

## Bumblebee Basics

### What's the Difference Between Bumblebees and other bees?

Bees can be broadly categorised into three groups:

**HONEY BEES** – These are managed and semi-domesticated, form long-lived social colonies that live in hives and are cared for by beekeepers. They are the source of the food we call honey. There is one species. They can sting aggressively if the hive is attacked.

**BUMBLEBEES** – are wild, form short-lived social colonies and construct their own nests in cavities in hedgerows, under rocks, or in disused mouse or birds nests. There are about 24 species in Britain and over 200 across the world. They are docile and only sting if aggravated.

**SOLITARY BEES** – this is a collective term for about 240 other species of bees in Britain, that are not social (i.e. do not co-operate in a group), but each individual lays its own eggs, usually in small cracks or tunnels in dead plant stems, dead wood, walls, or earth. Well-known examples include Mason Bees, Leafcutter Bees, and Mining Bees. The majority of species are Mining bees, making nest sites in the ground or in sandy banks or cliffs. They have weak or ineffectual stings. Many are very small, and people don't even realise that they are bees.

### How large is bumblebee colony and how long does it last?

A colony is founded by a 'queen' (large, fertile female) in the spring or early summer. She will have spent the winter in hibernation. Her first offspring will be 'workers' (smaller, non-reproductive females) who collect pollen and nectar and set to work maintaining the wax brood cells ('comb') and looking after more young. Sizes of colonies vary according to species, and some can produce several hundred workers. After two or three months, young queens and males will be produced and the colony starts to decline.

A colony only lasts a single season, and workers and males do not live longer than two months or so. After mating, the young queens go into hibernation over winter in soil or under leaves, and emerge next spring to found their own colonies.

### How do bumblebees feed?

All bumblebees require nectar, a sugary solution produced by many flowers, as a high-energy fuel to power their flight. This is sucked up through a tube-like proboscis, commonly referred to as a 'tongue'.

They also require pollen, as a source of protein and minerals. This is collected from flowers on their furry coats. They periodically comb pollen out of their coats with their legs, and females mould it into cakes ("pollen baskets") which they store on their back legs as they forage.

As well as co-incidentally accumulating pollen on their coats while they are sipping nectar, bumblebees will deliberately wallow among the stamens of certain bowl-shaped flowers and vibrate their wings to release pollen; this is called 'buzz-foraging'. Females take both pollen and nectar back to the nest to feed the colony. Food is stored in wax cells to keep the colony going in bad weather; a colony can last up to two weeks without foraging before starving to death.

## Where do bumblebees nest?

Different species have different preferences, but basically they require dry, concealed cavities, often underground. Bumblebees cannot dig and so they will use disused burrows made by small rodents such as mice and voles. Some species will nest above the ground, in piles of dead dry leaves, dry tussocky long grass, or abandoned birds' nests. They seem to like abandoned nests and can probably faintly smell that birds or rodents once lived there and use this as a cue. The queen will re-use dry grass or dry moss left by the previous residents of the nest to fashion a layer of insulation for her own nest, which will initially consist of a wax cell in which she lays her first batch of eggs. She then spreads her furry abdomen over the brood and incubates it until the larvae hatch. They must be fed on both pollen (for protein) and nectar (for energy). The queen also makes small wax containers in which she will store nectar or pollen.

The Tree Bumblebee (*Bombus hypnorum*), a species new to Britain that has spread widely since it arrived in 2001, tends to nest high up and occupies spaces in cavity walls or bird boxes.

## Do bumblebees swarm?

Honey bees have a tendency to 'swarm' when a colony is looking for a new place to live. Bumble bees do not do this as their colonies are very short-lived. Sightings of 'swarms' of Tree Bumblebees actually refer to the habit of (stingless) males congregating outside the nest in order to mate with females.

## Are bumblebees useful?

THEY HELP THE GARDENER - They are excellent pollinators of currants and other soft fruit, strawberries, runner beans, broad beans, tomatoes, and many other vegetable crops.

THEY HELP TO MAINTAIN OUR WILD FLORA - They are important pollinators of many wild flowers. Scientific research showed that where bumblebees had declined or become extinct due to intensive agriculture, local populations of wild flowers gradually changed and deteriorated, due to in-breeding and lack of viable seed set.

## Are Bumblebees Declining?

Three species became extinct in Britain in the 20th century. Of the remaining 22 British species, at least 10 have seriously declined over recent decades, due mainly to habitat loss and fragmentation, and the intensification of agriculture.

The good news is that there are seven species commonly found in gardens that are still thought to be doing well, as they use gardens as a foraging and nesting habitat. They are commonly referred to as 'the big seven'. These are woodland-edge or hedgerow species in origin, and to them a garden is just another flowery hedgerow. This gives a clue as to the kind of flowers and conditions that the gardener needs to provide for them.

Some species may have been under-recorded in the past due to a lack of recorders. By learning ID skills and submitting records, gardeners may help to improve our overall knowledge (which is still very incomplete) of the distribution and conservation status of bumblebees.

## The 'Big Seven'

You may well see these common species in your garden:

Red-tailed Bumblebee - (*Bombus lapidarius*)

Early Bumblebee - (*B. pratorum*)

Buff-tailed bumblebee - (*B. terrestris*)

White tailed bumblebee - (*B. lucorum*)

Garden bumblebee - (*B. hortorum*)

Common Carder Bumblebee - (*B. pascuorum*)

In the Southern UK: (*B. hypnorum*) This is the newcomer that arrived from the continent a few years ago. It is another 'woodland edge' species that does well in gardens.

## Do all these species compete with each other?

Different species have different 'tongue' lengths, specialise in different shapes or types of flowers, or start their nests at different times in the season. This helps to divide up the available food resources so they all get a share. But it does mean they need a wide range of suitable flowers over a long period – my handout about flowers for bumblebees gives lots of suggestions.

However, as they cannot dig underground cavities for themselves, there may be competition among newly emerged queens for nest sites. Shortage of rodent burrows in gardens (e.g. due to cats and foxes) is likely to make this situation

worse and it has been estimated that up to 80% of newly- emerged queens die without successfully founding a nest.

## Is it worth buying artificial bumblebees nests?

The sale of wildlife gardening merchandise is a commercial bandwagon onto which many companies have jumped. Some of their products, like bird feeders and nesting boxes, are tried and trusted and work very well. Many of the insect houses they sell are, in my view, an expensive rip-off. Habitats for beneficial insects can easily be created for free in your garden using recycled wood and dead stems.

Many wildlife gardening merchandisers sell very expensive wooden or plastic bumblebee boxes. However, the general experience of bumblebee enthusiasts has been that bumblebee queens are quite fussy in finding their own nests sites and tend to completely ignore purpose- built bumblebee boxes.

So my advice is not to fork out £20 or more on a bumblebee box. If you garden in a relaxed, wildlife-friendly way, leaving some long grass, dead stems, piles of sticks and logs etc., bumblebees may well find their own nesting sites.

If you wish to help them, a cheap and successful way to help the common Brown Bumblebee *Bombus pascuorum* is to leave some tussocky uncut grass, and lay a corrugated iron sheet on it. The bees will nest underneath. (Slow worms – a species of reptile that are beneficial to the garden - also love this habitat). For other bumblebee species, bird roosting pockets, (made of straw) placed near the ground with a piece of wood fixed above to deflect rain, will make a good and affordable potential nest site, should they choose to take up residence.

The website of the Bumblebee Conservation Trust: [www.bumblebeeconservation.org](http://www.bumblebeeconservation.org) gives further details about making your own bumblebee nest sites.

## A word about *Bombus hortorum*

This member of the 'Big Seven' common species has the longest tongue, and has a distinct preference for flowers with deeper throats. In centuries past it found traditional gardens, with their borders of herbs and flowers of European wild origin very much to its liking; so much so that Linnaeus named it the 'Garden Bumblebee' (*Bombus hortorum* in Latin).

Modern garden fashions make it vulnerable – Palm Trees, Bamboos, and highly hybridised bedding plants and most of the latest horticultural novelties are of no use to it.

Traditional flowers with deep tubular throats such as Wild honeysuckle, Larkspur, Monkshood, Comfrey, Delphiniums, Cerinthe, Nasturtiums (*Tropaeolum*) and wild-type Aquilegias are what it needs.

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