

# New research provides evolutionary snapshot of surprisingly altruistic bees

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Credit: Dr Mario Pahl

(Phys.org) —A paper published today in *Current Biology* demonstrates that even in the hopeless situation of colony collapse, queenless honeybees will still show remarkable altruism towards their colony, defending and feeding the collective.

It's a societal structure that gives new insight into primitive [animal societies](#) before evolution saw the role of the queen emerge, revealing surprising plasticity in animal social organisation.

Normally a [honey bee colony](#) contains a single reproductive queen attended by thousands of sterile workers, but no one had studied how the workers respond when the queen dies. To address this gap, Macquarie University's Dr Andrew Barron observed the behavioural patterns of queenless [honeybee colonies](#) in collaboration with researchers at the University of Illinois.

"As concern over global colony collapse continues, it's important that we look at societal structures carefully, to more accurately model behaviours."

We've studied bees so intensely, but no-one's kept watching after the queen bee has died. Now for the first time, we can see that in a hopeless queenless colony – the terminal phase – honeybees continue to work together to defend the colony, forage and feed each other. Altruism persists, despite earlier assumptions to the contrary," says Barron.

The researchers were surprised to see this altruism in a failing colony. Without the queen the workers began laying eggs and raising male drones. It was assumed that reproductive [worker bees](#) would selfishly prioritise their own reproduction over colony care – seeing an increase of selfish behaviour, and corresponding decrease in altruism.

"Although selfish behaviour did increase," Barron says, "we saw that altruism did not decrease. The colonies effectively became worker communes – collective societies where bees became generalists, maintaining and defending the colony together, to the end." The research also gives a unique snapshot into primitive queenless bee societies, before the role of the queen evolved to be the most successful

organisational structure for colonies.

**More information:** Naeger, N. et al. Altruistic Behaviour by Egg-Laying Worker Honeybees, *Current Biology*, August 2013.

Provided by Macquarie University

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