

PREMIUM

Insects that work to support the ecosystem



1 of 3 Doctoral student Tan Ming Kai's research is important as the findings help farmers distinguish potential pollinators from pests. PHOTO: LIN ZHAOWEI FOR THE STRAITS TIMES

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Some grasshoppers and crickets are among insects that pollinate flowers the way bees do

Jose Hong

Plant owners view grasshoppers and crickets as greenery-eating pests, but new research indicates some of these insects pollinate flowers in the same way butterflies and bees do.

These new-found pollinators belong to the family of insects known as orthopterans, according to doctoral student Tan Ming Kai, who made the discovery in a three-year study of five South-east Asian countries, including Singapore.

The region is traditionally overlooked by insect scientists probing the pollinating abilities of orthopterans, said Mr Tan, 28, who is doing his degree at the Department of Biological Sciences in the National University of Singapore .

"When people think of pollinators, bees and butterflies are usually the first that come to mind. There are very few records of orthopterans visiting flowers, and none of the studies involve South-east Asian orthopterans," he added.

His research, done in Singapore, Malaysia, Thailand, Brunei and Indonesia between 2015 and this year, found 41 species of orthopterans visiting the flowers of 35 plant species.

Of these, 19 were katydids (known as bush crickets), 13 grasshoppers and nine crickets. Among them, 29 orthopterans were found in Singapore.

Mr Tan, who has discovered more than 60 species of orthopterans new to science since 2009, said his study was the most extensive of flower-visiting orthopterans in the tropics. But not all orthopterans that visit flowers pollinate them, he said.

ASSESS RISKS AND BENEFITS

Without such studies, it is not possible to assess the risks presented by these potential pest species, as well as to further examine the beneficial roles of the flower-visiting orthopterans.

ASSOCIATE PROFESSOR HUGH TAN, who is from the Department of Biological Sciences at NUS, on the importance of the research done by doctoral student Tan Ming Kai.



During his expeditions in Mandai, Mr Tan found that the sickle-bearing katydid, for instance, collected the pollen grains from the Hairy Beggarticks plant by eating their flowers. And flowers visited by these katydids were three times more likely to develop into seeds.

He said: "Given that more orthopterans are being discovered in South-east Asia, there is a pressing need to better understand the biological roles they play."

"The orthopterans visit flowers to obtain food. Some damage the flowers without pollinating them. We need to know their feeding pattern and behaviour to ascertain this," he added.

This research is important to the agriculture-reliant nations of South-east Asia, as the findings help farmers distinguish the potential pollinators from the pests.

Said Associate Professor Hugh Tan, who is from the same department and Mr Tan Ming Kai's thesis supervisor: "Without such studies, it is not possible to assess the risks presented by these potential pest species, as well as to further examine the beneficial roles of the flower-visiting orthopterans."

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