Bumblebees of the World

Layout: Eva Kettl, München, DE

Why bumblebees need our help

Prof. Dave Goulson, Sussex, UK

B. distinguendus, Prof. Dave Goulson

The story of bumblebees over the past century has been one of decline.

Two species became extinct in the UK during the 20th century: Cullum's bumblebee *(Bombus cullumanus)* last seen on the Berkshire Downs in 1941, and the Short-haired bumblebee *(Bombus subterraneus)*, last seen at Dungeness in 1988 and officially declared extinct in 2000. A further eight species (a third of the remaining species) are currently listed.

These declines have occurred mainly because of large-scale changes to the way the countryside is managed. First the mechanisation of agriculture, then later the public demand for cheap food, the need for ever-greater quantities of food and crops, and the increasing reluctance to buy 'wonky' fruit and vegetables have conspired to hugely reduce the nationwide density of the flowering plants that bumblebees feed on, as well as the sheltered corners that they nest and overwinter in.

As bumblebees only feed on flowers, they need far more plants than equivalent species which are able to also eat leaves or roots. They also, because of their colony-based lifestyle, need to have enough flowers available to sustain 40-400 sterile worker bees for the lifespan of the colony (potentially several months March-October) in order to produce the new reproductive individuals – males and queens – at the end of the colony lifecycle.

Many of our rarer bumblebee species don't forage more than 1km from the nest, and 5-600 metres is common, so areas must be both flower-rich and diverse to provide enough flowers to sustain the colony each year.

Additionally, because only the queen in each nest breeds, the size of the breeding population in an area each year is equal to the number of nests, not the number of bees. So for a population to be genetically-sustainable in the medium or long term, a relatively large number of nests is needed, each with around 50-100 times more non-breeding workers than reproductive individuals... all feeding on the fragile, ephemeral flowers that surround them.

It's therefore no surprise that actions which reduce the number of flowers in the countryside, from replacing a clover-rich horse paddock with a tractor shed in the 1950s (97% of flower-rich meadows have been lost since 1937), to mowing road verges fortnightly in the 2010s, have detrimentally affected bumblebee numbers.

Some of our rarest species – notably the Shrill carder bee *(Bombus sylvarum)* and Great Yellow *(Bombus distinguendus)* now survive only in more flower-rich, less intensively-managed areas such as the Gwent Levels or the Scottish machair.

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Photo: Bombus humilis
Peter Haringsma, Delft, NL

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Photo: Bombus muscorum
Prof. Dave Goulson, Sussex, UK

It would be very easy to demonise farmers at this point. While it is true that changes to agricultural methods have been detrimental to bumblebees (particularly as agriculture accounts for around 70% of the UK's land area), it should be remembered that farmers, as essentially small business owners supplying huge corporations, have little to no power in the current system.

Pressure from supermarkets and ultimately from consumers – for perfect, unblemished crops, for ever- increasing yields, for the cheap food that pushes farm-gate prices significantly below the unit cost of production – is driving farmers towards agricultural intensification, towards increased chemical inputs (pesticides and fertilisers), and, increasingly, out of business. In a choice between bankruptcy and staying in business by doing what everyone else is doing, it is easier to appreciate those decisions which have led to wildlife increasingly getting squeezed out of farmland.

Impact of bumblebee declines.
It is well-known that bumblebees are great pollinators, and therefore have a key role in producing much of the food that we eat. Through the pollination of many commercial crops such as tomatoes, peas, apples and strawberries, insects are estimated to contribute over £600 million per annum to the UK economy (2015), and in doing so prop up the £108 billion per-year food and drink industry in Britain. Across the EU, insect pollinators are estimated to contribute €14.2 billion annually to the EU economy (2012). If bumblebee and other insect pollinator declines continue, the extremely high cost of pollinating these plants by other means could significantly increase the cost of fruit and vegetables.

Bumblebees also help pollinate many wildflowers, allowing them to reproduce. Without this pollination many of these plants would not produce seeds, resulting in declines in both abundance and distribution for a range of species. As these plants are often the basis of complex food chains, it is easy to imagine how other wildlife such as other insects, birds and mammals would all suffer if bees disappeared.

What can be done?
It is entirely possible for individuals and other groups to help bumblebees!

Perhaps the simplest thing to do is to plant some bee-friendly plants in your garden, to flower between March and September. As gardens cover over one million acres in the UK, this presents a great opportunity to provide food for bumblebees. By using these spaces more effectively, we hope that everyone can get involved in making the landscape friendlier to bumblebees, and help reverse the declines of the past century.

The poster can be downloaded here for free: www.hummel-hildegard.com