

Fatally off Balance

As a parasite that feeds off the bodily fluids of bees, the Varroa mite *Varroa destructor* evolved simultaneously with its original host, the eastern honey bee *Apis cerana*. Its activities are perfectly synchronized to the life cycle of this bee species. Parasite and host coexist in a balance where the bee colony does not suffer too much damage. Thus, the mites sustain their livelihoods.

For several years however, the Varroa mite has plagued the western honey bee *Apis mellifera* throughout most continents. The western honey bee employs longer breeding periods and less thorough nest care than its eastern kin. This leads to intensified exposure that can cause infected colonies to collapse. While it is unlikely that the Varroa can be eradicated completely, beekeepers are implementing various methods of treatment to restore the balance.

Perfectly in Shape
Once a mite is sitting firmly between two abdominal segments of a bee, it is hard to reach and impossible to shake off.

Gateway to Disease
The Varroa mite transmits five types of viruses. One of them causes the wings of infected bees to cripple.

Both Sides Loose


Bee colonies follow an annual breeding cycle. Right after infestation, the mites multiply slowly. But as soon as the bees start a new breeding cycle, the parasites reproduce rapidly causing the colony to eventually collapse.


Shared Nursery


- Day 1 The queen bee lays an egg into a honeycomb cell. In this example a male bee, known as a drone, will develop within 24 days.
- Day 6 The bee larva has hatched from the egg and is being fed by young worker bees with jelly, pollen, and honey.
- Day 9 A Varroa mite crawls into the cell and hides. Mites prefer drone cells because these remain sealed longer than those of worker bees.
- Day 11 Once the bees have sealed the cell, the mite starts to suck body fluid from the larva. It places the bite so that the larva remains viable.
- Day 13 The first egg that the mite attaches to the cell wall is a male one. From the following four or five eggs, female mites will hatch.
- Day 16 The larva has pupated. To nourish her growing family, the mother mite keeps an open wound on the developing bee.
- Day 19 The young Varroa male is mature. In the coming days, it will mate with the females that are about to reach adulthood, too.
- Day 24 The young drone opens the cell cover and emerges. It is smaller in size than drones that were not infested by mites.

The fertilized female mites leave the cell and spread. The mother, the male, and any females that did not mate, remain in the cell and die.

Enforcing the Balance

 Beekeepers treat their beehives with chemical agents such as acids or essential oils.

 They decimate the mites by operational procedures such as the destruction of drone larvae.

 In the longer term, hopes rely on the breeding of Varroa-resistant strains of honey bees.

Infestation by Varroa mites

