

Honeybees able to learn different 'dialects': scientists

Honeybees are able to understand different 'languages' communicated through the dances of bees from different continents, a team of scientists from China, Australia and Germany have found.

Songkun Su of Zhejiang University's College of Animal Sciences, who headed the study, said the research team found the Asian honeybee, *Apis cerana cerana* (Acc), could quickly grasp the distinctive dance of the European *Apis mellifera ligustica* (Aml) subspecies, as they conveyed information on the locations of food sources.

The honeybee waggle dance has been recognised as the only known form of symbolic communication in an invertebrate, but whether 'dialects' existed is still unknown.

Research on the dance language and orientation of bees earned Austrian zoologist Karl von Frisch the Nobel Prize in 1973.

Previous studies have shown honeybees performed different dances to indicate distances between food sources and their habitats.

A simple round dance usually implied a close food source, a sickle dance implied a larger distance, and a waggle dance even larger. The most complicated, the waggle dance, encodes both direction and distance of the food source.

Experiments showed a subspecies of Asian honeybees could understand the dance of European honeybees and thus locate the food sources when the bees were raised in the same hive.

The research team included Shaowu Zhang of the Australian National University, Shenglu Chen of Zhejiang University and Juergen Tautz from the University of Wuerzburg, Germany. Their findings were published in the June issue of the Public Library of Science journal PLoS ONE.

In outdoor experiments on the Da-Mei canal banks near the Agricultural School of Zhangzhou in Fujian province, the Asian subspecies often conducted a longer waggle dance at a steeper angle than their European peers.

However, Su said, after being kept together, the Asian bee quickly understood the unique way of European waggling and found the precise location of the food.

Despite understanding the European bees, the Asian bees maintained their own dance. The study shows the European species also have the ability to learn, although strikingly low.

By successfully putting the different subspecies in the same hive, the researchers excluded key influencing factors, such as variants of temperature, humidity and environment.

Su said: 'It was quite a tough job to mingle honeybees of different subspecies, who hate to be put together in one colony because of different odours and quickly kill each other.'

The scientists successfully put the European worker bees with the Asian queen and workers, and kept harmony for 50 days. However, they failed in experiments to keep Asian workers among the

European queen and workers in the Aml hive without them being killed.

To maintain the harmony in the Acc hive, the research team isolated hostile bees and pacified the rest by spraying honey water, Su said.

The scientists are discussing more intriguing questions on the honeybee's social learning.

'After 100 million years of evolution and micro-social development, their behaviour is a valuable reference for human society,' Su said.

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