

Sex life may hold key to honeybee survival

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Honeybees (queen marked). Image: Dr Bill Hughes

The number and diversity of male partners a queen honeybee has could help to protect her children from disease, say University of Leeds scientists, who are investigating possible causes of the widespread increase in bee deaths seen around the world.

The researchers are working on the theory that the reason some colonies are wiped out while others remain healthy could be down the genetic diversities of the hives.

Dr Bill Hughes, from the Faculty of Biological Sciences at the University of Leeds, says: “By making sure queens mate with enough genetically variable males, we may be able to boost resistance levels and so protect our [honeybee](#) populations from disease attacks like the ones we have seen hitting the US.”

One possibility is that the loss of honeybees means that the number and variety of potential mates for a queen is becoming too low to maintain [genetic diversity](#) and therefore disease resistant populations.

Says Dr Hughes: “Given the choice, queen honeybees will typically mate with up to 12 different male partners in a matter of minutes and some with over 20. The record is the giant Asian honeybee whose queens normally mate with well over 40 males - and in one case was found to have mated with over a hundred.”

The Leeds scientists will be examining the question of genetic resistance by studying honeybee reactions to a common fungus parasite called Chalkbrood, under carefully controlled laboratory conditions.

The [fungus](#), already found in the majority of UK hives, infects and ‘eats’ larvae, giving them a chalky appearance. Individual larvae die but the parasite rarely kills the whole colony.

In 2008, US average losses of honeybee colonies were 35%, with some beekeepers losing 90% of their colonies. A contributing factor to these high levels of honeybee deaths may have been a virus. However the same virus has been found in other countries yet does not seem to cause the same problems.

Dr Hughes and his team think infections by hidden [parasites](#) in genetically susceptible bees may be combining with other factors to produce a lethal ‘perfect storm’ which overwhelms their defences.

Honeybee survival is vital to the protection of our food supplies because they pollinate up to a third of the food we grow in the UK.

The project, which has received just under £500,000 in funding from the Natural Environment Research Council, is due last for three years.

Collaborators include the UK Government's National Bee Unit based near York and the University of Copenhagen.

Source: University of Leeds ([news](#) : [web](#))

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