BIZCOMMUNITY

The dark side of the hive

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Prof Robin Crewe is the co-author of *Dark Side of the Hive*, a book that forces us to re-examine everything we thought we knew about honey bees.

Most people have a perception that beehives and colonies are perfectly built, and that they are places of industrious labour for the greater good of the colony and a workforce working for the common good. Prof Crewe's research uncovers the "dark" side of bees. He finds that there are lazy bees, sloppy builders, bees who are thieves, stupid bees and assassins too.

The book takes us in great detail from the earliest origins of bees and how they evolved right through to the present day and some of the challenges they face.

According to Prof Crewe, "What may look obvious from one perspective may actually not be the case. What seems plausible at first sight may turn out to be completely wrong when reconsidered. We should remember the long misconception of a honey bee king ruling the colony formalised by Aristotle in 350 BCE because he considered the sting to be a sign of the male sex and the stingless drones to be the females. For more than 1,800 years, it was common sense to have a king in the honey bee colony because who else could rule such a large community? Only after the work of Luis Mendez de Torres in 1586 and propagated in English by Charles Butler in 1609 did it become clear that the king was rather busy laying eggs and hence might be a female. This was finally confirmed in 1670 when Jan Swammerdam showed that the queen actually had ovaries and was the only fertile female in the colony. These misconceptions were just the first steps in helping us understand honey bee biology today.

"In this book, we do not argue that we are the only ones to have found the biological truth, but we attempt to draw an up-to-date picture of what individuals in a honey bee colony do to get by in their lives. In fact, sometimes it is easier to comprehend social behaviour in animal systems if we borrow terms from our own social structures. Despite all the profound differences, social systems of bees and humans often follow similar rules for problem-solving, yet those in bees stem from natural selection, whereas those of human societies primarily originate from cultural evolution. Although some mechanisms may be similar, others will be completely different, and any comparisons are only helpful if they facilitate comprehension in either system," says Prof Crewe.

"This study was crucial because so many studies on honey bees focus on the queen. She is unique among the females, but we also tried to study the males because so little research has been done on them. Most students of honey bees focus on the female sex and see no need to study the lazy drones. And, yes, this is a gender issue in its truest sense because drones are anything but lazy, and the single-chromosome males often die without mating. Colonies themselves invest so much into their females that it compromises most of the individuals in the colony and males are only produced when there are excess resources for colony growth.

"My own interest in bees comes from a fascination with deciphering chemical communication systems that are highly developed in honey bees. The queen regulates much of the behaviour in the colony via the chemical signals that she produces, and documenting this communication system has led to a better understanding of the management of colonies for agricultural purposes."

It is crucial for us to understand bees, and in particular honey bees, because our fate as humans and their fate as bees are inextricably intertwined. Watch this short video to learn more about where bees come from:

Did you know?

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WHAT'S THE BUZZ?

Since their emergence in the Early Cretaceous era (approximately 145-113 million years ago), bees have played a crucial role on the planet. As pollinators, bees contribute to ecosystems that allow a diverse number of different species to co-exist, as they contribute to the growth of trees, flowers, and other plants that provide food and shelter to millions of creatures.

There are currently

29 500

bee species in existence

ONLY 11 SPECIES

of honey bee are currently recognised

This seems to be a particularly low number by comparison with other social bee species and only two of them have large geographic ranges.

HONEY BEE QUEEN

2cm Length
190mg Weight
4 years Lifespan

THE COLONY

The average **colony workforce** ranges from **2000 to 60 000** bees depending on its size.

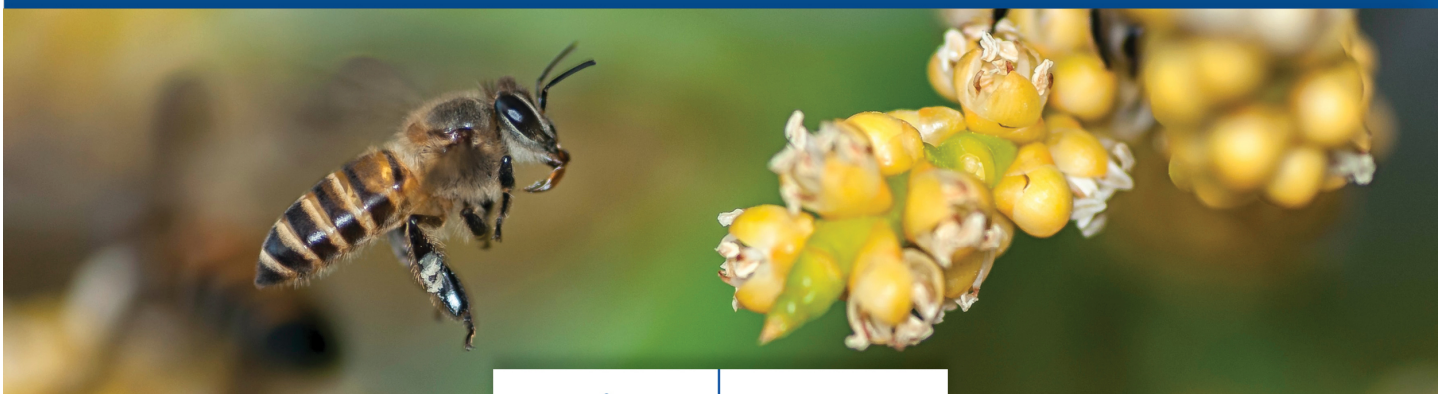
Whilst the **queen bee** can live for **up to 4 years**, the average **worker's lifespan is +/- 60 days in the winter and 30 days in other seasons.**

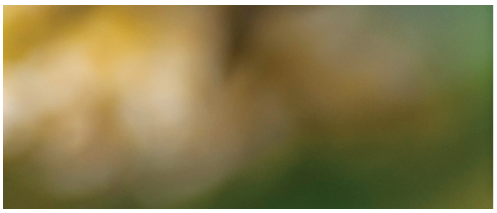
This means that, to maintain the strength of the colony, worker bees need to be **replaced at a rapid rate.**

The queen lays approximately **2000 eggs per day,** and this accumulates to an impressive **14 000 workers** within **7 days.**

FUN FACT

In order to fill a jar with **1 kg of honey,** a single worker with an **average load of 25.3 mg** would have to conduct close to **400 000 foraging flights** covering a **distance equivalent to a return flight to the moon and back** to harvest the required quantity of nectar.





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