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Living with *Tropilaelaps mercedesae*, the Chinese experience

*What is it like to live and work with *Tropilaelaps mercedesae* in beehives? A recent paper, published in *Apidologie*, reports the Chinese experience, where beekeepers live with this mite for more than 60 years.*

By Matteo Giusti

What is it like to live and work with *Tropilaelaps mercedesae* in beehives? This question is increasingly being asked by beekeepers as the mite rapidly expands towards Western Europe.



Tropilaelaps mercedesae specimen. Photo by EURL for honey bee health, ANSES

A recent paper published in *Apidologie* describes the history and experience of Chinese beekeepers, who have been dealing with this mite for more than 60 years. China was the first country where this parasite became a problem in western honey bee colonies. In the 1950s, *Tropilaelaps mercedesae* crossed the species barrier from its original host, *Apis dorsata*, and began infesting *Apis mellifera* colonies.



A colony of Apis dorsata, the original host of Tropilaelaps mercedesae. Photo by Ramesh Shenai Jr. - <https://www.inaturalist.org/photos/450486813>

The initial transfer of the mite between *Apis dorsata* and *Apis mellifera* may have occurred through interspecific robbing, followed by the long-distance movement of western honey bee colonies. Until the 1980s, *Tropilaelaps* remained confined to China and regions where *Apis dorsata* occurs. It then began to spread to other countries: from Pakistan to Afghanistan, from Indonesia to Iran and Papua New Guinea, and from China to South Korea. More recently, it has been reported in Russia and, probably,

reached Central Asia from Pakistan via Uzbekistan. From Russia, it spread to Georgia and, more recently, to Türkiye.

But what happened in China when *Tropilaelaps mercedesae* first arrived in beehives? Initially, there was panic. Chinese beekeepers then began to develop ways to manage the situation.



Varroa and Tropilaelaps specimens. These mites are similar but with important differences for the control.
Photo by Zachary Huang - Michigan State University

When *Tropilaelaps* mites arrived in China, honey bee colonies were already being treated regularly against *Varroa*, initially using sulphur fumigation or a combination of sulphur and camphor, and more recently with amitraz, pyrethroids, oxalic acid, and formic acid. At first, beekeepers assumed that these treatments would also be effective against *Tropilaelaps mercedesae*, but this was not the case.

Unlike *Varroa destructor*, which spends long periods outside the protection of brood cells, *Tropilaelaps mercedesae* spends most of its life protected within sealed brood cells. As a result, many treatments are less effective against *Tropilaelaps* than against *Varroa*. In addition, resistance to some of these chemical compounds has already been reported in *Tropilaelaps mercedesae*.

Among the available methods for controlling *Tropilaelaps mercedesae*, brood break is a promising approach, as it can be sufficient to control mite populations for up to 60 days. Oxalic and formic acids also appear to be less effective against *Tropilaelaps mercedesae*. Combining these treatments with brood break can improve their efficacy, although the additional benefit appears to be limited.

For these reasons, brood interruption has become a common management practice in China, particularly during autumn and winter, when it also helps reduce honey and pollen consumption by the colony.

However, further research is still needed to develop adequate and sustainable strategies for controlling *Tropilaelaps mercedesae*.

Unlike *Varroa destructor*, which has been extensively studied, research on *Tropilaelaps mercedesae* remains limited. However, scientists could use methods developed to study *Varroa destructor* to improve understanding of this mite and its effects on honey bee colonies. Regarding that, four main areas require further investigation.

First, researchers need to understand how *Tropilaelaps mercedesae* survives long periods without honey bee brood. The mite can survive for only one to four days on adult *Apis mellifera* bees under experimental conditions, because its mouthparts can not pierce their cuticle. Nevertheless, reports from China show that mites can be found in colonies after several months without brood. More recently, mites survived for 29 to 99 days in a broodless swarm of *Apis dorsata*. These findings suggest that survival may differ between honey bee species and that the mechanisms allowing the mite to persist during broodless periods remain unclear.

Second, more detailed studies are needed on the mite's reproduction. Existing research has examined reproduction in *Apis mellifera* in Afghanistan, Thailand and Papua New Guinea. However, these studies relied on daily observations and did not identify the sex of adult mites. Since eggs and larvae may develop in less than 24 hours, more frequent observations are necessary. Research on reproduction in *Apis dorsata*, the mite's native host, and *Apis cerana* could also reveal important differences between host species.



A comb of Apis cerana. Also this honey bee species is a host of Tropilaelaps mercedesae. But on this bee the mite has a lower reproductive activity. Photo by Martin Ziegler - Wikipedia

Third, treatment thresholds must be established. Beekeepers need to know when mite infestations become dangerous enough to require treatment. This requires information on reproductive cycles, mite lifespan, mortality and interactions with viruses, including deformed wing virus (DWV). Monitoring methods also need improvement because *Tropilaelaps mercedesae* is smaller and harder to detect than *Varroa destructor*. Similar-looking males and females, together with varying sex ratios between colonies,

create additional difficulties. And it is important understanding if we are counting male or female mites.

Finally, researchers must identify the natural resistance mechanisms of honey bees. Infestation levels remain relatively low in *Apis dorsata*, while *Apis cerana* colonies often contain very few mites, even when nearby *Apis mellifera* colonies are heavily infested. One possible explanation is hygienic behaviour, in which bees detect and remove infested brood, interrupting mite reproduction. However, it remains uncertain whether *Tropilaelaps mercedesae* can reproduce successfully in *Apis cerana* colonies.

Understanding these four areas could support more effective mite management and help develop sustainable, long-term strategies to protect honey bee colonies.

References

Miao et al., 2026 - [Living with *Tropilaelaps mercedesae*: its history and impact on Chinese beekeeping](#) – Apidologie, Volume 57, article number 72