Angry wasps deal to their competitors

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(PhysOrg.com) -- Scientists at Victoria University have identified a surprising and previously unknown behaviour in the animal world by studying interactions between native ants and invasive wasps in South Island beech forests.

Videotapes taken at bait stations show that wasps frustrated by having to compete with ants will pick them up in their mandibles, fly off and drop them away from the food. As the number of ants on the food increases, so does the frequency of ant-dropping and the distance the ants are taken.

For the ants, say researchers Dr Phil Lester and Dr Julien Grangier, the experience is the human equivalent of being thrown up to half the length of a football field. The ants are not physically hurt but appear stunned by the drop and often do not return to the bait station.

The wasp, Vespula vulgaris, is on the list of the world's 100 worst invasive species and reaches the highest known density in South Island beech forests. There, when competing for food, they dominate just about every animal except native ants.

"Despite being 200 times smaller, the ants are able to hold their own by rushing at the wasps, spraying them with acid and biting them. Eventually the wasps get so angry they pick up the ant, take it away and return to eat the food.

"The strategy works. It's giving the wasp access to resources it wouldn't

otherwise have," says Dr Lester.

"To the best of our knowledge this behaviour has never been observed before. Our results suggest that these insects can assess the degree and type of competition they are facing and adapt their behaviour accordingly," says Dr Grangier.

"It's a new interaction between a native and an invasive species and a wonderful example of behavioural plasticity."

He says the wasps' ability to tune their behaviour according to the abundance and identity of competitors could help explain why they are so widespread and invasive.

The research findings are published today in the Royal Society journal *Biology Letters*, one of the world's leading publications in the field of biological sciences.

Dr Lester says other data gathered during the research suggests that ants may actually attract wasps in the first place.

"Wasps seem to hear ants 'talking'. They have nerves in their antennae that pick up pheromones or communication chemicals given out by the ants. So it could be the foraging ants that bring wasps to the food resource. Once there, they adjust their behaviour according to the level of competition imposed by these ants."

Provided by Victoria University