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## A Lesson in Resilience: How Honeybees Adapt When Faced with Adversities



A recent scientific study reveals the impressive adaptability of honeybees to climate challenges. Bee colonies quickly adjust their internal roles and increase communication within the colony during extreme weather events, ensuring a constant food supply. This finding highlights the resilience of bees, but also the worrying challenges due to climate change.

Honeybees are remarkable creatures known for their diligent work as pollinators, helping to bring us fruits, vegetables, and flowers. But did you know that honeybee colonies have a complex social structure and that their workers take on different jobs as they age? This adaptation is a key part of their survival strategy. Our recent study sheds light on how honeybees can swiftly respond to challenges brought about by climate change and why this resilience is essential.

Imagine a honeybee colony as a bustling city where workers play various roles. The youngest bees start by cleaning and caring for the young, while older ones move on to tasks like storing food, guarding the nest, and, finally, foraging for nectar and pollen. This change in jobs as they age is not fixed, meaning that bees can switch roles based on the colony's needs. If the colony faces a sudden challenge, such as a loss of foragers due to extreme weather, the bees adapt quickly to maintain the colony's stability.

Climate change is bringing more frequent and severe weather events, which can disrupt honeybee colonies. For instance, heavy rainfall and strong winds can make it difficult for foragers to collect food, leaving the colony in a tough spot. In our study we were interested in understanding how honeybees might respond to such challenges. To test that, we simulated a significant loss of foragers in honeybee colonies, much like what could happen during a heavy rainstorm or strong winds. Surprisingly, we found that when foragers were removed, the worker bees adjusted their roles to compensate for the loss by speeding up their transitions from one task to another, and in some cases, even skipping tasks entirely.

For example, bees that typically cared for the young might quickly become guards, and some skipped food storage and went straight to foraging. This rapid adjustment allows the colony to ensure a continuous supply of food and maintain its overall health, even when faced with adversity.

But that's not all. Honeybees are also constantly interacting with one another. We also discovered that after forager losses, the bees became more closely connected within the colony. This likely helped them communicate better the colony needs, making it easier to cope with the challenge they were facing.

This study teaches us an important lesson about honeybees' resilience. In the face of significant perturbations, they can quickly adapt and maintain the balance within their colony, which is essential for their survival. But that does not mean they are free from danger. Wild honeybee populations are in fact in fast decline caused, among other things, by climate change.

And why should we care about honeybees' resilience? Because they are vital pollinators, and their survival is linked to our food supply. Without bees, we would have a hard time growing many of the fruits and vegetables we love to eat. By understanding how honeybees adapt to challenges, we can better protect their populations and, in turn, secure our own access to healthy, delicious foods.

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**References**

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