Scotland's MOORLAND FORUM

Principles of Moorland Management

Heather Cutting Guidance

Through the Principles of Moorland Management project, Scotland's Moorland Forum is preparing a range of guidance that provides practitioners, working in upland and moorland areas, with a source of information that reflects good practice and establishes a standard for accepted management techniques.

Information that is available elsewhere has not been duplicated, but a reference to it is included.

All the documents should be seen as representing evolving guidance. The aim is to review the documents at least annually so that they reflect the latest information.

Practices in this guidance, which are backed up by legislation and/or regulation, contain the word '**MUST**' in bold, letters. Failure to adopt these practices could lead to prosecution.

Parts of the guidance contain the word '**should**' in bold, lowercase letters. The actions identified in this way are not covered by legislation but land managers are expected to follow these parts of the guidance, as they represent sound, acceptable practices, which aim to achieve sustainable management of the hare population.

This Heather Cutting guidance consists of:

- This Guidance - an overview of the issues that practitioners need to be aware of; and
- Supplementary Information – more background information about heather cutting options.

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Acknowledgements
The guidance has been prepared for Scotland's Moorland Forum by representatives of: the Royal Institution of Chartered Surveyors, The Heather Trust, British Moorlands Ltd, the Royal Society for the Protection of Birds and the Scottish Gamekeepers Association; and it has been reviewed by the Project Steering Group.

The member organisations of Scotland's Moorland Forum are listed in Supplementary Information No. 1.

Revision Table

Date	Details

1 The Law and Heather Cutting

1.1 There is no law or regulation that relates specifically to heather cutting.

1.2 Although there is no season laid down for cutting of upland or moorland vegetation, to minimise the risk of damage practitioners **should** follow the muirburn season (see Further Information No. 1): 1st October to 15th April, with a possible extension to 30th April, with the landowners consent.

1.3 Use of cutting machinery on moorland has the potential to be hazardous. An appropriate risk assessment, as required under health & safety legislation, **MUST** be carried out.

1.4 Operators **should** have appropriate competency and hold all necessary training certificates, qualifications and insurance cover.

1.5 Before carrying out any work, an assessment of the proposed cutting area(s) **MUST** be carried out, to ensure that there is no risk of damage to: protected sites and species, nesting birds or their eggs and other natural heritage features, or features of archaeological or historical value.

1.6 If in there is any doubt, managers **should** take professional advice and check with statutory agencies, such as Scottish Natural Heritage and Historic Environment Scotland (see Further Information Nos. 2 & 3.).

2 Aim of the Guidance

2.1 This guidance aims to allow the managers of upland and moorland areas of Scotland to make informed decisions about how best to manage the heather, and other vegetation, in these areas using cutting on its own, or in conjunction with burning.

2.2 For simplicity, in this guidance reference is made to heather, but the guidance applies equally to other vegetation types.

2.3 Some scientists, NGOs and members of the public, believe that heather management in general, and muirburn in particular, **should not** be permitted on the grounds that these operations cause the loss of nutrients from the ecosystem, may contribute to air and water pollution and contribute to a perceived loss of wildness in the upland landscape.

2.4 However, burning and cutting heather remain legal operations, and many landowners and managers believe that these operations are an essential part of their management and the long-term stewardship of the land under their control.

3 Management Options

3.1 There are three management options for the management of upland or moorland vegetation: grazing, burning or cutting (mouth, match or machine).

3.2 Grazing may be carried out by domestic livestock and/or by wild herbivores. The recent reduction in sheep numbers, especially in the north west of Scotland, has resulted in a major increase in vegetation height, and where it is decided that management is required, this means that there is a greater requirement for other management methods.

3.3 Chemical control is a fourth option that may be appropriate for particular purposes in clearly defined areas, for example, the control of bracken.

4 Why Manage Heather?

4.1 There are several reasons for managing moorland and upland vegetation:

4.1.1 To control the age and density of heather to provide food, particularly early in the year, for deer or sheep and improve the quality of shelter.

4.1.2 To reduce predation of all ground nesting birds.

4.1.3 To provide grouse with access to areas of young heather, which is a primary food source.

4.1.4 To increase species diversity or maintain heather cover.

4.1.5 To reduce the risk of damaging wildfires. Cutting can perform a crucial role in restricting the spread of wildfire, both as part of a wider, long-term land management plan and also as a proactive control measure in the event of a major fire.

5 Heather cutting

5.1 Heather cutting is a technique for maintaining and rejuvenating moorland vegetation by mower, flail, swipe or similar equipment.

5.2 Machinery may be used to create a mosaic, or pattern, of different-aged heather for improved feeding value and shelter for farm livestock, deer, grouse and other moorland animals.

5.3 Cutting is not suited to every terrain and moorland managers **should** consider whether their objectives could be achieved by alternative means.

5.4 When cut heather is collected and taken off site, the nutrients it contains will be removed with it.

6 Impacts of Cutting and Burning

6.1 Impacts of Cutting

6.1.1 Slow regeneration of heather after cutting may lead to grass dominance and loss of heather cover.

6.1.2 Nutrients may remain in cut material and unavailable to regenerating heather plants.

6.2 Impacts of Burning

6.2.1 Ash from muirburn returns to the soil in a form that is readily usable and provides some of the constituent minerals that are necessary for the growth of young plants.

6.2.2 Repeated burning leads to the long-term loss of soil nutrients.

6.2.3 Exposure to light and cold temperatures, following burning, invigorates heather seed.

6.2.4 Burning followed by sheep grazing is associated with long-term heather loss.

7 Constraints

7.1 Weather and ground conditions

7.1.1 Heather is more vulnerable to loss on richer soils, as a result of competition from species that grow more vigorously in these conditions.

7.1.2 Rainfall and adverse weather inhibits heather management.

7.1.3 Burning is not possible in excessively dry conditions.

7.1.4 Ground conditions may be too soft to allow heavy machinery to carry out cutting work. Burning may be feasible on such ground, although neither technique **should** be carried out on blanket bog or ground of scientific or cultural interest that is liable to be damaged.

7.1.5 It is important that damage to peat-forming vegetation from heavy machinery is avoided. The greater the ground pressure and the wetter the ground, the more likely it is that the vegetation will be damaged, and that the machinery itself may become bogged.

7.1.6 Cutting during cold weather can lead to the frosting and death of damaged plants, which are more vulnerable after cutting. Since the success of the cutting technique depends upon regeneration from live plants, this may have a serious impact on heather recovery.

7.1.7 It may be impossible to use cutting machinery on ground that has stony outcrops, boulders, steep or uneven terrain or other obstacles.

7.2 Human and Financial Resources

7.2.1 Land managers may be able to use cutting machinery already in use on the farm or estate.

7.2.2 In certain circumstances cutting may be cheaper than burning, but this will depend on the terrain and the availability of labour and equipment.

7.3 Land Use

7.3.1 Cutting may be the best option on heather close to woodland. Burning is often discouraged in these areas to avoid the risk associated with fires that spread out of control into forestry. In the absence of any management, heather in and around forestry plantations tends to grow rank and burning such areas becomes even more dangerous and difficult.

7.3.2 The proximity of residential development to moorland and lowland heath may preclude management by burning. Cutting may be a better alternative.

7.4 Pollution and Environmental damage

7.4.1 Concern over the release into the atmosphere of carbon stored in peat, the damaging effects on health of smoke, the pollution of water courses (including drinking water supplies) by ash and the increase in erosion in some areas caused or exacerbated by muirburn, have led several government agencies, utility companies and environmental charities to discourage the practice.

7.4.2 Heather cutting allows the heather management objectives to be achieved without the potential negative impacts associated with burning.

7.5 Ecology

7.5.1 Lowland heaths are more likely to need management by cutting, grazing or burning, to retain the typical plant assemblage; in contrast, upland heath in northern latitudes may need little intervention where heather is already the climax vegetation.

7.5.2 Vegetation overlying peat has a very low nutrient value, and management effort is better restricted to dry heath.

7.5.3 Liverwort-rich heath is a rare habitat where old growth heather **should** not be cut, grazed or burnt.

7.5.4 High altitude prostrate heaths are of very low nutrient value and **should** be left as they are.

8 **Machinery** (also see Supplementary Information)

8.1 Heather cutting is often carried out using machines designed for thistles or rushes, known as "toppers". Some practitioners use specialised "mulchers", also known as "hammer flails", or "munchers". The pros and cons are set out below.

8.1.1 Topper (horizontal blades or chains)

- Cheap and universally available (most farms already have something similar).
- Low maintenance costs.
- Flexible, rough and ready management option, but great care is required to avoid damage on stony ground.
- Can create mounds of unwanted debris.
- On finer, sharper cuts, toppers can lead to more immediate regeneration from the stem.

8.1.2 Mulcher (vertical hammers or chains mounted on a drum with a horizontal axis).

- Quick, efficient management.
- Reduce litter into a fine mush, which causes less obstruction to regeneration.
- May be suitable for tackling scrub encroachment.
- Expensive machinery requires specialist contractors.
- Often unsuitable for use on stony or uneven ground.

Figure 1: Operation of a Topper (left) and a Mulcher (right)

9 Cut material (also see Supplementary Information)

9.1 Whereas muirburn converts combustible parts of heather plants into nutrient-rich ash, cutting machinery leaves a swathe of cut material, as windrows, lying on top of the remaining plants.

9.2 Cut material can be harvested, in bales or in bulk, for a number of uses, although its removal off-site leads to a reduction in the store of nutrients in what may already be relatively infertile areas.

9.3 The extent and position of cut material remaining after cutting can have a serious impact on the remaining vegetation.

10 Aesthetic Considerations

10.1 Cutting in large patterns across an extensive area of heather distributes management evenly across the landscape.

10.2 Large-scale geometric patterns produced by cutting can be unattractive in the eyes of those who prefer a natural appearance to the uplands.

10.3 Thin, single passes tend to be less controversial than wide parallel tracks.

10.4 Curves and snaking patterns look more natural than straight lines.

10.5 Commentators have also expressed a dislike of the aftermath of burning, leaving what is described as “a charred, burnt landscape”.

11 Targeted Habitat Creation

11.1 A loosely geometric grid of cut heather may be distributed in thin strips across open moorland – British Moorlands Ltd. have developed this style as ‘Narrow Strip Matrix’ (NSM). See Supplementary Information and Further Information No. 4.

11.2 Cuts may be made up of single passes, as narrow as 3 metres wide, or double passes, but may run for many hundreds of metres.

11.3 This style of management has been demonstrated to increase grouse numbers and create habitat for hares and waders at several sites on Speyside.

12 The End Product

12.1 After burning, relatively young heather can produce rapid growth from stick, rootstock and seed, and this vegetation has a higher available nitrogen and phosphorus content than cut or unmanaged plants.

12.2 After cutting, heather can be quite slow to recover. This is usually because a good deal of heather regeneration comes from the cut stick, and the plant requires time before starting to regrow.

12.3 Careless, or over-enthusiastic cutting, especially in older stands, can kill heather plants outright.

12.4 In some areas, the first response to heather management is from berry species, which flush with vigour within a few months burning or cutting.

12.5 The interval before the heather responds can allows other species to establish, leading to a more varied blend of vegetation.

12.6 The flush of berry growth and cottongrass can provide a positive boost for grouse after cutting, introducing an element of variety to the sward.

12.7 Studies show that after 10 growing seasons, there can be little visual difference between cut and burnt plots, but the nutrient content of these different forms of regeneration is largely unknown. See Further Information No. 5.

FURTHER INFORMATION

1. The Muirburn Code (2017)
   http://www.muirburncode.org.uk

2. SNH Area Offices
   https://www.nature.scot/about-snh/contact-us/area-offices

3. Historic Environment Scotland
   https://www.historicenvironment.scot/about-us/contact-us/

4. British Moorlands
   https://britishmoorlands.com

5. Cotton, D. E., & Hale, W. H. (1994). Effectiveness of cutting as an alternative to burning in the management of Calluna vulgaris moorland: results of an experimental field trial. Journal of environmental management, 40(2), 155-159.
   https://www.sciencedirect.com/science/article/pii/S0301479784710115

6. Birks, H.J.B. & H.H. The Rise and Fall of Forests. Natural succession to moorland. University of Bergen and Bjerknes Centre for Climate Research.
   http://science.sciencemag.org/content/305/5683/484

Heather Cutting Guidance - Supplementary Information No. 1
Members of Scotland's Moorland Forum

Association of Deer Management Groups	Royal Institution of Chartered Surveyors in Scotland
British Association for Shooting and Conservation	Royal Society for the Protection of Birds Scotland
British Deer Society	Scottish Association for Country Sports
British Trust for Ornithology (Scotland)	Scottish Countryside Alliance
Cairngorms National Park Authority	Scottish Environment Protection Agency
Confor	Scottish Gamekeepers' Association
Crofting Commission	Scottish Government
Forestry Commission Scotland	Scottish Land & Estates
Game and Wildlife Conservation Trust	Scottish Natural Heritage
Heather Trust	Scottish Raptor Study Groups
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National Trust for Scotland	Scottish Wildlife Trust