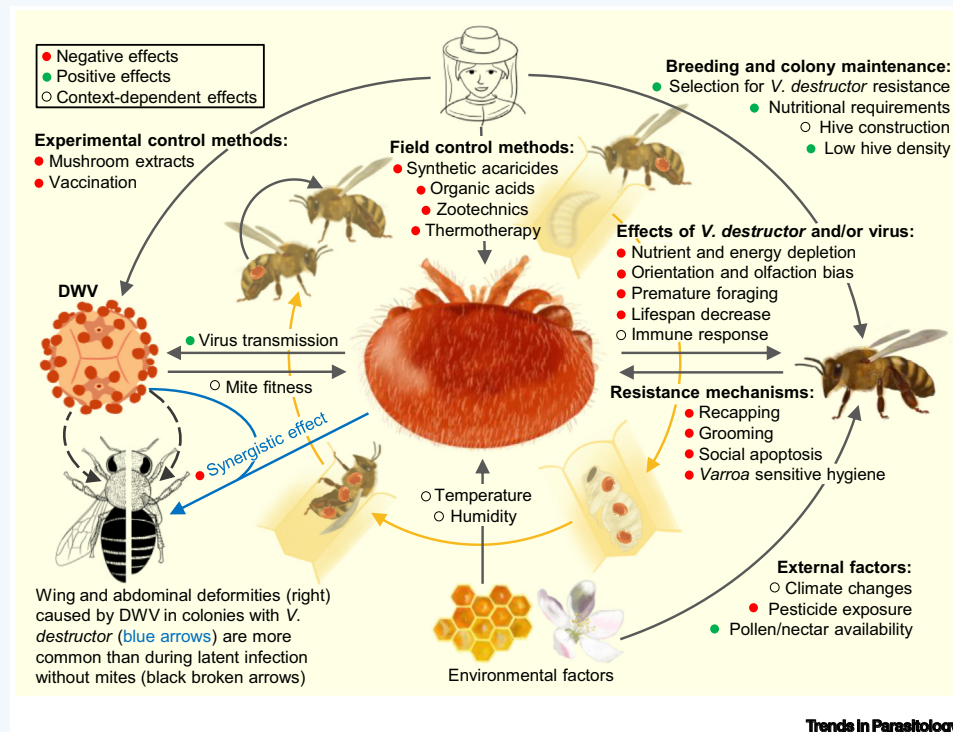


*Varroa destructor*Alena Bruce Krejčí^{1,2,*} Kateřina Votýpková,³ Julius Lukeš^{1,4} and Jan Votýpka^{3,4}¹Faculty of Sciences, University of South Bohemia, České Budějovice (Budweis), Czech Republic²Institute of Entomology, Biology Centre, Czech Academy of Sciences, České Budějovice (Budweis), Czech Republic³Faculty of Science, Charles University, Prague, Czech Republic⁴Institute of Parasitology, Biology Centre, Czech Academy of Sciences, České Budějovice (Budweis), Czech Republic**KEY FACTS:**

V. destructor, the largest known mite relative to host size, has neither eyes nor antennae but uses its front pair of legs to detect smell, temperature, and vibrations.

Mites spread as passengers on honeybees that drift between colonies, during swarming, robberies amongst colonies, and by anthropogenic factors.

Mites serve as vectors of several viruses, such as deformed wing virus (DWV) and acute bee paralysis virus (ABPV), significantly increasing their negative impact on host health.

DISEASE FACTS:

Without human intervention, most *V. destructor*-infested managed honeybee colonies of European subspecies die within 2–3 years.

The tools for mite control include synthetic acaricides, organic acids and thymol, combined with thermotherapy and zootechnical approaches, such as introduction of brood-less periods during the season.

Transgenic endosymbionts with *V. destructor*-specific RNA interference have proved successful in laboratory conditions.

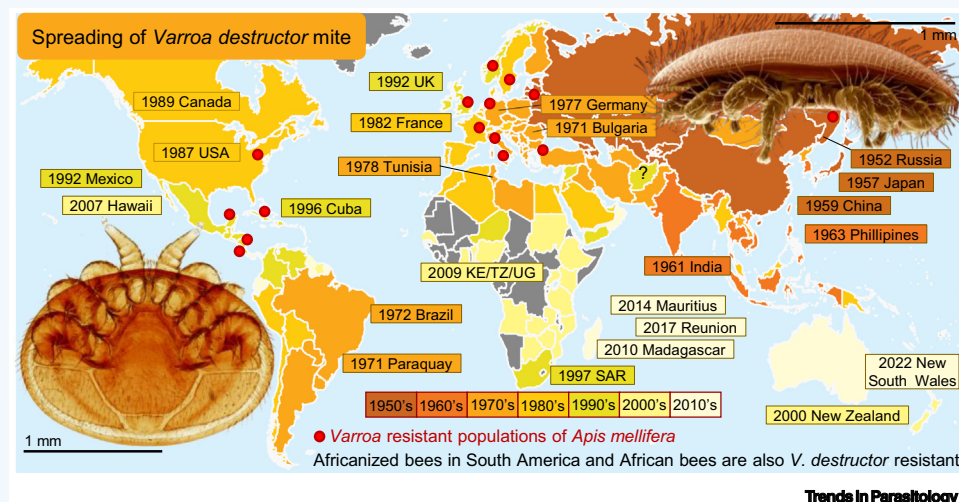
Emerging mite resistance to synthetic acaricides limits their use in the beekeeping industry.

The mite has eradicated most wild honeybee populations in Europe.

Extensive use of organic acids has caused other honeybee parasites to become near extinct in Europe, e.g. tracheal mite (*Acarapis woodi*) or bee louse (*Braula coeca*).

TAXONOMY AND CLASSIFICATION:**PHYLUM:** Arthropoda**CLASS:** Arachnida**ORDER:** Mesostigmata**FAMILY:** Varroidae**GENUS:** *Varroa***SPECIES:** *V. destructor* Anderson & Trueman, 2000

The mite *Varroa destructor* and the viruses it transmits are considered the most serious threats to managed western honeybee (*Apis mellifera*) colonies of European subspecies. During the dispersal phase, the female mite feeds on adult honeybees. During the reproductive phase, it is attracted by volatiles emitted by the honeybee brood and hides inside the food at the bottom of the brood cell, waiting until the cell is capped and the food consumed by the larva. Chemical mimicry helps the mite to avoid detection by adult honeybees. Ecdysone from the brood stimulates mite oogenesis. The female establishes a common pupal feeding site for all offspring. Before adult honeybee emergence, sexually mature daughters mate with their sole brother that is unable to survive outside the cell. The female undergoes two or three reproduction cycles, producing only about five fertile female offspring during its lifetime. When mites are hidden in brood cells, they are difficult targets for acaricides.



Acknowledgments

We thank Jana Bulantová (Charles University) for sharing pictures. This work was supported by the Czech Ministry of Education ERD Funds (16_019/0000759), the Czech-Biolmaging project (LM2018129), and Gama2 of the Czech Technology Agency (TP01010022). We thank the anonymous reviewers for their constructive comments that helped to improve this manuscript.

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Declaration of interests

The authors declare no competing interests.

Resources

<https://honeybeehealthcoalition.org/resources/varroa-management/>

<https://bee-health.extension.org/varroa-mites/>

www.outbreak.gov.au/current-responses-to-outbreaks/varroa-mite

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