

First known instance of a cricket as an orchid pollinator captured on film (w/ Video)

January 12 2010

An orchid researcher based on the island of Reunion in the Indian Ocean and collaborating with researchers at the Royal Botanic Gardens, Kew (RBG Kew) has used motion sensitive night cameras to capture the first known occurrence of a cricket functioning as a pollinator of flowering plants. Not only is this the first time this behaviour has been documented in a member of the Orthoptera order of insects - who are better known for eating plants - but the 'raspy cricket' is also entirely new to science. The discovery is revealed in a paper published today in *Annals of Botany*.

In 2008 Claire Micheneau, a RBG Kew-associated PhD student studying how the epiphytic <u>orchid</u> genus *Angraecum* has adapted to different <u>pollinators</u> on Reunion Island, and Jacques Fournel, her collaborator, shot the remarkable footage. It shows a raspy cricket (*Glomeremus* sp) carrying pollen on its head as it retreats from the greenish-white flowers of *Angraecum cadetii*.

The genus *Angraecum* is best known for Darwin's study of the comet orchid, *Angraecum sesquipedale* of Madagascar, and his hypothesis that it was pollinated by a bizarre, long-tongued moth pollinator - a theory that was later proved to be true many years after his death.

Says Claire Micheneau, "We knew from monitoring pollen content in the flowers that <u>pollination</u> was taking place. However, we did not observe it during the day. That's why we rigged up a night camera and caught this raspy cricket in action. Watching the footage for the first



time, and realising that we had filmed a truly surprising shift in the pollination of *Angraecum*, a genus that is mainly specialised for <u>moth</u> pollination, was thrilling.

"The moths that are the main *Angraecum* pollinators on Madagascar are not found on Reunion and until we started our research the pollination of this genus on Reunion had always been an open question."

Micheneau's research also revealed that two other species of Reunion Island *Angraecum* orchids (*A. bracteosum* and *A. striatum*) are pollinated by two species of small white eye songbirds (*Zosterops borbonicus* and *Zosterops olivaceus*).

She continues, "My studies have shown that the raspy cricket is also a surprisingly efficient pollinator with higher rates of pollination and fruit set in *Angraecum cadetii* than those recorded in its bird-pollinated sisterspecies."

There is a close match in size between the raspy cricket's head and *Angraecum cadetii*'s nectar-spur opening. These wingless raspy crickets reach the flowers by climbing up the leaves of the orchid or jumping across from neighbouring plants. They use long very long antenna to explore their surroundings.

Just why the raspy cricket developed a taste for orchid nectar is still a key question for Micheneau. "Although crickets are typically omnivorous and eat both plant material and other insects, we think the raspy cricket has evolved to eat nectar to compensate for the general scarcity of other insects on Reunion."

Provided by Royal Botanic Gardens Kew



Citation: First known instance of a cricket as an orchid pollinator captured on film (w/ Video) (2010, January 12) retrieved 26 April 2024 from <u>https://phys.org/news/2010-01-instance-cricket-orchid-pollinator-captured.html</u>

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