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Welcome!
to the first newsletter of the Bumblebee Conservation Trust (BBCT). We are a newly-founded organisation, so please bear with us through any teething troubles we may experience!

The BBCT was founded by a group of bumblebee enthusiasts in January 2006. Our aim is to conserve bumblebees and the places in which they live. We want to include as many people as possible in our activities over the coming years, and hopefully have some fun along the way.

If you are reading this then you have probably recently joined the BBCT, and on behalf of the management team I would like to extend you a particularly warm welcome.

Dave Goulson

Contents of Issue 1:

What are bumblebees?
Part 1 of our introduction to these beautiful and important insects

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Garden Flowers for Bumblebees; Legumes
Summer is almost upon us. Here are some of the best plants to grow to attract bumblebees into your garden.

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The Uists
The first in a series of features on places to see bumblebees

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Centre Spread
Each issue we feature our favourite bumblebee picture

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The Hunt for the Blaeberry Bumblebee
Join the hunt for Britain’s most beautiful bumblebee

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Books on Bumblebees

If you would like to learn more about bumblebees, all five of the books below are recommended reads:

Benton, T. Bumblebees. New Naturalist Series, Harper Collins, 2006. An excellent and detailed account of all the British species, including their identification, and the most detailed account to date of their ecology

Prys-Jones, O.E. & Corbet, S.A. Bumblebees. Richmond Publishing Co. 1991. A really nice little book on UK bumblebees, with lovely paintings of all the British species (the same ones as used in the BBCT poster), and good keys.


used to occur. What she wants to do next is find out where the species survives today, and for this she needs your help! If you live in the hillier parts of Britain, or are likely to visit them on holiday in the summer, please keep an eye out for this bee. It is very distinctive as it is the only British bumblebee in which the majority of the abdomen is orange (some common species have a red/orange tail, covering no more than a third of the abdomen). Please send records (date, grid reference, plus any other observations such as what flower it was visiting) to Jenn at jennifer.harrison-cripps@stir.ac.uk or by post to the BBCT. If you prefer, recording sheets can be downloaded from our website (www.bumblebeeconservationtrust.co.uk). Hopefully Jenn will be able to build up an accurate picture as to how many populations of this species still survive, to help us develop sensible conservation strategies.

Please note that we welcome records of all species, even the common ones, and even if they are only what you can find in your back garden. If you are unsure about identifying bumblebees (and most people are), you could attend one of our bumblebee identification training days (check website for dates). Or take a picture and send/email it to us with the date and place.

**BWARS (Bees, Wasps & Ants Recording Society)**

**www.bwars.com**

BWARS is the UK-wide amateur society with an interest in the distributions of all our bees, wasps and ants. The Society has about 300 UK based members, and aims to gather data on the distributions of all the UK bee, wasp & ant fauna, with a view to publishing distribution maps, and providing information to conservation organisations on the known biology and ecology of the species. BWARS also provides data for the National Biodiversity Network database, which can be accessed by the general public.

The Society aims to promote interest in bees, and in addition to producing 2 newsletters a year and distribution atlases, it contributes a column in British Wildlife magazine, runs and assists in training courses and helps provide advice to mass participation exercises such as “SpringWatch”. It also supports (and is sup-

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**Why a Bumblebee Conservation Trust?**

“Everybody knows the burly, good-natured bumblebee. Clothed in her lovely coat of fur, she is the life of the gay garden as well as the modestly blooming wayside as she eagerly hums from flower to flower”. F.W.L. Sladen, 1912.

So begins “The Humble-bee”, the first book ever written on bumblebees, and it is hard to be better as an opening line. With their large size, furry, colourful bodies and slow, buzzing, slightly clumsy flight, bumblebees are among the most endearing and welcome of insect visitors to the garden. In my mind they are forever associated with the endless sunny summer days of childhood. So it is particularly alarming that these loveable insects are slowly but surely disappearing. Three of the 25 or so UK species have become extinct, and five more are critically endangered. Over most of the UK only a handful of species remain. What has happened? Where have they gone?

The loss of our bumblebees is the result of profound changes to the countryside, particularly in the last 60 years. Pesticides were introduced widely during the second world war and their use increased steadily until the 1990s. Farmers were given subsidies to rip out hedgerows, and to plough up ancient flower-rich meadows. Well over 90% of our chalk downland was lost. Ponds and marshes were drained, heathlands ploughed, and woodlands cleared, all paid for by taxpayers money in the name of increased productivity. Faced with this onslaught, much UK wildlife suffered. Skylark and other farmland bird numbers plummeted and many butterflies and wildflowers disappeared. Bumblebees depend on flowers for food, and they nest in hedgerows, woodland and old meadows. As these resources disappeared, so did the bees.

Perhaps more so than any other creatures, we should be concerned by the loss of our bumblebees. For they are not just beautiful and endearing. They are a vital part of the ecosystem. They pollinate many of our wildflowers, and a great many of our crops. Without them, some of the remaining wildflowers would fail to set seed, and could vanish. Many of our crops would be less productive, such as raspberries, currants, beans and peas.

Fortunately, there is light at the end of the tunnel. The drive to intensify farming has largely ceased, and now farmers can get subsidies to replant hedgerows and sown wildflowers. Some of this is being targeted specifically at providing more habitat for bumblebees. There is a realistic hope that our countryside will slowly recover, and that once again we could live in a land that is bursting with biodiversity. We can all help to get there. Almost everyone has access to a garden or allotment, however small. Private gardens cover about 1 million acres (450,000 ha) of the UK, and they have already become a sanctuary for our wildlife; for example bumblebees are much more numerous in suburbia than in most farmland. But gardens could be so much better. Many of the ornamental plants
grown are of no value to wildlife; they produce no nectar or pollen for insects, and no berries or nest sites for birds. By choosing carefully what we grow we can attract and feed a host of wild creatures, which can add enormously to the interest and pleasure we obtain from our gardens. By growing some wildflowers we can directly help the conservation of the flowers themselves, and wildflowers will draw in all the insects that are naturally associated with them.

The focus of the BBCT is obviously on bumblebees, but if we look after our bumblebees we will benefit much else besides. The wildflowers that they love also support a host of other creatures. And by attracting and feeding the bees we can ensure that our flowers, vegetables and fruit trees are well pollinated, so that we directly benefit from better crops.

Only by studying bumblebees can we find out what they need to survive, and so how best to conserve them. This cannot be left to professional scientists. There just are not enough of them to go around. At present we do not even know for sure what the distributions of the UK bumblebee species are because there are too few people in the country with the time and expertise to identify bees and map their positions. The more one learns about a subject the more interesting it becomes. So our intention in founding the BBCT is to encourage more people to take an interest in these delightful insects, to watch them, to grow flowers for them, to tell their friends about them, and to go out into the wider countryside and see which ones they can find. With dedication and a little luck perhaps we can conserve the “burly, good-natured bumblebee” for future generations to enjoy.

Insight: What are Bumblebees? Part 1

Technically speaking, bumblebees are bees of the genus Bombus. There are roughly 250 known species in the world, with 25 native to the UK, and all of them are fairly large, furry bees. They are mostly found in temperate, arctic, or mountainous regions, because their large size and furry coat make them well suited to keeping warm. The genus Bombus falls within the Superfamily Apoidea, which includes all of the bees. Bumblebees and their cousins the honeybees (genus Apis) are social insects, living communally in nests. It is a female-dominated society, with each nest containing a queen and her many daughters, the workers. The males are short-lived and do little or nothing in the way of work in the nest. Their only role is to mate with new queens.

Bumblebees have an annual life cycle. The huge queens emerge in spring and build a nest, often in a hole underground. They lay batches of eggs, which they incubate just like a bird. When they hatch the grubs are fed on pollen and nectar until they pupate (form a chrysalis), and a few days later the first adult workers hatch from the pupae. The queen lays several batches of eggs during the

The Hunt for the Blaeberry Bumblebee (Bombus monticolosa)

The blaeberry (or bilberry) bumblebee is undoubtedly the most beautiful of British bumblebees. It is the species used in the BBCT logo, and although the original painting by Anthony Hopkins is lovely, it does not do the splendid beast justice.

The blaeberry bumblebee is a montane species, found on or near moorland where blaeberry (Vaccinium spp.) grows. It seems to be dependent on blaeberry flowers for food in the spring, although the queens are often also seen on flowers of willow (Salix spp.). Later in the year it feeds on heather and heaths (Calluna and Erica). In the south there is a gap between the flowering of blaeberry (in May) and that of heathers (mainly August onwards), when there aren’t many flowers in the mountains, and at this time it may have to find other areas to feed, such as pastures and road verges lower down in the valleys. The blaeberry bumblebee is found on Dartmoor and Exmoor in the south, and in the mountains of Wales, northern England and Scotland. Its real stronghold is the Cairngorms, where it is still quite common.

Sadly, like many of our bumblebees it seems to be in decline, especially in the south, but we do not know why, or how much it has declined. Jennifer Harrison-Cripps is starting a PhD at the University of Stirling to try to find out more about the ecology of this species. As part of this she has toured museum collections compiling historical records of where this species
Machair is an exceedingly rare habitat, with 75% (about 17,500 Ha) of the world-wide total found in Scotland. It consists of short-turf grassland growing on flat low-lying plains of wind-blown sand over impermeable bedrock. Current machair systems are the result of thousands of years of low-intensity farming, primarily winter grazing and rotational cropping with potatoes, oats or rye. This long history has produced a complex habitat mosaic, and supports a unique assemblage of fauna and flora. It is known for its rare arable weeds, for providing a breeding ground for threatened waders and particularly for corncrake, and for its rare bees.

The machair is now a stronghold for several bumblebee species which are internationally rare and in decline, notably the great yellow bumblebee, *Bombus distinguendus* (see pages 8-9), the moss carder bee *Bombus muscorum*, and also the BAP-listed solitary bee *Colletes floralis*.

Depopulation of remote farming communities threatens the long term survival of the machair and associated organisms such as the great yellow bumblebee. It is exceedingly hard to make a living out of crofting, so most youngsters head to the mainland as soon as they are able, leaving the crofts to their aging parents. Eventually the crofts fall into disuse, and the houses lie abandoned or are sold as holiday homes. When cropping is abandoned, floristic diversity on machair declines. Highly diverse machair in Scotland is now largely confined to Tiree, Coll and the Uists; elsewhere, abandonment of traditional agricultural systems has led to a marked decline in wildlife.

Some of the very best machair, and the biggest remaining populations of the great yellow bumblebee, are to be found along the west coast of North and South Uist. The great yellow bumblebee is quite common here, and can be seen foraging on road verges and on garden flowers. Other species that can be seen include *B. magnus, B. pascorum, B. lucorum, B. hortorum* and *B. jonellus*. The moss carder bee (*B. muscorum*), is now very rare in England, but it is the commonest species in the Hebrides, occurring on most islands. In the Outer Hebrides it looks quite different to the mainland, being a most impressive beast with a chestnut coloured thorax...
Bees originally evolved from wasps, which are predators. The word wasp conjures up an image of the yellow and black social wasps which can be so annoying in late summer. Actually, just as with bees, there are enormous numbers of wasp species, and most of them are not social. A great many species are parasitoids, attacking other insects and laying their eggs inside them, whereupon their larvae eat their host from the inside out. Some are predators, and it is from one such wasp family, the Sphecidae, that bees evolved. In the Sphecidae the females stock a nest, usually an underground burrow, with the corpses or paralysed (but still alive) bodies of their preferred prey. They attack a broad range of insects and spiders, with different wasp species specializing in different prey, such as aphids, grasshoppers or beetles. Their life cycle is very similar to that of the solitary bees, the only difference being that the nest is stocked with prey rather than pollen. At some point many millions of years ago a species of sphecid wasp switched to stocking its nest with pollen instead of dead insects. This could have been a gradual process, the wasp perhaps initially adding a little pollen to the nest provisions. Pollen is rich in protein, and so would have provided a good supplement to the diet of the young. When, eventually, the wasp evolved to feed its offspring purely on pollen, essentially it had become the first bee.

We do not know how long ago this occurred, because insects almost never form fossils in the way that larger animals do. What we know is based on insects that became trapped in amber (tree resin), but this must be a very rare event. Bees in particular are pretty bright as insects go, and are rarely so foolish as to get stuck in resin. The oldest known bee in amber is about 80 million years old, so bees have been around for a very long time, and would once have shared the world with dinosaurs. Issue 2: the life cycle of the bumblebee in detail

Garden Flowers for Bumblebees; Legumes

Lots of plants, both familiar garden flowers and wildflowers, provide nectar and pollen for bumblebees and other insects. Some folk seem to think that wildlife gardens have to be untidy, overgrown and full of nettles. This is rubbish. It is perfectly possible to have a garden that is both beautiful and a haven for wildlife.

In this issue we focus on plants that you might grow from the pea family (otherwise known as legumes or, officially, as members of the family Fabaceae), which include many bumblebee favourites. The pea family is huge, and contains familiar garden vegetables (peas and beans), gar-

Places to see bumblebees

Everybody lives near somewhere that they can see bumblebees; gardens or the nearest park are good places to start. But if you want to see some of the rarer species you may have to go further afield. The very best places are widely scattered around the country, so there is bound to be somewhere not too far away. All have one thing in common; lots and lots of flowers. Chalk grassland, haymeadows, marshes, heaths and moors, even abandoned brownfield sites are all worth exploring. Here we begin a series on the very best places to go bumblebee-spotting, starting with one of the most remote, the Uists.

The Uists

The Outer Hebrides are among the hardest-to-get-to places in the British Isles. Oban is a long drive from almost anywhere, and then you are facing quite a few hours on a (sometimes rather rough) ferry crossing, but it is definitely worth the trip. On a fine day there is no more beautiful place on earth. The white sand beaches and crystal clear sea look as if they should be in the Caribbean, although admittedly the water is a degree or two colder! Dolphins, basking sharks and seals are common, and you are far more likely to see an otter here than almost anywhere else in the UK. But if it is bumblebees you are after, then the machair inland from the beaches is where you should head.
There are many wild legumes that are readily available as seed and easy to grow in the garden. Some look great in the flower border. Two are included in the wildflower seed mix that you will have received in your BBCT membership pack (bird’s foot trefoil and kidney vetch). Both are quite low-growing and so work well at the front of the border. Bird’s foot trefoil flowers for months on end, and can be naturalized in lawns or flower meadows. Other very pretty flowers for the herbaceous border include sainfoin and tufted vetch (both illustrated), the latter being a self-supporting climber that will happily ramble over an old fence or up a trellis.

Some of the very best flowers for bumblebees are the clovers, red clover for the long-tongued species, and white clover for the shorter-tongued species. Neither looks great in a flower border, but both thrive in a wildflower meadow if you have room. In fact most lawns already contain white clover, and all you have to do to get it to flower is relax your mowing schedule a little.

**Where to get wildflower seed**

A comprehensive range of wildflower seeds can be obtained from Herbiseed, who supplied our packs of wildflower seed ([http://www.herbised.com](http://www.herbised.com)). It is also easy to collect your own from the wild; a range of clovers, vetches and trefoils can be found in most hedge-banks and field margins, and the seeds are usually large and easily gathered. In general it is best to sow them immediately and leave the seed trays outside for the winter (seeds of some species do not germinate until they have been frosted).

 onde flowers (lupins, laburnum, brooms) and lots of wildflowers (clovers, vetches, trefoils). Traditional haymeadows, chalk grasslands, and the beautiful machair dune systems of western Scotland (see page ?) are all dominated by legumes, because they have a trick which gives them an advantage over most other plants: they have root nodules packed with bacteria that are able to fix nitrogen from the air and turn it into nitrates that the plant needs to manufacture protein for growth. Most soils are naturally low in nitrates, so being able to get them from the air gives legumes the edge in competition with other plants. It also means they can afford to put more protein into their pollen, which makes legume pollen an absolute favourite with bees, as it is more nutritious than that from most other plants.

In the days before tractors, clovers were often grown to provide fodder for horses. Also, before the advent of artificial fertilizers, farmers were dependent on legumes in crop rotations to maintain soil fertility. In the second half of the 20th century synthetic fertilizers became cheaply available and traditional crop rotations were almost entirely abandoned. Haymeadows were replaced with silage fields, and flower-rich pastures were ‘improved’ by pouring on fertilizer. With lots of nitrates, grasses grow very quickly and squeeze out herbaceous plants such as clovers. The end result of these processes is that wild legumes are no longer anywhere near as common as they used to be, and therefore there is not as much nutritious food for the bees.

We can help by growing lots of legumes in our garden. Every vegetable patch is likely to contain broad beans, peas, runner beans or French beans, all of which are loved by bumblebees. And of course the bees repay us for growing them by ensuring that they are pollinated and that we get a good crop.

Oddly, not many legumes are widely grown for their flowers, although many are very beautiful. An obvious exceptions is the cottage garden favourite the lupins (*Lupinus polyphyllus* and Russell hybrids are the... (Continued on page 10)
A worker of the great yellow bumblebee, *Bombus distinguendus*, photographed by D. Goulson on 5 August 2005 on an overgrown football pitch on the machair of South Uist. Insect photography is increasingly easy with modern digital cameras. Send us your favourite picture, and if we like it we will include it in buzzword