

Creature Feature

The European (or Western) Honey Bee (*Apis mellifera*)

The European Honey Bee has been featured in many news stories in recent years, largely because it plays a hugely important role in agricultural production and there has been a significant drop in its population. One of four species of honey bees, the European Honey Bee is the species that is most commonly raised by beekeepers in North America to pollinate about \$20 billion worth of crops each year. Its value is unquestionable, and we'll delve into what has been causing its alarming decline, but first, let's learn a bit about its biology and its culture, which is truly fascinating!

Honey Bees are members of the insect order Hymenoptera. Honey bees have many characteristics common to all insects. They have a hard outer covering called an exoskeleton, rather than an internal skeleton like vertebrates. The exoskeleton, which is made of a material called chitin, helps to protect the internal organs of the insect and helps keep the animal from drying out. Honey bees shed their old exoskeletons and develop new ones as they grow. Like other insects, honey bees have three easily identifiable body segments: the head, thorax and abdomen. As with most insects, honey bees see the world through compound eyes, which are made up of thousands of tiny lenses (facets). Scientists believe each facet in a compound eye takes in one small part of the insect's vision. The brain then takes the image from each tiny lens and creates one large mosaic-like picture (kind of like what we see when we look at a television screen, where the picture is actually hundreds or even thousands of tiny pixels).

Honey bees are social insects. They live in hives containing as many as 60,000 individuals. The matriarch of each colony is the queen. She is larger than the other bees in her hive, and her abdomen is much longer than the other bees. A few days after she hatches, she takes flight and mates with drones, male bees live only to mate with the queen. During this "mating flight," the queen receives millions of sperm cells from the drones that last her entire life — often two years or more. A productive queen will lay up to 3,000 eggs in a single day. She can lay over 1,500 eggs per day during her lifetime, which typically lasts between two and eight years.

Drones, as noted above, are males, and have no stinger. They live about eight weeks. Only a few hundred - at most - are ever present in the hive. Their only job is to mate with a new queen, if one is produced during their short lifetimes. A drone's eyes are noticeably bigger than those of the other castes. This helps them to spot the queens when they are on their nuptial flight. Any drones left at the end of the season are considered non-essential and will be driven out of the hive to die.

Worker bees are sterile females, and comprise the vast majority of the hive's population. They do all the tasks needed to maintain and operate the hive. When young, they work in the hive constructing the honeycombs, rearing the young bees, tending the queen and drones, cleaning and defending the hive. Older workers forage outside the hive to gather nectar, pollen, water and certain sticky plant resins used in hive construction. Workers born early in the season will live about 6 weeks while those born in the fall will live until the following spring. Workers have a pollen basket (corbiculum) on each of their hind legs, an extra stomach for storing and transporting nectar or honey and four pairs of special glands that secrete beeswax on the underside of their abdomen. They have a straight, barbed stinger which can only be used once. It rips out of their abdomen after use, which kills the bee. If they sense a threat to their hive, workers swarm the treat and attack it to drive it away.

Known best for their main product, which they eat during the cold months of the year when plants are not producing pollen or nectar, Honey bees also make beeswax (the bees use it for their honeycombs, and humans use it to make candles, furniture polish and make up, among other things), propolis (used by the bees to make a sticky "glue" used to repair their hives and by us in medicines and varnishes) and royal jelly (used by bees to feed a developing queen and by us as a dietary supplement).

In 2006, large numbers of Honey bee colonies across the United States began to die. Scientists named the phenomenon Colony Collapse Disorder (CCD), but were at a loss to explain it. Sadly, the phenomenon has not been limited to the U.S., and the loss of Honey bees could have enormous agricultural and economic impacts if colonies continue to decline significantly. Earlier this year, scientists isolated a parasite from collapsing commercial apiaries in Spain and treated the bee colonies with an antibiotic, which allowed the collapsing colonies to recover. Now that one strain of parasite has been identified, scientists will look for signs of infection by it and treat affected colonies. Certainly there may be other causes of CCD, but this bit of good news has certainly lifted the spirits of Honey bee enthusiasts and governments across the globe.

For more information about Honey bees, visit these sites:

[Urban Beekeeping](#)

[Back Yard Beekeepers Association](#)

[Everything About Honey Bees](#)

[Honey and Honey Bees](#)

[United States Department of Agriculture Colony Collapse Disorder Information](#)

[NOVA Tales from the Hive](#)

[Science Daily – Cure for Honey Bee Colony Collapse?](#)

[Help the Honey Bees](#)