

## **The Effects of Varroa in North America**

**Dr. James E. Tew, Wooster Ohio (excerpt from Apimondia talk)**

The arrival and establishment of Varroa mites in North America has been the biggest catastrophe to befall apiculture since its establishment on this continent in the 1600's. Honey bees and the beekeeper have been through a terrible ordeal in having to learn to coexist with Varroa mites. In only a few years the Varroa mite redesigned nearly 300 years of North American apiculture in ways akin to the dramatic way the boll weevil restructured the cotton-producing industry in the Southeastern US in the early 1920's.

By most estimates, the feral honey bee population within the contiguous US is now ineffective as a provider of pollination. Home gardeners and commercial producers alike have witnessed the devastation of the wild honey bee, once dependable providers of free pollination services, with interest – in many cases alarm. Estimates of losses have ranged from hundreds of thousands to millions of colonies lost. For the foreseeable future, it is expected that the feral population of honey bees will stay extremely suppressed.

One of the eternal mysteries of Varroa becoming established within the US is how long it went undiscovered. It could have been here undetected for several years. Due to migratory operations and package shipments, the mites were scattered quickly across the US. States with a high degree of migratory activity were infected first. Canadian agricultural authorities, rightly concerned about picking up Varroa, closed the Canadian border to shipments of packages and queens and spread has been slower there.

For a while, various individuals kept numbers and statistics concerning the arrival and establishment of Varroa mites. The time needed for Varroa to invade every state, except Hawaii, was nine years, 1987-1995 (all but AL, DE, NM and WY had Varroa mites by 1991). These were tumultuous beekeeping years in the US. For a while a crazy patchwork of quarantines was established between, and sometimes even within, various states that were essentially unenforceable. At bee meetings of all levels, there was an air of absolute urgency. Bee operations that were several generations old were dying out completely. A national newspaper put the "Common Honey Bee" on a list of threatened beneficial animals. For a while, we all wondered if there would be anything left to the beekeeping industry after the Varroa experience.

Although beekeeping specialists touted the dangers of Varroa infestations, beekeepers at first felt that somehow Varroa mites would not affect them. The harsh realization seemed to come in four phases: (1) It won't happen to me, (2) It has happened to me, (3) Treatment frenzy, and finally (4) Acceptance. After passing through phase one, newly affected beekeepers seemed hurt, shocked, and even angry. If they had never moved their colonies, how did they pick up mites? The final aspect of phase two, saw the attitude that, even though they did have Varroa, it was not permanent and they could still rid themselves of the problem. That attitude lead, headlong, into phase three – treatment frenzy. After surviving for a few seasons, much like one surviving a serious personal illness, beekeepers became resigned to the finality of mite infestation. Significantly, new beekeepers, never having known life without Varroa, did not go through these phases. Beekeeping groups today are made up of pre- and post-Varroa beekeepers. I suspect that most pre-Varroa beekeepers will always harbor the notion that we will one day once again be rid of Varroa.

A major change that has been forced onto beekeepers by mites is the use of pesticides within the colony. Until Varroa, the North American beekeeping industry saw archenemies in all pesticide companies. Now we are much more selective. Some pesticide companies are good while others are not. Since our beekeeping industry has no history of using pesticides as extensively as our food commodity cousins, all too often beekeepers are

driven to recklessness in their use of chemical control agents. If we lose the respect honey has as a wholesome food, it could very well be the ultimate loss caused by Varroa.

As I see it here are some **negative effects** of Varroa parasitism:

1. Varroa mites have significantly diminished the availability of the wild (feral) honey bee as a common pollinator.
2. Varroa mites have required beekeepers to become “pest control operators.” The risk of contamination of honey and wax with pesticide residues is a serious one.
3. Varroa mite infestations drove many beekeepers – both hobbyists and commercial – from the beekeeping industry. With their departure went the hives that they were managing. In addition to bees, we have lost beekeeper friends of past years.
4. Varroa mite research has taken priority over most other research topics during past years. That has stunted our industry’s development to some unknown degree.
5. Reduced pollination services has forced commercial growers to look elsewhere for ways to meet their pollination needs. Other pollination techniques being explored include experimenting with other species of bees, exploring mechanical pollination devices and future genetic cloning.
6. The steep number of losses of wild (feral) honey bees have resulted in a pronounced loss of variation within the honey bees’ gene pool.

The list of good things Varroa has provided is woefully short, but a major point must be made – Varroa mites have done more to show the services of the honey bee in a positive light than any publicity campaign that our industry has ever attempted. Though still concerned about stinging incidents, the public is much more tolerant of honey bees now than just a few years ago. It took the decimating effects of Varroa infestations to convince the public that honey bees were not just stinging insects but they performed a positive service. **Some other positives** are:

1. Varroa mites have made the public more appreciative of the pollination services of honey bees, a radical change from the early 1990s when the public was deeply concerned about the Africanized honey bee.
2. Though looking at other pollination options, most growers readily accept the pollination value of honey bees and are more eager to engage in pollination contracts.
3. The decline in the feral honey bee population has spawned interest from gardeners, growers, and ecologists who probably otherwise would not have gotten involved in beekeeping.
4. The package & queen aspect of the industry is healthy. While not considered a “growth” component of the industry, individuals who are in it earn a comfortable income.

It is difficult to effectively estimate the loss of honey bees to human society, agriculture, and the environment. Arrival of mites has overwhelmingly consumed research efforts and funds as it has become the most important challenge to solve. Beekeepers today are trained better than beekeepers of a few years ago because of the mites and the public understands and appreciates pollination to a greater degree. Mites, both positively and negatively have completely dominated US beekeeping – it would be hard to visualize our industry in a different light.