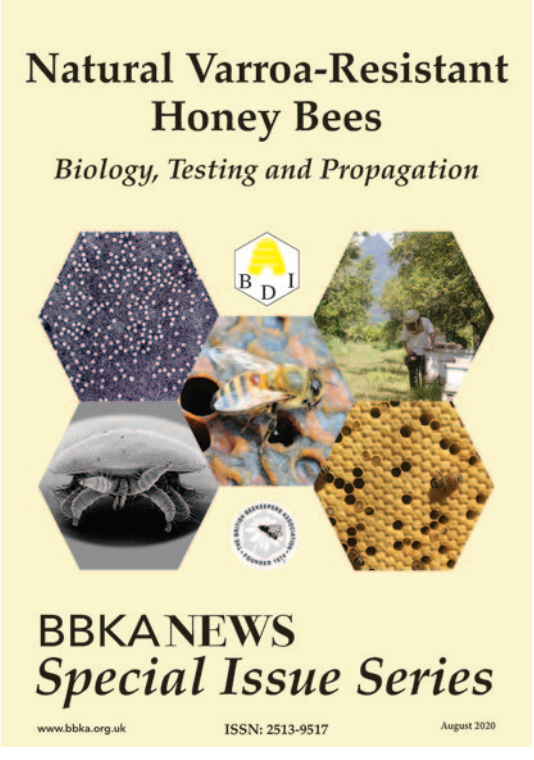
Natural Varroa-Resistant Honey Bees – Biology, Testing and Propagation

Reviewed by David Heaf, author of *Treatment-Free Beekeeping*



Natural Varroa-Resistant Honey Bees – Biology, Testing and Propagation. By Stephen Martin and Isobel Grindrod, Salford University, UK.
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Anyone wondering if beekeepers are doomed to treat against *Varroa* until eternity can take heart from this richly informative little publication, well illustrated with photos and diagrams. Natural *Varroa*-resistant (NVR) *Apis mellifera* populations have arisen in Europe, the Americas and Africa. Furthermore, fifteen UK apiaries or apiary groups have contained untreated bees for between three and more than ten years, the largest group being in my locality, Gwynedd.

Varroa is the most serious honey bee pest, especially when combined with its most prevalent vectored virus which causes deformed wings (DWV). Two pages on the lifecycle of *Varroa* include interesting details such as its 'snorkel', which it uses for breathing when immersed in brood food. The section on DWV, describes a virus that only became a problem when *Varroa's* direct bee-to-bee transmission of it took hold. Of two DWV-free island populations of honey bees, the oldest was founded in 1984 on Fernando de Noronha, Brazil.

Two pages on hygienic behaviour, the main way bees resist *Varroa*, evidence the crucial point that treating for *Varroa* lessens colony natural resistance. Processes of chemical or physical detection of diseased pupae, cell uncapping and pupal removal or recapping are still undergoing research. Imbalance in the three tasks causes bald brood.

Three pages show the biology and behaviour of NVR populations. They have in common poor mite reproduction, increased mite detection and removal and increased recapping. NVR colonies are better than susceptible colonies at removing infested pupae resulting in a reduction of the number of viable female mite offspring per reproductive cycle to well below unity, thereby reducing infestation.

Recapping is discussed in greater detail including showing what recapped cell cappings look like. We read: '*Elevated recapping levels in a population is currently the best indication of an NVR population*'. This leads to, undoubtedly, the most useful part of the publication for the beekeeper, namely the methods for measuring not only recapping rates, but also rates of mite removal and reproduction.

The few tools needed for recapping rates are inexpensive, even the adjustable magnifying lamp. A page covers measuring infested and uninfested cell recapping rates. Then, for the more adventurous, we learn how to measure mite removal rates by first artificially infesting cells with mites, replacing the frame in the hive and checking after ten days how many cells have been emptied. The section on the even more challenging procedure of assessing mite reproduction, requiring a binocular microscope, refers us to an open-access online guide.

Someone told me that these measurements are too difficult for the ordinary beekeeper. However, anyone with a steady hand who is used to, for example, caging and marking queens, could easily cope with measuring recapping rates. This procedure would equip beekeepers with a valuable tool to assess NVR status during colony propagation and give them confidence in making a gradual, methodical change towards treatment-free beekeeping.

Treatment-Free Beekeeping (2021), by David Heaf, is available from Northern Bee Books.