

OP-101 [Bee Health]

An in vitro investigation into the survival of *Tropilaelaps mercedesae* on a range of matrices

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Tropilaelaps spp. are a parasitic mite that feed and reproduce within honey bee brood (*Apis* spp.) and cause significant damage and mortality to *Apis mellifera* colonies. *T. mercedesae* is found outside the range of its natural host *A. dorsata* and was recently detected in Europe for the first time in 2024 in *A. mellifera* colonies. It is widely believed that *Tropilaelaps* spp. are unable to survive without brood. However, studies have demonstrated that *T. mercedesae* can survive during broodless periods while parasitising *A. dorsata* and in overwintering colonies of *A. mellifera* in temperate climates which have are potentially broodless.

This study sought to examine the survival of *T. mercedesae* on a range of matrices and found that mites could survive for more than 96 hours on live adult *A. mellifera* and more than 144 hours and 168 hours on decomposing *A. mellifera* pupae and adults respectively. These findings could indicate one possible mechanism which allows *T. mercedesae* to survive without brood. These findings also have implications towards better understanding possible transmission routes for *Tropilaelaps*. Previously bee sales in the form of queens and packages and used beekeeping equipment were considered to be a relatively low risk for transmitting *Tropilaelaps* spp. due to the absence of live brood. This study demonstrates *Tropilaelaps* ability to survive in these scenarios and the increased potential for these mites to spread globally.



***In vitro* assessment of
Tropilaelaps mercedesae survival
across different substrates.**

M.C Gill, B Chuttong, P Davies, A Earl, G Tonge, & D Etheridge.



What are *Tropilaelaps*?

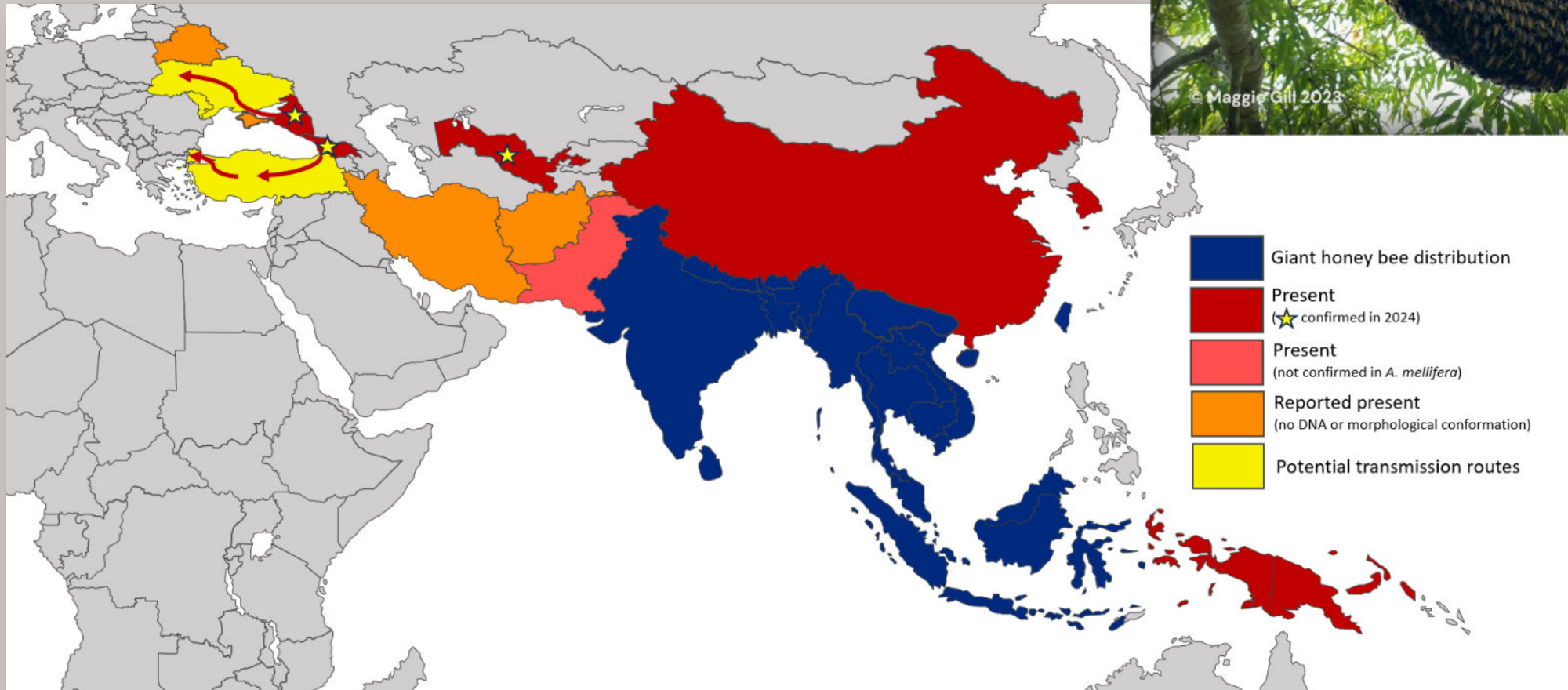


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Distribution and transmission.



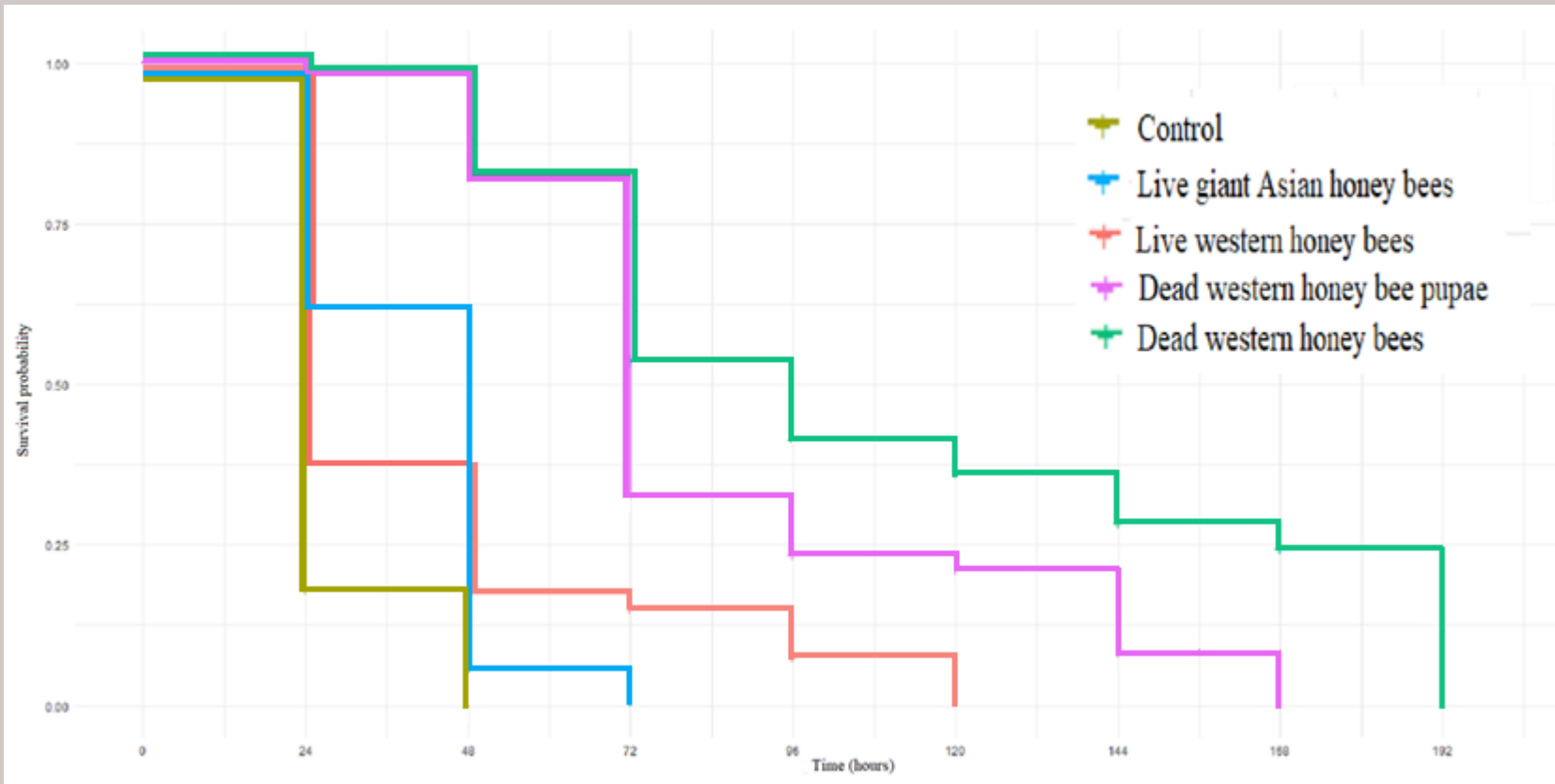
How can *Tropilaelaps* be spread?



Method



Results



- The majority of *Tropilaelaps* survived for <48 hours on their native hosts *Apis dorsata*.
- 15% of mites survived for up to 120 hours on newly emerged adult *Apis mellifera*.
- Dead bees and dead pupae saw the longest survival of mites. Up to 192 hours and 168 hours respectively.



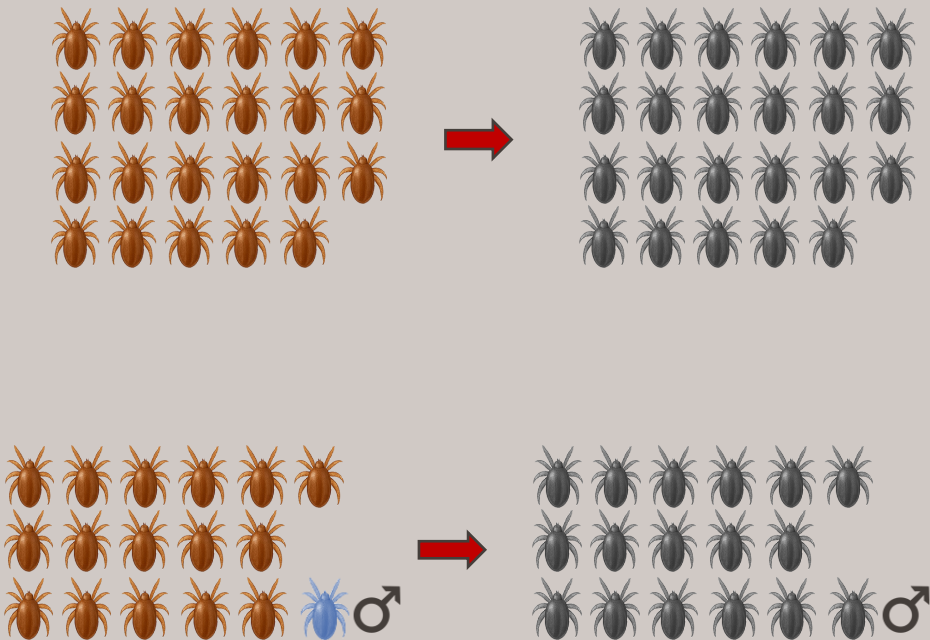
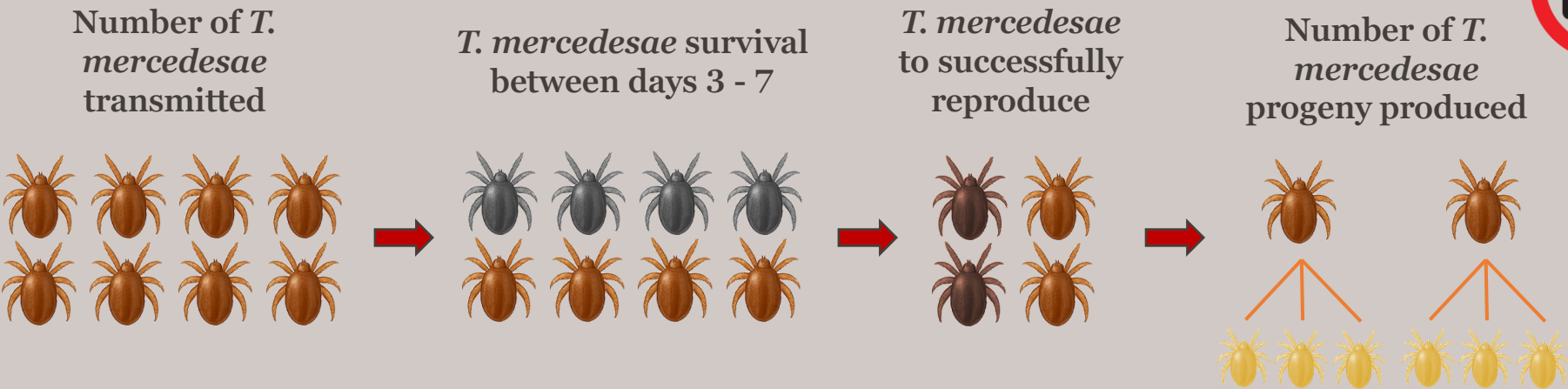
Swarming promotes
Tropilaelaps
mercedesae dispersal in
Apis mellifera.

A Uzunov, I Janashia, C Chen, C Costa, M Kovačić & M.C Gill.

Can *Tropilaelaps* be transmitted via swarming?



Results

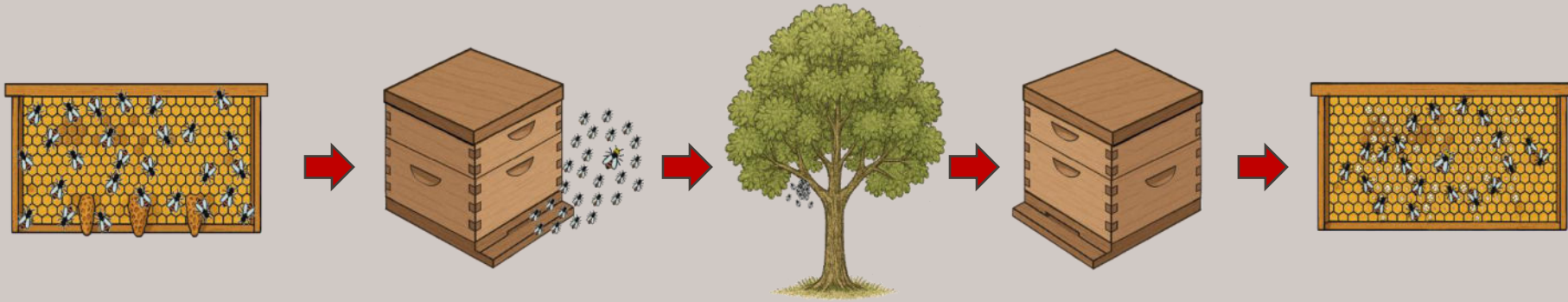


	Natural	Artificial 1	Artificial 2
Number of <i>T. mercedesae</i> transmitted	8	23	17
Survival between days 3 - 7	4	0	0
Number of <i>T. mercedesae</i> that successfully reproduced	2	-	-
Number of <i>T. mercedesae</i> progeny produced	6	-	-



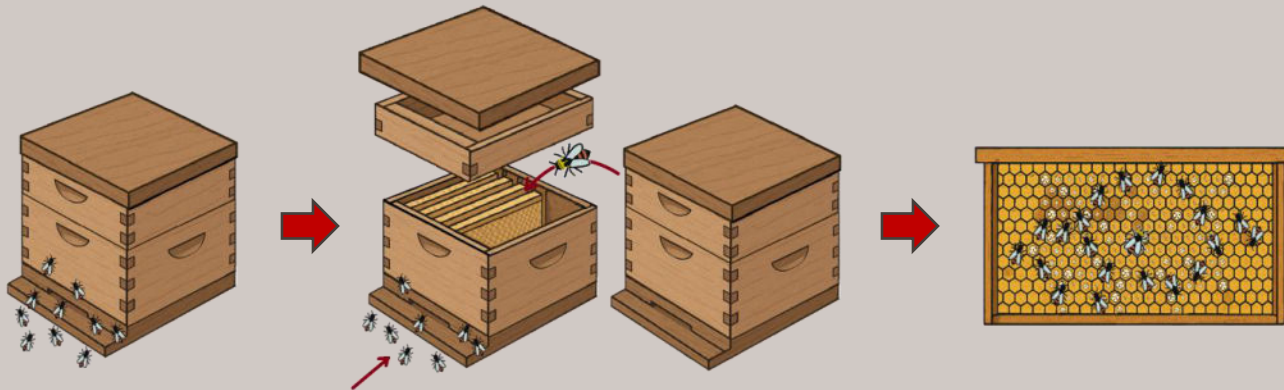
Can *Tropilaelaps* disperse in swarms?

Natural swarms



- $\frac{2}{3}$ of the colony swarm.
- Bees <10 days old.

Artificial swarms



- $\frac{1}{3}$ of the colony leave.
- Bees >10 days old.

In conclusion

How might *Tropilaelaps* be transmitted?



Swarms



Bee sales

- Young bees in queen cages and packages
- Dead bees in queen cages and packages



Used equipment

- Dead bees or brood in used beekeeping equipment and combs

Thank you.



Bee Disease
Insurance

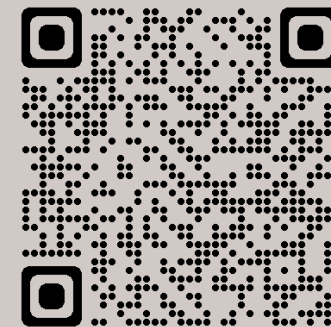


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