

The conservation of bumble bees

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The approximately 250 known species of bumble bee (genus *Bombus*) are found predominantly in temperate regions of the northern hemisphere. This region also contains much of the world's human population and the most intensive agricultural regions. Probably as a result of this, many bumble bees appear to be undergoing dramatic declines in range. This decline has drawn considerable media attention, which is to be encouraged, but this has led to some confusion. Articles in national newspapers have claimed that bumble bees are 'threatened with extinction' yet, paradoxically, they remain a common sight in gardens. Here I attempt to clarify our knowledge of the status of bumble bee populations. I shall focus particularly on the UK as an example, since distributions of bumble bees (and many other invertebrates) are better known here than elsewhere.

The UK is widely accredited as having 25 bumble bee species, although there is considerable doubt whether *Bombus pomorum* was ever resident (it was only ever recorded a handful of times in the 1800s). *B. culumanus* was always scarce, being confined to chalk grassland in southern England, and was last recorded in 1941. *B. subterraneus* was once quite widespread in England, but declined rapidly in the 20th century and was last recorded in the 1980s, reducing the species count to 22. Several more species have declined greatly, notably *B. distinguendus* (now confined to a handful of sites in Scotland), and *B. sylvarum* (which clings on in a few sites in England and Wales). It is quite likely that there will be further UK extinctions in the near future. More alarmingly, the available (largely anecdotal) evidence suggests that these declines are occurring across Europe and North Amer-



Worker of *B. subterraneus*, extinct in the UK and suffering widespread declines in much of Europe.

ica (see review¹). For example *B. subterraneus* is now an exceedingly rare insect throughout most of its known range in Europe.

While many bumble bee species appear to be declining, a small number continue to be abundant, particularly in gardens. In almost

any location in Europe, planting a few square metres of bee-friendly flowers will attract at least five bumble bee species, often more. There is little evidence that these species have declined at all, and at least one species, *B. hypnorum*, appears to be expanding its range, having recently colonized the UK. So why have some species undergone drastic declines while others remain abundant? Recent studies suggest a possible answer. It seems that rare species tend to be more specific in their forage requirements. For example *B. humilis*, *B. ruderatus* and *B. subterraneus* all appear to specialize in gathering pollen and nectar primarily on legumes, notably red clover (*Trifolium pratense*), and seem to favour Viper's-bugloss (*Echium vulgare*) as a nectar source.² In contrast, widespread and abundant species such as *B. terrestris* and *B. pratorum* collect pollen and nectar from a broad range of plant species spanning dozens of families. The switch from horse-drawn to mechanized power on farms (reducing the need for legume-rich pasture), and from hay meadows to silage for animal feed, have resulted in a great reduction in the area of leguminous crops and of semi-natural grasslands in regions of intensive farming (notably across western Europe). Botanical surveys demonstrate that red clover has declined significantly in the UK.³ It is thus not surprising that bumble bee species that specialize in visiting red clover have declined. In contrast, generalist bumble bees able to exploit the eclectic mixture of exotic and domesticated flowers available in gardens continue to thrive.

Gardeners are often advised to plant traditional cottage garden flowers such as lavan-

der (*Lavandula angustifolia*), foxglove (*Digitalis* spp.) and Michaelmas-daisies (*Aster* spp.) to provide nectar for wildlife such as bumble bees. While these will provide forage for the common species, if we are to encourage the rarer bumble bees that are most in need of help we should promote the planting of clovers and other legumes such as bird's-foot-trefoils (*Lotus* spp.), vetches (*Vicia* spp.), meliots (*Melilotus* spp.) and sainfoin (*Onobrychis viciifolia*) in gardens and in wildflower mixes for field headlands and set-aside.

References

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