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Iconic Bees: North East Bilberry Bumblebee

Bees are a vital to the ecology of the UK and provide significant social and economic benefits through crop pollination and maintaining the character of the landscape. Recent years have seen substantial declines in many species of bees within the UK. This report takes a closer look at how 13 'iconic' bee species are faring in each English region, as well as Wales, Northern Ireland and Scotland. In North East the report focusses on the *Bombus monticola.*

Authors Rebecca L. Evans and Simon G. Potts, University of Reading.

Key Facts:

- A generally high altitude bumblebee. The species name monticola means 'mountaineer'.
- Strongly associated with the Bilberry.

Good places to see: Most upland areas with an abundance of Bilberry. Dipton Woods, Northumberland is a particularly good spot.

Bombus monticola, Peak District. © Tim Melling

Through collating information on the 13 iconic bee species, common themes have emerged on the causes of decline, and the actions that can be taken to help reverse it.

The most pervasive causes of bee species decline are to be found in the way our countryside has changed in the past 60 years. Intensification of grazing regimes, an increase in pesticide use, loss of biodiverse field margins and hedgerows, the trend towards sterile monoculture, insensitive development and the sprawl of towns and cities are the main factors in this.

I agree with the need for a comprehensive Bee Action Plan led by the UK Government in order to counteract these causes of decline, as called for by Friends of the Earth. But households and communities, local authorities and agencies, and devolved governments can also make a significant difference. And while it's critical that the UK Government acts to reverse the decline in all bee species, some of the iconic bees identified in this research also have very specific and local needs.

Overarching Recommendations include:

- Government[i], local wildlife groups and local authorities to raise awareness of bee diversity and pollinators' ecological and economic importance.
- Government to ensure further surveying and monitoring of wild bees to establish more accurate population numbers and changes.
- Government to ensure there is enough expertise and advice available for landowners, local authorities and farmers to inform bee-friendly land management.
- Government, local wildlife groups and local authorities to promote sympathetic grazing regimes to landowners and farmers that ensure adequate bee-friendly forage availability until the end of summer/early autumn.
- Government to encourage farmers to take-up the most beneficial Agri-environment options such as sowing pollen and nectar mixes, buffer strips, wildflower margins, sympathetically managed hay meadows and semi-natural grasslands. These options need to be widely available and financially viable for the landowner.
- Government to set quantitative targets for the reduction of all pesticide use and to encourage the use of alternative pest management methods.
- Government to ensure protection for sites of importance to rare and threatened bees, for example with SSSI designation.
- Government and local planning authorities to ensure that biodiversity priority lists and action plans are consulted as part of their consideration of any planning or development proposals and damage to priority species and habitats avoided.
- Local planning authorities to encourage developers to include bee-friendly habitat when carrying out developments.
- Planning authorities to identify important populations of rare or threatened bee species and significant sites for bees in their local plans, ensuring that they are adequately protected.
- Local authorities and local wildlife groups to encourage gardeners and local communities to grow more wild and/or bee-friendly plants in open spaces and gardens.
- Local authorities to grow more bee friendly plants in parks and open spaces.

These actions cut across various policy areas and involve multiple actors. Friends of the Earth's call for a Bee Action Plan is primarily aimed at the UK government, but would involve devolved governments, key stakeholders such as farmers, bee keepers, local authorities and agencies to advise on its content and implementation.

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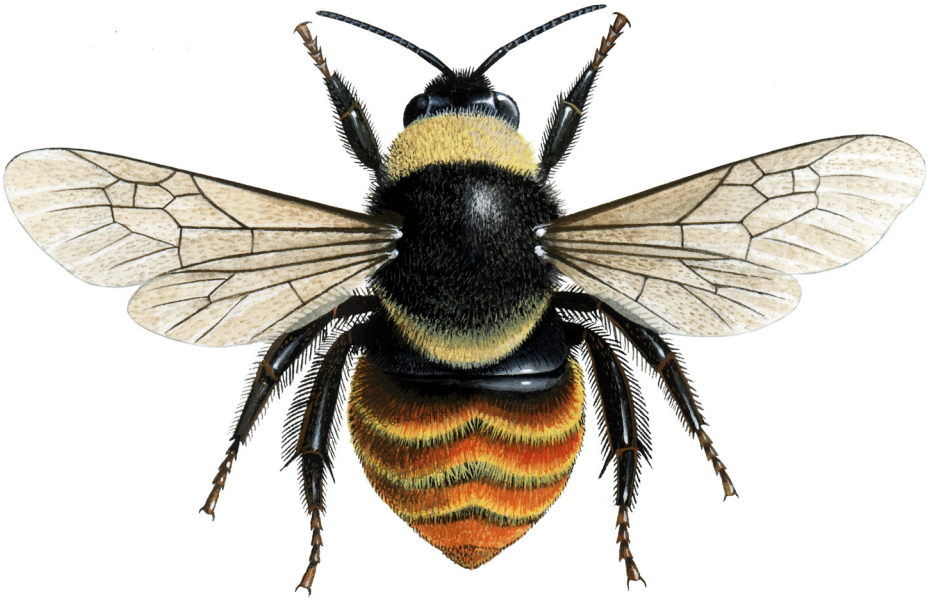
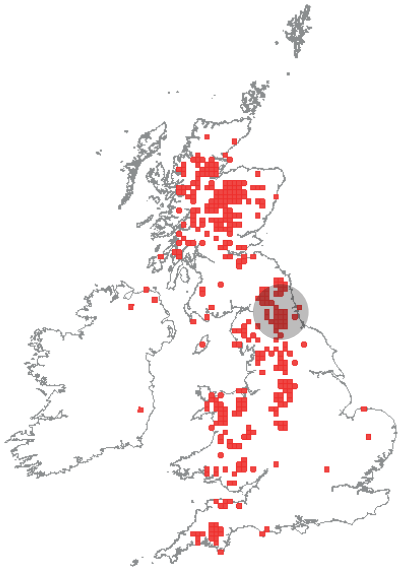
[i] Government refers to UK Government or where powers are devolved to the relevant devolved Government



Common name:
Bilberry/Blaeberry Bumblebee

Latin:
Bombus monticola



North East is a key area for the *Bombus monticola*.

Description

This small bumblebee has a red tail and quite round face with a short tongue. There is a yellow band across both ends of its thorax (the front one being wider) and the red tail, although common to several other species of bumblebee, is diagnostic in covering most of the abdomen in this species. The males can be distinguished from the females by their yellow-haired faces.

Distribution and Status

- *B. monticola* is only found at the higher latitudes or altitudes of Western Europe including parts of Scandinavia, the Alps, the Pyrenees, Northern Italy and the Balkan mountains.
- It was formerly quite widespread in the British Isles (although never in the South East) but it is feared that its range may retreat to the North and West.

  As mentioned, *B. monticola* prefers high altitude, upland habitats such as mountain and moorland but is also happy at lower altitudes if at a higher latitude, for example, it has been recorded at sea-level in Scotland and Northern England.
- There is evidence to suggest it also needs access to grassland habitats and does not do well in pure moorland alone. There also seems to be a strong affinity with highland areas rich in Bilberry (one of the bee's favourite pollen sources).

Ecology and Behaviour

- Queen *B. monticola* emerge from hibernation in April and start looking for a suitable nest site which may be under vegetation and occasionally just under the soil surface. Once this is located, nearby soft dry materials such as grass and moss are gathered into a ball and used to insulate the nest. The queen makes a chamber inside this material with a single entrance. She secretes wax from her abdomen and forms it into a pot which she fills with nectar and next to it a

wax covered lump of pollen (almost exclusively from flowers of Bilberry or clover) inside which she lays around 8-16 eggs.

- The queen incubates her eggs and after a few days these hatch and the larvae begin feeding on the pollen which must be replenished by the queen as they grow. After a couple of weeks the larvae spin a cocoon and pupate and two more weeks after this hatch into the first all-female 'worker' bumblebees. Some of these will stay behind to help rear the next batch of workers but most will leave the nest and forage to bring back pollen and nectar for the nest workers and developing young. These workers can be seen from May onwards visiting flowers of Bilberry but also Sallow, Bramble, Raspberry, Bell Heather and legumes such as Clover and Bird's-Foot Trefoil.
- This cycle continues until around June when the queen switches from producing workers to that of males and new queens. These emerge from the nest to be seen between about July and October. The young queens feed purposefully on pollen and nectar in order to build-up fat reserves. Around this time they also set about looking for a mate and after mating, aim to find a suitable hibernation spot which is usually some loose soil in which they can burrow and form a small chamber in which to overwinter, living off the fat reserves they laid down. What remains of the colony i.e. workers, males and the old queen, expires from exhaustion. The cycle begins again the following spring.
- Over a quarter of British bee species are known as cleptoparasites or 'Cuckoo Bees'. This means that they enter the newly established nests of other bees, usually kill the queen and then lay their own eggs. The young, reared by the host workers will only ever be fertile females or males as cuckoo species do not need their own workers. The cuckoo bumblebee Bombus sylvestris is the parasite of Bombus monticola.

Causes of Decline and Conservation

- Historically, *B. monticola* was found in many upland areas of the North East wherever Bilberry was found in abundance as well as some Forestry Commission and private forest sites that were planted on acid bog or moorland.
- The main causes of the observed quite rapid decline in *B. monticola* are thought to be a combination of habitat loss and degradation as a result of development or under/over management, as well as possibly effects of climate change, both of which reduce or eliminate the flowering plants it needs to complete its life-cycle, in this case, Bilberry and legumes such as Clover and Bird's-Foot Trefoil.
- Within the North East this bee is probably less affected by habitat loss and degradation than in other places since areas of upland in this region are less subjected to those types of pressures. The region also supports a fairly well connected mosaic of good habitat that the bee should easily be able to disperse around.
- A local recorder spent the 1990s extensively surveying the uplands of **Northumberland and Durham** and from the mid 90s recorded a successional decline in the bee year on year. He noticed that the declines coincided with a weather pattern of mild early springs followed by frosts in late spring. This pattern brings the queen bumblebee out of hibernation in March and April but when the cold snaps hit at the end of April, their food plants often die. If queens have not already located and set-up a nest then they are unlikely to survive since their fat reserves are normally too depleted by that point to go back into hibernation.
- The recorder reported the year 2000 to be the worst for the species and noted its absence at many of the sites where it was usually seen.
- Unlike in some other parts of its UK range, numbers since then have been very slowly recovering despite further years since of warm periods followed by cold during the spring. National Park and Forestry Commission employed bumblebee

recorders however still note that the bee remains more thinly distributed than a couple of decades ago.

- One of the best places to see *B. monticola* in the **North East is Dipton Woods in Northumberland**; despite suffering the same decline over the 1990s, the population is still fairly healthy and productive, the site supporting good stands of Bilberry. This could be because the upland habitats in the North East are healthier and better connected than in other regions of the UK but it is very hard to say.
- Despite the decline of *B. monticola* in the UK, it has appeared in Ireland for the first time over the last few decades, being first recorded in 1974 in the Wicklow Mountains. It probably arrived there by being blown over from Wales and has since also established itself in the upland and heathland areas of Carlow, Wexford, Antrim (probably blown over from Scotland), Tyrone and Derry in Northern Ireland. Due to its decline in the rest of the British Isles, the Irish populations of *B. monticola* are now very important.

Recommendations

The report authors agree with the need for a **Bee Action Plan** to address urgent actions to be taken by the UK government, as called for by Friends of the Earth's Bee Cause campaign.

Further potential strategies to assist *B. monticola* and in turn its endangered cuckoo bee Bombus sylvestris include the following:

- **UK Government** to introduce a national programme to monitor populations of wild pollinators including declining, threatened or rare bee species such as *B. monticola*.
- **Local recorders and/or wildlife organisations** to continue survey work of existing populations in the area and identify any new sites where the species was previously unknown.
- **Local recorders and wildlife groups** to record the species and submit the data to the Bees, Wasps and Ants Recording Society (BWARS).
- **Local recorders and wildlife groups** to identify any corridors of potentially suitable habitat between existing populations and relate this to the species' dispersal distance and propensity. This information can then be used to determine if colonisation of these sites would be feasible given appropriate management of the corridor.
- If a corridor is established then it should be monitored by **local authorities, wildlife groups, or recorders**. If it is deemed particularly important, the local authorities should incorporate it into their local plans to provide protection for the corridor and the species dependent upon it.
- Wildlife groups to continue to raise awareness of *B. monticola* with **local authorities, local MPs** and land owners/managers where the bee occurs or where it could potentially occur.
- **Government agencies, local wildlife organisations and local authorities** giving advice to landowners in the above areas (and those surrounding) to promote the bee's required habitat e.g. sowing/ planting of Bilberry and leguminous plants and installation of a grazing/mowing regime that avoids removing forage flowers such as clovers, heathers and vetches until late summer/early autumn but also avoids undermanaging which would lead to scrub invasion.
- **Government agencies and local authorities** to encourage farmers near important *B. monticola* areas to provide Agri-Environment options to support the bees, such as pollen and nectar seed mixes of leguminous plants.
- If any management is undertaken then monitoring of its effectiveness by **local authorities, local recorders and local wildlife groups** should be undertaken.

Top: ***Bombus monticola*** worker on wild thyme, North Yorks Moors. © Louise Hislop

Bottom: ***Bombus monticola*** in flight over a bilberry bush, Hade Edge, West Yorkshire. © Tim Melling

- **Local authorities** should record any important sites (either already in existence or identified by the further survey work) for the bee in their local plans and ensure policies and mitigation plans are then in place to protect these populations.
- **UK Government and local authorities** to encourage developers to include bee-friendly habitat in new developments. This would be in-line with the National Planning Policy Framework which aims to achieve biodiversity gain.
- **Local people** in the region could also join local habitat creation campaigns such as the Friends of the Earth 'Bee Worlds' project and also sign their petition for a British Bee Action Plan.

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Want to know more?

More information about the University's work on bees can be found at www.reading.ac.uk/caer/staff_simon_potts.html

Information about Friends of the Earth's The Bee Cause campaign can be found at ***www.foe.co.uk/bees***

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