



Bees

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According to an Article by NRDC (Natural Resources Defense Council) titled 'Why We Need Bees: Nature's Tiny Workers Put Food on Our Tables'

“Bees are one of a myriad of other animals, including birds, bats, beetles, and butterflies, called pollinators. Pollinators transfer pollen and seeds from one flower to another, fertilizing the plant so it can grow and produce food. Cross-pollination helps at least 30 percent of the world's crops and 90 percent of our wild plants to thrive. Without bees to spread seeds, many plants—including food crops—would die off.”



Dangers the Honeybees (*Apis Mellifera* and *Apis Cerana*) face:

- Colony Collapse Disorder (CCD)
- Small Hive Beetles
- Varroa Mites
- *Acarapis Woodi*
- Neonicotinoids



Acarapis Woodi

Acarapis Woodi (rennie) were found in Florida. It was found that Acarapis is not a serious pest of honey bees, however mite infestation may reduce bee activity. Acarapis Woodi is a tracheal mite affecting the respiratory system of honey bees, causing the disease known as acarapisosis, an infection in the trachea or bee breathing tubes, caused by the Acarapis Woodi. These microscopic mite measure 150 cm in length and feed on the hemolymph which is the equivalent of blood from their hosts. A bee with mites have a darkened trachea indicating the possibility of a mite infestation.



Varroa Destructor

Varroa Mites are external parasitic mites that attack *Apis Mellifera* and *Apis Cerana* otherwise known as the Western and Eastern Honey Bee. They reproduce when a female mite enters the hive attached to a returning Worker bee. Because Worker bees have several jobs, she must gather pollen, pollenize, and pack pollen, gather water, build the hive, feed the drones, attend the queen, and nurse the larvae. By attacking the worker bee the Varroa has full access to the hive, but once the Worker gets to the nursery she detaches and attaches to the larvae. Once the Worker Bee seals the cell for the larvae to grow the Varroa produces male and female offspring which then mate and reproduce as well.

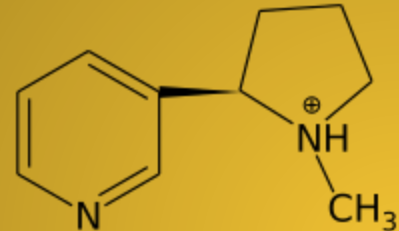
They do not kill the pupa as they crowd its cell, they let the now adult bee eat its way out of its cell and they escape and spread to other cells and once they mature they attach to the adult bees and drain them.

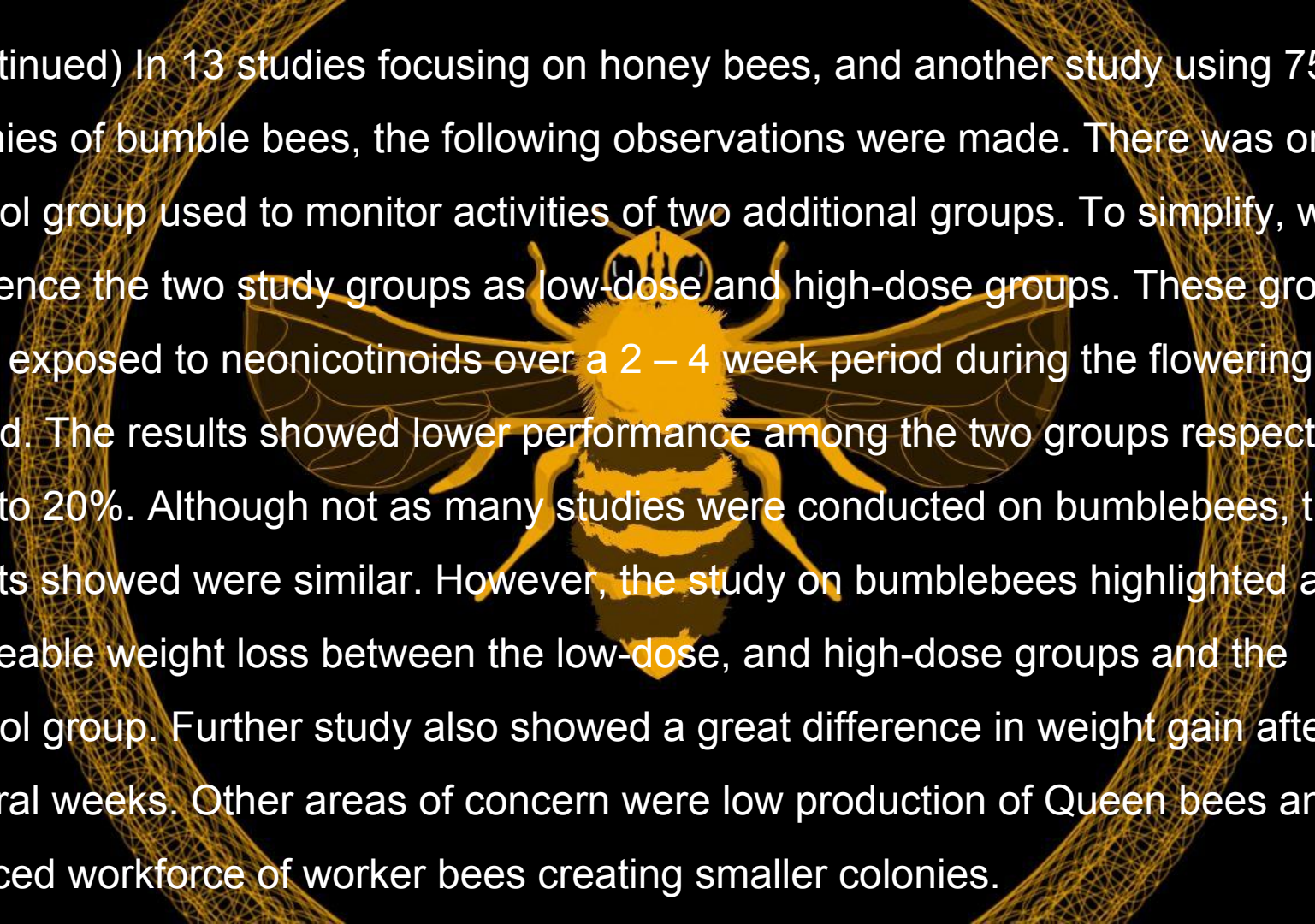
Continued exposure to the Varroa Mite can lead to birth defects in bees due to Varroosis, a disease that causes malformed wings and weakens their immune systems.



Neonicotinoids

Of various pesticides, the neonicotinoid, has been identified as the main source of the problem for reduced bee population. This is a chemically-based pesticide similar to nicotine, designed to affect the nervous system when insects feeds on treated plants. This chemical can also affect humans and animals, but is not as lethal. Caution should be used when handling such chemicals, washing your hands is strongly recommended.





(Continued) In 13 studies focusing on honey bees, and another study using 75 colonies of bumble bees, the following observations were made. There was one control group used to monitor activities of two additional groups. To simplify, we'll reference the two study groups as low-dose and high-dose groups. These groups were exposed to neonicotinoids over a 2 – 4 week period during the flowering period. The results showed lower performance among the two groups respectively by 6 to 20%. Although not as many studies were conducted on bumblebees, the results showed were similar. However, the study on bumblebees highlighted a noticeable weight loss between the low-dose, and high-dose groups and the control group. Further study also showed a great difference in weight gain after several weeks. Other areas of concern were low production of Queen bees and a reduced workforce of worker bees creating smaller colonies.