

Biosecurity New Zealand
Ministry for Primary Industries
Manatū Ahu Matua

Tracheal mites (*Acarapis woodi*)

What are tracheal mites?

Tracheal mites (*Acarapis woodi*) are microscopic mites that invade the breathing tubes (trachea) of honey bees. These mites crawl down into the trachea, pierce their mouthparts into the lining, and then draw up the blood (hemolymph) from the bee. This causes damage to the airway of the bee and reduces their lifespan. These mites reproduce in the trachea and then emerge to be passed on to other bees. Tracheal mites usually cause dwindling of colonies, and this may occur at any time of year, but can be especially profound in spring when bees have been confined over winter. When mites first arrive in a country they can cause severe colony losses that can continue for many years.

What should beekeepers look for?

Tracheal mites cannot be seen with the naked eye. They are less than 0.2 mm in size and are usually found inside the first airway opening (thoracic spiracle) on the thorax. They can only be confirmed using a microscope and expert identification in a laboratory.

Signs of infestations in an apiary are extremely variable and are not specific. Some colonies show no obvious signs; while others may show the following symptoms:

- large numbers of crawling bees at the entrance of the hive;
- inability to fly;
- disorientated bees;
- a large number of bees remaining inside the hive;
- "K" wings – bees holding their wings at odd angles;
- drop in population;
- spring losses.

What can it be confused with?

All the above symptoms resemble a range of conditions including pesticide use, nutrition deficiency and various other pests and diseases Only an expert can identify tracheal mites, using a microscope. There is no specific symptom or indicator that a beekeeper can use to detect tracheal mites.

How does it spread?

Tracheal mites spread within a hive by bee-to-bee contact. When mites emerge from the adult bee airway they grip the hairs (cetae) of the bee and reach out for the hairs on another bee. Mites can then be transferred to new colonies in any way that adult bees can move between colonies and apiaries, such as drifting, robbing, or manipulations by beekeepers like splitting.



Photos courtesy of Lilia de Guzman

Where are they now?

Tracheal mites are present and widespread in most countries throughout the world, except New Zealand and Australia. They were first noticed in 1921 on the Isle of Wight in the United Kingdom. They have been in the United States of America since 1984.

How can beekeepers protect their hives from Tracheal mites?

Tracheal mites are **NOT PRESENT** in New Zealand and is a **NOTIFIABLE ORGANISM**. Beekeeper sightings of Tracheal mites should be reported to MPI as soon as possible on our **Exotic Pests and Diseases Hotline 0800 80 99 66**. An MPI investigator will give you directions once you have made contact on the hotline.

Further Reading

Centre for Agriculture and Bioscience International (CABI). *Acarpis woodi (honeybee mite)* https://www.cabi.org/isc/datasheet/2527

Sammataro, D; De Guzman, L; George, S; Ochoa, R; Otis, G (2013) Standard methods for tracheal mites research. In V Dietemann; J D Ellis, P Neumann (Eds) *The COLOSS BEEBOOK: Volume II: Standard methods for Apis mellifera pest and pathogen research. Journal of Apicultural Research 52(4):* http://dx.doi.org/10.3896/IBRA.1.52.