



UNIT FOR WEEK 5

SAVE THE BEES



BEYOND THE HIVE



ASK THE AUDIENCE

- Do you know what it feels like to be stressed?
- Do you have any pests in your life?
- Do you have a vegetable garden or any flowers in your yard?

Bees live as people should live: naturally, symbiotically, and in a manner that only contributes positively to the world around them.

**TED DENNARD
BEEKEEPER**

STRESSES ON THE HONEY BEE

Several factors may create stress in the hive, which can cause a decrease in population. Below are some of those possible contributors. All of these effects on the colony can be observed, some more easily than others, in the Observation Hive.

VARROA MITES: The **Varroa mite** is a **parasitic**, invasive species that was introduced to the United States in the 1980's . It originated in Asia and the western honey bee has no resistance. The mated adult female Varroa mites enter the brood cells right before the bees cap the pupae and feed on the growing bee. The bee will hatch with deformities such as misshapen wings that result in an inability to fly.

SMALL HIVE BEETLES: **Hive beetles** are pests to honey bees. They entered the United States in the late 90's. Most strong hives will not be severely affected by the beetle; however, if the hive beetle becomes too overbearing, the colony will desert the hive. The beetle tunnels in the comb and creates destruction in the storage of honey and pollen. Ways to identify a beetle problem is a smell of fermented honey, a slimy covering of the comb, and the presence of beetle maggots.

DISEASE: although bees keep their hive very clean and try to maintain sanitation as best as possible, there are many **pathogens**, disease causing microorganisms, which can infect the bees. These include: American foulbrood, European foulbrood, Sacbrood, Nosema, Chalkbrood. The resulting diseases are very serious, as they are highly contagious. In these particular cases, a state beekeeper should be notified, and the hive would need to be disposed of carefully and properly.

ROBBERS AND PREDATORS: A hive will have robbers that want to steal honey or eat the brood of the honey bee. These are animals or other insects that can smell the food sources. While other honey bees or wasps are after the honey and pollen, natural predators are usually after their brood, not their food. The natural predators of the honey bee brood include the skunks, bears, and mice. Birds, toads, lizards, dragonflies, and spiders will catch and eat the adult bees.

HARMFUL PESTICIDES: The use of pesticides and other chemicals for growing food and for landscaping can be a serious stress to the honey bee. If they do not directly kill the bee, they can compromise the bee's immune system, and hence compromise the entire colony.

COLONY COLLAPSE DISORDER

Colony Collapse Disorder (CCD) is a recent phenomenon where the adult worker bee population disappears from the hive, leaving behind only a few young bees and the queen with the remaining brood, pollen, and honey. The term was coined in 2006 after a drastic decline in the population of commercial honey bees. Scientists are still trying to determine the exact cause of this behavior; however, many speculate that certain insecticides containing **neonicotinoids** are a main cause. This insecticide affects the central nervous system of insects, including the honey bee.

While it is known that pesticides and insecticides can directly affect the honey bees, they may also affect the bees' immunity and prevent them from naturally resisting other stresses. Many countries have banned such chemicals harmful to the honey bee, but in the United States they are still widely used. It is important to practice chemical-free landscaping and gardening, especially in the area near the entrance to the Observation Hive.

Global warming may also be a contributing factor. With newly recorded warmer temperatures, plants may bloom earlier, shifting the cycle of foraging for the honey bee. Also, warmer weather seems to be advantageous to several parasites, allowing for large increases in such pest populations.

Finally, the beekeeper himself may be at fault. Very large, commercial beekeeping operations must move the bees from one **monoculture** crop to another. The changing environment and transportation that the bees endure may add to stress on the honey bee colony.

LESSONS ON BEES IN OUR ENVIRONMENT

A human being is a part of the whole...our task is to free ourselves by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.

ALBERT EINSTEIN