- Scrub encroachment (hawthorn, bramble, gorse) and woody tree growth.
- Tall and even sward height (over 20cm).
- Increase in invasive weeds such as himalayan balsam.

Signs of overgrazing in wildflower grassland
- Uniform short sward height (under 5cm).
- Bare patches/poaching of exposed soil by livestock trampling
- Increase of agricultural weed species such as ragwort, curled and broadleaved docks, creeping and spear thistle as grassland is not long enough to outcompete these.
- Excessive dunging by livestock (via supplementary feeding) leading to increased fertility and dense patches of nettles.
- Browsing damage to adjacent field margin hedges/trees.
- Lack of flowers and invertebrate species.
- Lack of ground nesting birds, due to disturbance by stock.
Wetlands and waterside margins

Cattle are generally the best livestock to use for grazing wet grassland, fens and rush dominated sites. However, where open water occurs, such as around ponds and along stream sides, cattle can cause considerable damage through poaching. Sheep or a mixture of sheep and light cattle grazing, may be more appropriate. Cutting with the removal of cut material, may be the only option on highly sensitive sites. Grazing impacts can vary in these sites, for example, higher stocking levels might be used to encourage the spread of wetland plants, than those used if the aim was to encourage ground nesting birds, such as snipe. Defining the conservation objectives for these sites is therefore important. Waterside margins generally benefit from streamside fencing to exclude livestock or to allow seasonal light grazing.

Signs of undergrazing in wetland and waterside margins

- Rush/reed encroachment at expense of grass
- Growth of shrubs, particularly Willow on the site
- Habitat (wet grassland) becoming drier
- Domination of stream sides by single plant species ie reed canary grass, rosebay willowherb or meadowsweet
- Reduction in numbers of different plants
- Reduction in numbers of ground nesting birds

Signs of overgrazing in wetland and waterside margins

- Reduction in overall plant species composition
- Closely grazed patches of rush
- Lack of wetland invertebrates such as Dragonflies
- Reduction in number of ground nesting birds such as Lapwing
Upland and heather moorland

This habitat type comprises a mosaic of dwarf shrub heath (heather, bilberry), acid grassland (mat grass, purple moor grass) and peat bogs. In the absence of burning, sheep are crucial in maintaining the balance between heather and grass composition on a moor. Grass is preferred by sheep but they will eat heather in winter. Overgrazing of heather moorland is most likely to occur in winter. Light summer grazing with cattle (and sheep) can significantly enhance the condition of a moor. Studies have shown that stocking density can be an appropriate measure in the management of heather moorland – an example can be seen in table 1.

Signs of undergrazing in heather moorland

- Extensive areas of tall leggy heather
- 100% ungrazed flower heads/new shoots on heather plants
- Regeneration of trees (Rowan, Birch) through heather
- Areas of tall acid grassland with thick thatch on ground layer

Signs of overgrazing in heather moorland

- Closely cropped grass (and moss) dominated lower hill slopes
- Small patches/mosaics of highly fragmented heather and grass
- Areas of low growing heather plants, ‘Carpet heather’
- Areas of pin cushion, ‘Topiary’ heather and single branches, ‘Drumstick’ heather
- More than 60% heather flowers/new shoots grazed annually
- Noticeable signs of grazing of unpalatable grasses such as Mat grass and Purple Moor grass, particularly in spring.
- Bracken encroachment

Evidence of overgrazing by sheep creates ‘topiary’ heather with open areas of grass mosaics.
Table I: Management prescriptions for enhancing moorland grazed by sheep.

| Current Heather condition | Ewes per hectare plus any off-wintering*  
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Glastir stocking rate is 0.2 – 0.5lu/ha (1-4 ewes/ha)</td>
</tr>
</tbody>
</table>
| Good                      | For first 5 years: 0.75 – 1.5 and zero off wintering (OW)  
|                           | After 5 years: 1.5 – 2.0 and 50% OW |
| Poor                      | For first 5 years: 0.5 – 0.75 and 100% OW  
|                           | After 5 years: 1.5 – 2.0 and 50% OW |
| Suppressed                | For first 5 years: 0.5 and 100% OW on grass  
|                           | For years 6-10: 0.5 – 0.75 and 50 – 100% OW  
|                           | For years 11-15: 1.5 – 2.0 and 50% OW |

* Off wintered sheep are put on in-bye land or are housed. Source: Adapted from Sutherland and Hill (2005).
Native woodland and wood pasture

Many woodlands are a mixture of several habitats, especially if they are open to grazing as is the case with wood pasture. Management plans for individual woods may vary but most plans should include measures that enhance the woodland environment for wildlife. This may involve such measures as: maintaining or creating tree species diversity, retaining or creating age structure, keeping rides/glades free from trees, retaining dead/fallen trees, maintaining/creating several layers within the wood, ie field layer, shrub layer and canopy. Other than livestock, grazing animals such as deer, rabbits and voles can have a significant impact on tree regeneration and distribution within a wood. In mature and semi-mature woodland, livestock exclusion may be the only practical solution to protecting the woodland habitat. In wood pasture situations, complete exclusion of livestock (through fencing) may well damage existing conservation interest.

Signs of undergrazing in native woodland
- Dense stands of single species trees such as young birch, ash or sycamore
- Impenetrable shrub layer
- Lack of diverse ground flora
- Few open spaces/glades
- Few open woodland rides

Signs of overgrazing in native woodland
- Absence of any sign of tree regeneration
- Lack of young trees
- Uniform age structure
- Uniform tree size
- Increased bracken cover
- Domination of field layer by small number of plants
- Ring barking of mature trees, dead trees and browsing of branches
- Browse line on trees

Native woodland that would benefit from fencing to encourage natural regeneration of trees.
Coastal habitats

Included here are: rocky shores, sea cliffs, dunes and saltmarshes. Species diversity can be very high in such habitats but grazing management can be problematic due to accessibility. For most of these habitats, there is little active management that can be undertaken except for grazing.

Signs of undergrazing in coastal grassland

- Scrub (hawthorn, bramble, gorse) and woody tree growth on sea braes (except on cliffs, beyond the reach of browsers)
- Tall and even sward height (over 15cm)
- Domination by coarse grass species
- Reduced number of flowering plants such as thrift

Signs of overgrazing in coastal grassland

- Uniform short sward height (under 2cm)
- Bare patches of exposed soil/rock by livestock trampling
- Increase in ‘undesirable weeds’ such as ragwort, docks and thistles
- Lack of invertebrate species such as butterflies
- Lack of ground nesting birds due to disturbance by stock

Rank coastal grasslands that would benefit wildlife if grazed by sheep at an appropriate grazing level to generate a more uneven sward height.
General grazing management guidelines

General stocking rates should take account of the fact that each type of grazing animals has its own grazing behaviour and plant selectivity. As a guide annual average stocking densities for a range of semi-natural habitats are listed in Table 2.

Win-wins for farmers and the environment

There are a number of situations where the same management actions are beneficial to both livestock and the environment. For example, fencing wetlands to exclude stock can be beneficial both for the habitat and the control of liver fluke in livestock.

In addition, the buffer areas created by double fencing hedgerows reduces the contact between neighbouring stock which benefits biosecurity and also creates a wildlife corridor. Planting and managing these areas appropriately can provide a network of habitats around and across the farm, which will have even higher conservation value.

Biodiversity targets and climate change mitigation measures

In Wales and across the UK, there are national biodiversity and carbon storage targets. Targeted conservation grazing schemes will almost always contribute positively to this because they act to increase biodiversity, reduce diffuse pollution and help to lock carbon in the soils. Similarly, inappropriate and unsustainable grazing practices will have a negative impact on environmental targets.

Other factors which can affect habitat condition

Factors other than livestock type and density can affect the condition of a habitat, such as: wild animals’ feeding preferences, distribution and palatability of plants, weather; soil type, geology, altitude, aspect and the effects of fire. Availability of drinking water, supplementary food, shelter and shade will also influence animal movement and grazing behaviour on sites. Because of these other factors it is important to watch out for how the vegetation behaves each season and move stock around if grazing is too heavy or light.
Table 2: Guideline annual average stocking rates for a range of semi-natural habitats.

<table>
<thead>
<tr>
<th>Semi-natural Habitat</th>
<th>Guideline annual average stocking rate (LU/ha/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grassland</strong></td>
<td></td>
</tr>
<tr>
<td>Improved grassland (eg Lolium)</td>
<td>1.00 - 2.00</td>
</tr>
<tr>
<td>Semi-improved grasslands</td>
<td>0.75 - 1.00</td>
</tr>
<tr>
<td>Unimproved lowland grassland</td>
<td>0.4 – 0.75</td>
</tr>
<tr>
<td>Unimproved upland grassland (eg Nardus)</td>
<td>0.2 – 0.6</td>
</tr>
<tr>
<td><strong>Moorland</strong></td>
<td></td>
</tr>
<tr>
<td>Glastir</td>
<td>0.2 – 0.5</td>
</tr>
<tr>
<td>Young heather (&lt; 20 cm)</td>
<td>0.20</td>
</tr>
<tr>
<td>Intermediate heather (20 – 40 cm)</td>
<td>0.05</td>
</tr>
<tr>
<td>Old heather (&gt; 40 cm)</td>
<td>0.02</td>
</tr>
<tr>
<td>Blanket Bog</td>
<td>0.06 0.01 – 0.4</td>
</tr>
<tr>
<td><strong>Woodland</strong></td>
<td></td>
</tr>
<tr>
<td>High fertility (eg Lowland broadleaves)</td>
<td>0.15</td>
</tr>
<tr>
<td>Moderate fertility (eg Birchwood)</td>
<td>0.07</td>
</tr>
<tr>
<td>Low fertility (eg Native pinewood)</td>
<td>0.03</td>
</tr>
<tr>
<td>Mob-stocking to enhance regeneration*</td>
<td>0.25 – 0.50</td>
</tr>
<tr>
<td><strong>Wetland</strong></td>
<td></td>
</tr>
<tr>
<td>Rush pasture</td>
<td>0.40 - 0.60</td>
</tr>
<tr>
<td>Lowland raised bog</td>
<td>0.05</td>
</tr>
<tr>
<td>Swamp and fen</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Coastal</strong></td>
<td></td>
</tr>
<tr>
<td>Coastal sand dunes</td>
<td>0.6</td>
</tr>
<tr>
<td>Coastal heath</td>
<td>0.1 – 0.4</td>
</tr>
<tr>
<td>Saltmarsh</td>
<td>0.4</td>
</tr>
</tbody>
</table>

* for short periods only. Source: Paul Chapman, SAC.
Action points for conservation grazing

- Work to a five year grazing plan for the site.
- Check sward height and structure regularly.
- Be prepared to alter the grazing plan if the site appears to be over or under grazed.
- Make a simple photographic record from fixed points and fixed times annually to assess how the site is changing through time.
- Seek professional land management advice if in doubt.

Useful websites
www.grazinganimalsproject.org.uk

Contact

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