Plight of the humble bee

Bees are dying in unprecedented numbers, for reasons we don't yet understand. And when they've gone, it'll be mankind's turn next

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How many of us realise what a truly vital role the bee plays in a balanced ecosystem? These creatures are not just a delightful part of our springs and summers; far more importantly, they pollinate around 70% of the world's food crop. But over the last five years, their numbers have dwindled alarmingly, with beekeepers in some parts of Britain reporting an 80% loss, leading to predictions of ecological apocalypse.

Colony collapse disorder, or CCD, has been blamed. In the United States, the worker bees disappear without warning and are reported as suffering from this syndrome. In Scotland many beekeepers feel that there is no single factor for such devastating losses, and most are convinced that a combination of elements have caused the problem, many of them man-made.

Farming, for instance, has changed beyond recognition and is now a complicated science. In many places, the landscape has been altered and is now a cereal desert – a monoculture that is far from sympathetic to wildlife. Gone are the old-fashioned grasslands rich with

Above and opposite: Lush wildflowers, blossom-laden trees and lowly weeds are all much sought-after by pollen-hungry bees.

nectar-producing flora. Plants are sprayed with chemical pesticides, fungicides and weed killers. (Even in our own gardens we poison, hack and strim any weeds that dare to appear. But weeds are often just what a bee needs.) More traffic means more pollution, and concerns have been raised about the possibility of radiation coming from radio masts for mobile phone networks. All of this has an affect on insect life.

In March this year, PAN UK (Pesticide Action Network) welcomed news that one of the government's chief scientific advisers had launched an inquiry into the effects of pesticides on pollinator species, especially bees. Neo-nicotinoids used in pesticides since the 1990s have a bad track record. Beekeepers in Europe reported serious losses following their introduction, and they have since been banned in several countries. Despite this disturbing evidence, the UK government still appears unconvinced, so this inquiry can only be good news.

Recent investigations have shown that many bees have seriously depleted immune systems and are suffering from malnutrition. It's thus no surprise that they've struggled to cope with our recent wet summers and protracted winters.

Worse has been the devastating arrival from the Far East of the much publicised varroa destructor in 1992. This tiny ginger-coloured mite wreaks havoc in a hive and lowers the bees' resistance. Since its appearance there have been large outbreaks of Foulbrood (a notifiable disease) and Nosema. Vast numbers of bees have been wiped out. Treatments are drastic and exorbitant, with beekeepers often forced to burn their hives, and losses are keenly felt.

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Catch the buzz

Along with their vital role as pollinators, bees produce one of nature's greatest natural fruit sugars, honey. It has been treasured for thousands of years for its antiseptic and antimicrobial properties and its ability to boost performance and the immune system. Its price, not surprisingly, has rocketed recently.

Other important products from bees include royal jelly – a secretion used for the nutrition of larvae and for feeding the adult queen bee. We use it in the cosmetics industry and it is thought to help with many serious medical conditions. Propolis, a resinous mixture gathered by bees from tree sap and floral sources, is used by them to seal hives and has long been employed in traditional medicine.

Torquil MacKenzie, a Perthshire beekeeper who learnt his skills from his father on the heather moorlands near Carrbridge, has been producing superb honey since he was a youth, and has several intriguing insights into the current problems. Just like wine, he says, there are great honey years, though recently the crop has been woefully small. He explains that in the USA, commercial beekeepers move vast numbers of bees from coast to coast to catch the pollen on both sides of the country. This long, exhausting journey puts inevitable stresses and strains on bees. Elsewhere, bees are transported across the globe and bring with them many new problems and pests.

On a sultry spring afternoon I set off with Torquil to visit his hives high on the hill overlooking Breadalbane. In this lofty spot, they feed on copious seasonal flower pollen. Other hives are taken to Carrbridge where the bees gather the heather nectar. Honey flavours depend totally on the bees' feeding habits. The increasing swathes of oil seed rape may be popular with the bees, but it can result in honey of dubious quality, described by some connoisseurs as 'granular and sugary'. Heather and blossom honey tends to outsell the rest and, despite its price, is always in demand.

Clad in a full white bee suit, I follow Torquil into a group of hives sitting among stunted hawthorn, blackthorn and hazel bushes. A gentle hum comes from the hives. Torquil has lit his smoker and soft puffs fill the heady blossom-scented air as he opens a hive. A fizz of bees erupts out in a small cloud. Frames are removed, cleaned and set back inside, and a container of sugar mixture is refilled. In recent years Torquil says he has had to feed his bees more than usual, and for longer periods.

As well as a basic check and tidy up, he wants to find and catch a queen. During high summer, each hive is made up of 30,000 to 40,000 bees – one queen and many workers. Each drone has about 800km flying time, and then dies off.

Finding a queen amid a sea of moving bees is tricky, but Torquil eventually points one out. He has made an excellent little queen catcher using one of his wife's hair rollers, a small piece of net and a piece of sponge on a stick. Once the queen is carefully encased within it, he expertly trims a wing and marks her with blue paint. This means she won't be able to leave the hive when the bees swarm in high summer, and they will want to return to her.

Once I've got over the initial shock of having so many bees exploring me up close, I find myself hypnotically absorbed, watching them come and go – golden-yellow legs indicating a successful foray as they return pollen-laden.

'If the bee disappeared off the surface of the globe, man would have four years of life left,' said Albert Einstein. 'No more bees, no more pollination, no more plants, no more animals, no more man.' It may seem a drastic prediction but right now we are in worrying times and it is essential that we sit up and take notice. SF

Top: Torquil MacKenzie checks on the health of his hives. **Bottom:** During the height of summer, a hive can be home to up to 40,000 bees.