

The honey bee - a beginners view

The honey bee *Apis mellifera* is one of many species of bee that are truly the gardener's friend and are not just a supply of honey or just another stinging insect, they are certainly not to be confused with wasps. It is estimated that one third of the human diet can be traced to bee pollination. Honey bee pollination is estimated to be worth \$9 BILLION to US agriculture alone. If not for them and the other species of bees much of the fruit and vegetables we grow in our farms, gardens and allotments would simply not be pollinated and plant life would be reduced to mainly wind-pollinated grasses and trees. Albert Einstein once stated that if the honey bee were to become extinct then mankind would have only 4 years of life left. Honey bees, if kept properly, are docile and non aggressive and when left alone need never be a problem to anybody.

The honey bee

Honey bees are insects which have, six legs, four wings and five eyes, they live together in hives in a highly structured social order, each bee belongs to one of three specialised groups - **queens**, **drones** and **workers**.

The queen.

There is one **queen** in each hive and she controls other bees by emitting chemical signals called "**pheromones**". Her other job is to lay eggs. When active she can lay 1500 eggs per day and can live for 2 to 8 years. She is larger (up to 20mm) and has a longer abdomen than the workers and drones.

The drones.

Are male so have no stinger. They live about eight weeks and only a few hundred are ever present in the hive. Their function is to mate with a new queen, if one is produced in a given year. They make no contribution to the running of the hive and are looked after by the female workers but at the end of the season when there is no longer any use for these males the female workers evict them from the hive and they soon die. Drones are bigger and have a more rounded abdomen and have bigger eyes than worker bees.

Worker bees.

Most of the bees in the colony are sterile females called worker bees. They do all the different tasks needed to maintain the hive. Young workers are called **house bees** look after the hive by doing jobs like comb construction, brood rearing, tending the queen and drones, cleaning, temperature regulation (by beating their wings) and defending the hive. Older workers are called **field bees** and are the bees we see pollinating the flowers of our fruits and vegetables. They gather nectar, water and certain sticky plant resins used in

hive construction called propolis. The field bees also collect pollen which is a food source for the bees. As they forage the pollen sticks to the fuzzy hairs which cover their bodies. Some of this pollen rubs off on the next flower they visit, fertilising the flower and resulting in better fruit production.

Beekeepers don't just keep bees for pollination, Bees are very hard working insects and a well run hive of bees can produce 60lbs of honey in a good year. The bees do this by building honeycomb from wax that the workers excrete from glands in their bodies. They fill the honeycomb with the nectar they have collected after combining it with enzymes from their bodies. Then they wait for the water in the nectar to evaporate until such time that it becomes honey, this is then capped with a wax cap and the honey is stored until needed later when no further foraging is available to the bees.

The bee keeper

Early in the season when the bees begin to bring in pollen and nectar to the hive the bee keeper removes the roof from the hive and lifts a board called a crown board. He then lays a mesh sheet over the hive, this is called a queen excluder. The bee keeper then adds chambers on top of the queen excluder, then replaces the crown board and roof. Chambers on top of the queen excluder are called supers and chambers beneath the queen excluder are called brood chambers. The queen will not fit through the mesh of the queen excluder and is restricted solely to the lower chambers, the queen will lay her eggs in this part of the hive, however the workers do fit through the excluder thus leaving them to fill the upper parts with honey. It is this that at the end of the season the bee keeper takes away to harvest the honey. The bee keeper must not be too greedy and remove too much honey as the bees will need 30 to 40 lbs of honey for food during the winter months and an experienced bee keeper can judge this by carefully lifting one side of the hive and estimating the weight of the hive. He then roughly calculates the amount of honey left in the hive.

The supers now full of honey and removed from the hive are uncapped with a sharp knife and placed into a spinner. The honey is then spun out from the frames and left to settle in tanks. It is then filtered and placed into jars ready for use.

The wax that the bees produced to cap the honey is also harvested and used to make candles, polish or even skin moisturiser.

Bee problems

Recently, bees have had many problems,

Beekeepers all over the world have been reporting large losses in bee colonies through no apparent single reason. Up to a quarter of bee colonies have been reported to have died out in the USA and some parts of Europe. The phrase Colony collapse disorder has been used to describe this problem.

Some say this is caused by the way many beekeepers move their bees around on trucks over many miles to pollinate as many different crops as possible for financial gain, giving the bees little rest and thus causing bees stress. Some believe pesticides are the cause of the problem. Some even blame mobile phone signals. One of the biggest problems to face bees is the Varroa mite which has recently spread around the world. This is a nasty pest about the size of a pin head which attaches itself to the bee and then feeds from it. The mite moves from bee to bee weakening the bees and also spreading disease.

Colony collapse disorder is more likely caused by a combination of all these things which have served to weaken the bee to a point where it can no longer cope with diseases which until recently it had been able to shrug off.

The opinion of bee keepers that I have spoken to is largely that we do not have colony collapse disorder here in Britain, but our bees have suffered losses. They have had to adapt to the many changes to the flora of the British Isles as agricultural practices have changed. Monoculture (large areas of one single crop) and more efficient farming practices have produced fields with less or no wild flowers and less hedgerows which bees depend on for nectar and pollen.

How we can all help bees

It is very important for all of us if we want to have a plentiful supply of food for the future that we help the bees in as many ways as we can. We can do this by planting bee friendly plants, a list of the best plants for bees is available from the RHS website. Buy local honey, you will be helping to support your local bee keepers. Become a bee keeper, Join your local bee club and enrol on a bee course and learn more about this fascinating insect, Look after swarms, if you have a swarm in your garden call a local bee keeper, they will be happy to remove them for you. And finally bees are good neighbours and only sting when provoked. If a bee hovers inquiringly in front of you do not flap your hands. Stay calm and move slowly away, best into the shade of a shed or a tree. The bee will soon lose interest. It is worth remembering that bees do not like the smell of alcohol on people, the "animal" smell of leather clothing, even watch-straps. Bees regard dark clothing as a threat – it could be a bear! Bees are sometimes confused by scented soaps, shampoos and perfumes, best avoided near the hive.



Kerry Sargood, local bee keeper and author of this article displays his wares at the Eastcote Horticultural Society's Autumn Show, September 12th 2009.