Team approach appears to work best for insect colonies

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The study's findings appear to echo the insect worlds portrayed in the animated films Antz and Bee Movie, in which the characters live in rigidly conformist societies.

Scientists from the Universities of Edinburgh and Oxford reached their conclusion by creating a mathematical model to study the manner in which cooperative groups of animals, known as superorganisms, evolve.

The study identifies that there are two scenarios in which a group can act as a unit. The first is when all the members are very closely related, and carry the same genes, so ensuring their genes are passed on to the next generation. The second is when the group's behaviour is controlled by a form of policing -in honey bee hives, for example, any egg not laid by the queen is destroyed by worker bees, to ensure only the queen's offspring survive. Both methods ensure that all the individuals involved are united in a common purpose.

Dr Andy Gardner, from the School of Biological Sciences at the University of Edinburgh, 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. In a beehive, the workers are happy to help the community, even to die, because the queen carries and passes on their genes.

"However, superorganisms are quite rare, and only exist when the internal conflict within a social group is suppressed - so we cannot use this term, for example, to describe human societies."

More information: The findings, funded by the Royal Society, are published in the *Journal of Evolutionary Biology*. www3.interscience.wiley.com/jo … l/121670992/abstract

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