



The plight of **the bumblebee**

A little effort from all of us could help to ensure the survival of nature's most efficient pollinator

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COUPLE OF SUMMERS

AGO, when the plight of bees hit the headlines, I began paying more attention to the bees around me. And the more I looked, the more intrigued I became, spending much of my time sitting on a bucket near a nest I'd discovered, photographing the comings and goings of its resident bumblebees. What was it like in there, I wondered? How did those unfurling tongues, probing antennae and pollen baskets function, and what could we do to help this threatened insect who does so much for us?

My search led me to the door of Dr Dave Goulson, one of the world's leading authorities on bumblebees, who lives near the University of Stirling, where he is Professor of Biological Sciences. Goulson founded the Bumblebee Conservation Trust in 2006, has written the most comprehensive book on bee behaviour and ecology, and is part of a team that researched neonicotinoid insecticides, used on crops and gardens. The results made global news in March.

Ground-breaking experiments on bumblebees at Stirling and on



Bumblebee caption kicker

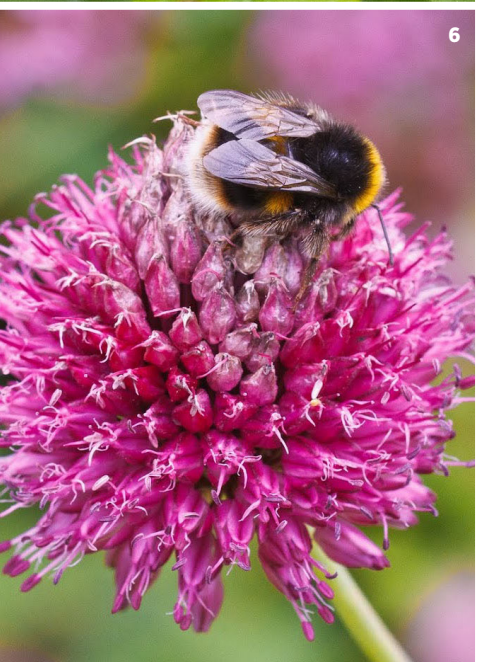
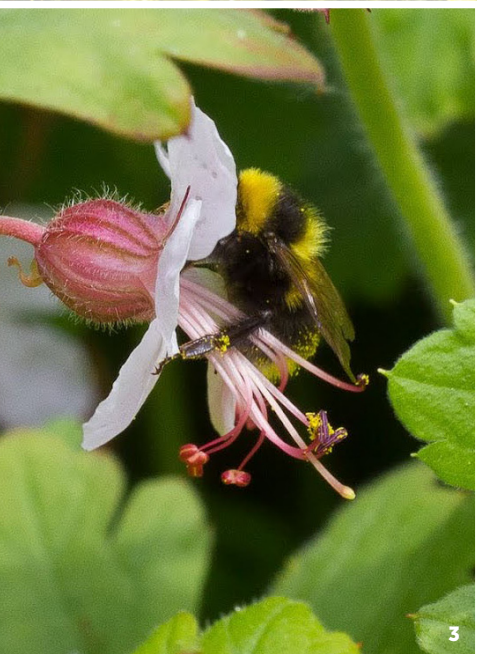
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honeybees in Avignon, France, revealed that these compounds interfered with their ability to navigate their way home. Unable to bring food back to the nest, the colonies starved, producing a staggering 85% fewer new queens.

'If these disappear,' said Dave, 'nothing can replace them.' Without bumblebees, you would get a poor harvest from runner beans, raspberries, strawberries and pumpkins. Unlike honey bees, bumblebees will forage in the cold and wet, and in a bad spring, are invaluable for an early crop, such as apples. Some species, having longer tongues, are the only pollinators for broad beans. A number of wild □





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□ flowers, including rare orchids and foxgloves, depend on them, and this has a knock-on effect for other wildlife dependent on these plants. But being so good at what they do has its jeopardies. Commercially reared colony boxes used by tomato and cucumber growers in their vast glasshouses, are infested with disease-carrying parasites and escapees have infected wild bee populations with disastrous results.

Having completed a biology degree at Oxford and a doctorate in butterfly ecology, Goulson decided in his twenties to make bumblebees the focus of his life's work.

AFTER YEARS OF RESEARCH, HE AND HIS COLLEAGUES had a pretty good idea why many species were in decline: modern agricultural practice and the loss of hedgerows. But what could be done? Frustrated by the way scientists were sounding the alarm in papers that were only being read by other scientists, he set up the Bumblebee Conservation Trust to raise public awareness and translate this knowledge into action.

One of the Trust's first projects was to plant the world's first dedicated bumblebee meadow (*opposite, top left*) as a means of showing farmers how to reinstate wild flower margins around their crops. The RSPB Reserve by Loch Leven, near Kinross, provided 20 acres of land which was deep ploughed to bury nutrients and then sown with clover, knapweed, scabious, trefoil, tufted vetch and grass-suppressing yellow rattle.

This perennial mixture of nectar and high quality pollen plants was designed to flower throughout the summer until cut in September. George Guthrie, a volunteer and moth specialist, conducts systematic monthly surveys to monitor the

CAPTION KICKER FOR OPP PAGE

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Bumblebee caption kicker

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bumblebee population and identify the species. Everyone is thrilled that the rare and beautiful blaeberry bumblebee, which lives in the heather strewn hills above, now flies down to the meadow to forage.

'When I dreamt up the idea of the Trust, it was a huge gamble as I had no idea if anyone would join,' admits Dave. But the now 7,500-strong membership speaks for itself. Run by a dedicated team from Stirling University, they have, among many other initiatives, reinstated 5,000 acres of flower rich habitat and were instrumental in reintroducing the short-haired bumblebee, extinct in England for 25 years, to Dungeness in Kent in May. They scooped the 'Best Environmental Project' prize from Heritage Lottery in 2010, and were awarded another tranche of Heritage Lottery money for their new Bees for Everyone project.

Whether you want advice on identification, what to plant in your garden or how to make a meadow or take part in other conservation work, the Trust website has the answers. You can also participate in species surveys in your own area. Goulson explain that this 'citizen science' enables scientists to gather data from all around the country at the same time, something that is impossible by any other means.

'Everyone can help,' says Goulson, 'by joining a recording scheme or by providing nesting sites and flowers. Gardens cover about 2,500 million acres of the UK, more than all the nature reserves, and they have the potential to be havens for wildlife.'

When a bumblebee queen comes out of hibernation in the early spring she is immediately faced with

formidable challenges. It's cold, she's very hungry and she needs to find a warm, cosy nest.

'These bees are "warm-blooded"; Dave explained, 'and the queen keeps her eggs warm by incubating them. She shivers to generate heat, which requires a lot of energy so she has to repeatedly dash out to bring in more nectar – and while she's gone the eggs get cold.' Left to fend for themselves, every component of their curious anatomy is engaged in survival and the speed and intensity with which they collect pollen and nectar, is fascinating to watch. A bumblebee can burn off the calories of a Mars bar in 30 seconds, Goulson told me, something a jogger would take an hour to do. Pollen is picked up by their hairy coats and combed by their front legs into 'baskets' on their hind legs while nectar is sucked into their honey stomach through a tube inside the tongue.

They use their antennae to smell how much nectar is in a flower – and they are also quite canny. The buff tailed bee is a notorious 'nectar robber', using her jaws to make a hole near the top of a petal to access the nectar her tongue isn't long enough to reach. Male bumblebees, by contrast, are a feckless lot. Their only purpose is to mate and leave. They bring in no food nor help defend the nest against predators.

DAVE GOULSON CONTINUES TO BE OPTIMISTIC for the future. 'Very few bumblebee species have gone extinct globally,' he points out, 'and so there is still time to save them. They provide a free and often taken-for-granted pollination service and if everybody planted just a few bumblebee-friendly plants in their garden, and every farmer left a few corners for wildflowers to grow, we could ensure a future for our bumblebees.' □

FIND OUT MORE

Visit bumblebeeconservation.org
Bumblebees: Their Behaviour, Ecology and Conservation *by Dave Goulson* (Oxford University Press, 2009, £34.95; ebook £27.08)

For details of how you can help bees visit saga.xxxxx