

## Bees and ants are 'model citizens'

Bees and ants have long been recognised as tireless workers, but new research today suggests they can also behave like selfless model citizens.

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A study has found that some bees and ants do operate in the best interests of the group to which they belong – creating a "superorganism" – and can even sacrifice their lives for the greater good of their community.

But scientists at the Universities of Edinburgh and Oxford found the same could not be said for other animal groupings, such as herds of bison or shoals of fish.



Researchers found that some insects, such as honey bees, do seem to put the interests of their group above their own selfish interests. Photo: GETTY

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In those instances, where individual animals appear to be acting like team players, they are actually putting their own interests first, researchers found.

Dr Andy Gardner, of the University of Edinburgh's School of Biological Sciences, explained that theories about the existence of superorganisms – where many individuals work within a self-sustaining social unit for a common purpose – have been much maligned over the years.

He also argued that theories about superorganisms have been "overstretched", for example by those who suggest that

human beings act as part of one giant unit.

Dr Gardner said of his research: "On the one hand we're saying that the theory does have some place. On the other hand, we're saying let's be careful about how we use it."

The researchers studied the way in which co-operative groups of animals evolve, using mathematical models.

They found that some insects, such as honey bees and leafcutter ants, do seem to put the interests of their group above their own selfish interests.

"Looking at a honey bee hive, it does strike you as being like an organism," he said.

"What we've done is show formal mathematical backing for that idea."

Dr Gardner believes that the honey bee's behaviour is controlled by an efficient form of "policing", which suppresses conflict between individuals within the group.

This means that the bees are united in a common purpose – ensuring the survival of the queen bee's offspring.

Dr Gardner said: "If you look at honey bee workers, they don't have much opportunity for mating, but they can still lay eggs that can develop into males.

"But when other workers encounter those eggs, they eat them.

"It means if you're a worker, you cannot get ahead by pursuing your own reproduction, so you might as well help the queen with her reproduction.

"In a beehive, the workers are happy to help the community, even to die, because the queen carries and passes on their genes."

But Dr Gardner said his research also found that superorganisms are rare occurrences in nature and the term should not be widely applied to other animal groupings.

He said: "We often see animals appearing to move in unison, such as bison or fish.

"However, what looks like a team effort is in fact each animal jostling to get to the middle of the group to evade predators.

"By contrast, an ant nest or a beehive can behave as a united organism in its own right."

The findings, funded by the Royal Society, are published in the Journal of Evolutionary Biology.