

Managing moorland... for bumblebees

Bumblebees are key to maintaining Britain's biodiversity as so many wildflowers depend upon them for pollination. Moorlands and their associated habitats such as mountains, forests, heaths and bogs are valuable wildlife habitats which make up 46,000 square kilometres of the British uplands and cover approximately 43% of Scotland, 14% of Wales, 8% of Northern Ireland and around 5% of England. All of these moorlands support bumblebee habitats which, in turn, provide bumblebee populations with an important refuge.



High quality heather moorland in full bloom at Gairnshiel, Aberdeenshire. Adam Smith (GWCT).



Why maintain a moorland?

Moorlands are fantastic areas for wildlife, including bumblebees. Indeed, the Bilberry bumblebee (*Bombus monticola*, also known as Mountain bumblebee or Blaeberry bumblebee) is found only in bilberry-rich moorlands. The Heath bumblebee (*Bombus jonellus*) is also found in moorlands. The heavy abundance of heather on most moorland provides a nectar source for bumblebees late into the summer months and dense patches of heather provide an excellent shelter for bumblebees if the weather takes a turn for the worst.

Most moors are semi-native habitats, maintained in their open, sunny form by management and land-use. Grazing, burning and cutting for sporting and farming reasons over hundreds of years has resulted in a grouping of plants which thrive under this management.

Sensitive moorland management to help conserve bumblebees.

Management	When	Why
Rotational heather burning (muirburn) – between 5-25 years, depending on the rate of heather growth and other management aims e.g. grouse.	Restricted by law to between the 1 st October and 10 th April in England and Wales and 1 October to 15th April in Scotland.	If heather is left to grow, it grows dense and woody with a reduced flowering. Controlled burning removes the dead heather and encourages new growth.
Graze with livestock	April to October	Grazing keeps the heather growth under control. However, grazing by sheep, cattle, deer and hares must be balanced in order to avoid over-grazing and over-trampling of fragile soils.
Spray bracken with safe herbicides	Mid-July to the end of August	Bracken kills other vegetation and can be poisonous to sheep and cattle as well as producing potentially carcinogenic spores.
Mow (or burn, with permission) areas of heather affected by heather beetles	August-September	A license must be obtained to burn the heather out of season as the potential for damage to other biodiversity at this time of the year must be balanced against heather recovery.

Bee-friendly moorland plants

Bilberry (*Vaccinium myrtillus*, also known as blaeberry, winberry or whortleberry) is an excellent evergreen shrub for the Bilberry bumblebee. It is widespread in upland sites and grows best in sunny spots, typically open areas following muirburn and grazing and in forestry sites in light shade.

Birds-foot trefoil (*Lotus corniculatus* /*L. pendunculatus*) is another moorland favourite of bumblebees as it provides excellent forage for the workers. It flowers throughout May to August and is a hardy plant largely due to its deep, branched root system.

Heather (*Calluna vulgaris*) is the dominant plant in the majority of

moorlands and is also a useful plant for bumblebees. Bell heather (*Erica cinerea*) and cross-leaved heather (*Erica tetralix*) are both fantastic plants for bumblebees, especially the Heath bumblebee. The queen Heath bumblebee uses the pollen to establish nests and rear workers. If heather is not in abundance, the queen may use wild thyme (*Thymus polytrichus*) as a



substitute. Buff-tailed bumblebees and Red-tailed bumblebees are also known to heavily use heather as a nectar source.

Pests

Heather beetles can become a significant pest where heather is stressed by drought, over-grazing and flooding. Heather beetle erupt in large numbers after mild winters and warm springs. The heather beetle eggs hatch into grubs in late May and feed on young heather shoots and stems causing them to desiccate and die. One of the most effective methods managing the impact of heather beetles is by controlled rotational heather burning (muirburn) of the moor, including affected areas. Follow burning advice in the Heather Burning Code or Muirburn Code for your country. If moorland habitat

quality is very poor it is possible to get a license to burn moorland out of season from the appropriate governmental organisation (NRW in Wales, SNH in Scotland, NE in England).

Bracken can swamp and suppress many of the flowering plants that benefit bumblebees. It is important to keep the levels of bracken in check on your moorland. Where it is necessary to eradicate bracken, use a safe herbicide or use machinery to cut/roll over the stands. Targeted grazing by cattle or horses in early spring using licks to concentrate grazing, when the fronds are emerging can also be very effective, the aim being to trample the young fronds. Limited poaching in the autumn will expose rhizomes to frost, further weakening the plant. However,

bracken may be poisonous for cattle and sheep (but this is rare and usually down the animal not the plant), and the spores are considered carcinogenic. More information from www.brackencontrol.co.uk.

Phytophthora ramorum is a fungus-like pathogen recently recorded in bilberry, resulting in severe dieback. This notifiable disease can be transferred to other species such as larch, and full biosecurity measures are necessary surrounding affected sites. No cure or chemical treatment has been found to date. See guidance from the Forestry Commission for more information (www.forestry.gov.uk/pramorum).



Heath bumblebee in flight, showing the white tail and two yellow stripes extending across the thorax and abdomen.



Bilberry bumblebee in flight, showing the characteristic orange tailed and two yellow stripes .



Heather moorland at Langholm demonstrating how significantly grazing can affect the habitat. The moorland to the top left is fenced, excluding sheep, and on the right the sheep have access. The heather and other flowering shots have been grazed off, leaving only grasses (Adam Smith, GWCT).

Heather Moorland

Where heather has been lost to grass through overgrazing or bare peat has formed, bee-friendly heather moorland can be re-instated by re-seeding heather; in very small areas plug-planting can

also be used. Specialist advice is necessary to make sure the right conditions are present and seeds germinate and survive (www.moorlandassociation.org).

Livestock grazing

Grazing is a very effective means of managing moorland areas. However, it is crucial to have a correct density of livestock and, where present mountain hares, red and roe deer. Too few grazers and the moorland will become old and tired, producing fewer flowers unless burning or cutting is used. Too many grazers will lead to overgrazing and suppression of nectar and pollen rich flowers (see picture, left). Minimising grazing pressure during the winter is especially valuable at protecting the flowering heather tips.

Funding

Funding to support the management of moorland habitats is available through the UK's regional agri-environment schemes.

Other Links

The Heather Trust
(www.heathertrust.co.uk)
The Game and Wildlife Conservation Trust
(www.gwct.org.uk)

Key facts

Upkeep – Balanced summer grazing with heather burning every 5 to 25 years (depending on rate of growth).

Suitable for – Moorland/Heather Moorland

Sustainability – Long-term option

Bumblebee rating - ****

bumblebeeconservation.org