



# Life Without the Queen Bee

## Inside a Beehive Ordeal

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***The importance of a queen in a honeybee colony is such that when the queen goes missing, the entire colony plummets into chaos.***

**W**ITHIN the intricate web of natural wonders, honeybees are among the most fascinating creatures in the insect kingdom and are simultaneously economically significant and popular for teamwork.

A honeybee colony typically comprises three distinct castes: the diligent worker bees, the ruling queen bee, and the drones, each with unique morphological, anatomical, and functional attributes within the hive. A single queen, the most prominent member, is at the heart of the colony's dynamics, exclusively dedicated to egg-laying. A queen can lay thousands of eggs daily, and worker bees nurture these eggs. Worker bees constitute the smallest members, performing the essential tasks that sustain the hive. Drones, the male honeybees, play a role solely in mating with the queen to propagate the colony. Although the worker bees are females, they cannot lay eggs in the queen's presence, which releases pheromones that inhibit ovarian growth in worker bees. However, this pheromone concentration wanes in the absence of the queen, permitting worker bees to develop ovaries.

So, the queen is a central figure, an orchestrator of life and productivity. Her presence dictates the harmony within the hive, ensuring the continuation of the colony's legacy. But what transpires within the colony when the queen is absent? Queen bee pheromones maintain social cohesion, communication, and order among the workers and drones, fostering a functional society. In the absence of a queen due to disease, improper handling, or any other reason, the hive's

harmony wavers as the critical cues that regulate worker behaviour diminish. In response, worker bees recognise the impending vacuum and undertake an immediate measure of rearing a new queen. Worker bees select a young larva, usually under three days old, to groom into a potential queen. This chosen larva is nurtured in an enlarged cell and fed with a lavish diet of royal jelly, a secretion rich in nutrients, turning an ordinary larva into a potential queen.

However, when the queen's absence prolongs, or the colony faces challenges in raising a new queen, a peculiar phenomenon emerges — worker bees take the role of laying eggs! Some of these workers transform into laying workers and start laying eggs clustered in a single cell, unlike the single egg laid by the queen. Though the eggs laid by the workers resemble those the queen lays, they generally remain clung to the cell wall and never reach the bottom of the cell as their abdomen is shorter than the queen's. Moreover, these eggs are unfertilised, resulting in the birth of drones only. If the colony is not inspected by a beekeeper and a new queen is not introduced into the colony, the eggs laid by the workers start to hatch into drone larvae. The hive, unfortunately, faces an uncertain future with limited egg-laying capabilities and a skewed gender ratio.

As worker bees age and dwindle, the colony's population thins, resulting in a compromised workforce for essential tasks like foraging, nursing larvae, and guarding the hive. With time, the honeybees in a queenless colony accept the