

New wasp species may be friends of agriculture

20 June 2014, by David Ellis

University of Adelaide researchers have discovered large numbers of new species of tiny Australian parasitic wasps - some of which may have potential as new biological control agents of insect pests in agriculture.

Eighteen new [species](#) of "chelonine" wasps have been discussed and described in detail in the journal *Insect Systematics & Evolution*. These are among 150 new species discovered by School of Earth and Environmental Sciences PhD student Rebecca Kittel during her three-year project.

The tiny wasps - up to 4mm in length - all have a fascinating biology. The adult wasps inject their eggs into the eggs of their host moths. The growing wasp larvae feed and develop inside the developing moth caterpillar, eventually emerging from the caterpillar as it dies. The wasp larvae then form a cocoon until environmental conditions are right for the adult to emerge and begin the life cycle again.

"This biology and the fact that each [wasp species](#) targets only one specific moth means that they are potentially ideal candidates for development as biological control agents of agricultural pests," says Ms Kittel.

"Wasps from this family have been successfully introduced to Australia as controls, for example against the potato tuber moth. It's important, however, that these wasps are properly identified and described so that agricultural researchers can work with known species."

As part of her project, Ms Kittel has been sent 5,000 specimens of chelonine wasps from all over Australia to identify. 250 of those specimens were found to be examples of the 18 [new species](#) just published.

The new group - from the genus *Phanerotomella Szépligeti* - was previously considered a small

genus, known only from three previously described species - now redescribed in this paper. "Recent intensive collecting has revealed a much more species rich group than had been thought," says Ms Kittel.

To properly identify and describe the new wasps, Ms Kittel has measured over 30 characters on each wasp including overall size, length of wing and various ratios such as the size of the eye in relation to the head.

"Sometimes they look similar at first glance, but with these measurements and detailed images, they can be clearly distinguished from all other species," she says. One distinguishing feature is that they look as if they are always smiling. "They are very friendly looking and indeed, they can be very good friends to us," says Ms Kittel.

Project supervisor Professor Andrew Austin, from the University's Australian Centre for Evolutionary Biology and Biodiversity, says: "These are a very important group of insects - both for their position in maintaining ecological balance and for their potential as natural control agents of [agricultural pests](#). This work has laid the foundation for research to make good use of these native insects."

The [wasps](#) are relatively rare but found in environments across Australia from the tropics to arid lands - wherever moths are found.

More information: "Systematics of the parasitic wasp genus *Phanerotomella Szépligeti* (Hymenoptera: Braconidae: Cheloninae) for Australia, with descriptions of 18 new species." Rebecca N. Kittel, et al. *Insect Systematics & Evolution*, May 2014. [DOI: 10.1163/1876312X-45032120](#)

Provided by University of Adelaide

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