Tropilaelaps: The Need to Remain Vigilant

Tropilaelaps mites are exotic parasitic pests of honey bee brood. They are not currently present in the UK and are confined to tropical/sub-tropical zones. Their natural host is the giant Asian honey bee, but two species, *T. clareae* and *T. mercedesae,* also use *Apis mellifera*. Parasitisation causes abnormal brood development, leading to colonies declining, absconding or even collapsing altogether; see *BBKA News* 183, June 2010. In severely infested hives up to 50% of brood dies, and there is a noticeable smell of decaying remains. Deformed adult bees, damaged during development, have reduced life-spans. *Tropilaelaps* is reported to have a much greater impact on colonies than varroa.

Figure 1. Deformed pupa from Tropilaelaps infested colony of A. dorsata. All three Photos are supplied courtesy of The Food and Environment Research Agency (Fera), Crown Copyright; images supplied by the National Bee Unit at Fera.

Tropilaelaps cannot feed on adult bees because their mouthparts are unable to pierce tough body walls, so they depend on softer developmental stages. *Tropilaelaps* thus have an absolute requirement for all year-round brood within infested colonies (even if present in only small amounts) to multiply and spread. Historically, while year-round brood production is normal for honey bees in tropical zones, it has been relatively uncommon in temperate parts of the world. Seasonal interruptions in annual breeding cycles represent a level of protection from the establishment of *Tropilaelaps* in northern climes.

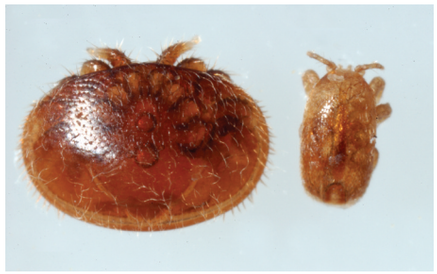

Figure 2. Distinguishing between Varroa and Tropilaelaps adults is straightforward: Varroa is larger, crab-shaped, wider than it is long, and relatively slow-moving; Tropilaelaps' body is elongate, and adults run rapidly across infested brood combs; they also 'hide' in brood cells rather than on adult bees.

However, the climate is changing; predictions are that in future our winters will become milder, increasing the numbers of honey bee colonies with overwinter brood and hence capable of sustaining *Tropilaelaps* long term. Although further work is necessary to clarify the risk, recent data suggest that around half of UK colonies may contain some brood in winter months. Fera scientists have been looking at the effects of climate change on the likelihood that *Tropilaelaps* could establish in the UK. We have compared the current climatic features of *Tropilaelaps*' northern geographical range in China with the predicted future climate in the UK using 'UKCP09' projections. UKCP09 is based upon the latest methodology designed by the Met Office. It reflects scientists' best understanding of how climate systems operate and how these might change in the future, and takes into account the uncertainty in future climate projections. Under certain climate change scenarios we find that regions of the UK, especially in the south east of England, could be permissive for the establishment of *Tropilaelaps*.

Figure 3. Uncapping drone brood to check for the presence of mites. They will be clearly seen against the white background of the pupae.

Despite efforts to the contrary, sooner or later *Tropilaelaps* could arrive in the UK. Given current and emerging climate projections, we must assume that it will be able to survive and spread. Beekeepers need to be prepared.

- Ensure you understand essential details of the mites' lifecycle, how to recognise them, and how to distinguish between *Tropilaelaps* and varroa. Details are provided in the NBU leaflet *Tropilaelaps: parasitic mites of honey bees*, which is freely available through our BeeBase website (www.nationalbeeunit.com), or by post from the NBU.
- *Tropilaelaps* are notifiable pests under EC legislation. Beekeepers are obliged to report any suspected presence to the NBU (England and Wales) or the relevant agriculture department (Scotland and Northern Ireland).
- Be vigilant. Look out for *Tropilaelaps* when examining your bees; make monitoring for the mites part of routine colony management. Familiar detection techniques used for varroa are equally appropriate for *Tropilaelaps*. Regular collection and examination of floor debris, hive inserts, bees and brood, and the use of a proprietary acaricide as a diagnostic tool are all helpful approaches.
- Suspect *Tropilaelaps* samples should immediately be sent to the NBU for examination. Use a sealed container e.g. a match box. Provide as many details as possible, such as name and address, apiary name and location (including, where possible, the Ordnance Survey map reference). Do not send live mites in the post. Kill them by freezing overnight or by putting them in 70% ethanol. A simple sampling form can be downloaded from BeeBase at www.beebase.csl.gov.uk.
- BeeBase holds all the apicultural information relating to the statutory bee health programme for registered colonies in England and Wales, and since 2010 in Scotland. Where pests are confirmed, the NBU uses BeeBase to identify apiaries at risk in the local area and to target control measures. It is extremely important that all beekeepers register on BeeBase. If we do not know where at risk colonies are located, then our chances of effectively monitoring for the arrival of *Tropilaelaps*, or achieving control in the event of an invasion are seriously jeopardised. To register as a beekeeper visit www.nationalbeeunit.com or telephone 01904 462510.
- Import regulations are our main defence against the introduction of *Tropilaelaps* from overseas to the UK, and it is essential that all beekeepers abide by them. *If you are going to import queens or bees make sure that you do so only from countries permitted under current legislation and from reputable producers.* Do not import bees illegally; the risks are just not worth it. If you need further advice contact the NBU or look on BeeBase.

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