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Emergence of *Podagrion* wasps from the ootheca of a praying mantis

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Subjects: Wasp, *Podagrion* sp. (Insecta: Hymenoptera: Torymidae);
Ootheca of praying mantis, *Tropidomantis tenera* (Insecta: Mantodea: Iridopterygidae).

Subjects identified by: Tiffany Q. H. Lum, confirmed by Jeong Yoo (Royal Ontario Museum).

Location, date: Singapore Island, Mount Faber; 12 April 2018 (origin of adult mantis that laid the ootheca).

Habitat: Parkland.

Observer: Ho Li Yah.

Observation: Instead of mantis nymphs, 14 adult wasps were observed emerging from an ootheca laid in the laboratory by an adult female *Tropidomantis tenera* obtained from Mount Faber. They had appeared from holes on the lateral surface of the ootheca (Fig. 1). A magnified lateral view of one of the wasps is shown on Fig. 2.

Remarks: According to the Universal Chalcidoidea Database by the Natural History Museum (London) and waspweb.org, there appears to be no records of *Podagrion* species in Singapore and Malaysia. The only member of the family Torymidae recorded in the region seems to be *Propalachia beaveri*. There is no recorded association of *Propalachia* wasps with mantis ooths except for a doubtful case mentioned by Bouček (2007). This seems to be the first record of a *Podagrion* wasp in Singapore.

The behaviour and life cycle of the North American *Podagrion mantis* has been fairly well studied by Breland (1941). From field collections of mantis ooths from Florida, USA, the wasp is found to parasitize multiple host species. Thus far, all species of *Podagrion* are known to oviposit solely in the ootheca of praying mantises (Coombs, 1994; Breland, 1941; Fox, 1939). Recent observations and studies on these wasps have been conducted in regions outside Singapore and Malaysia (Fagan, 2001; Narendran & Sudheer, 2004; Panis & Laudeho, 2008).

Tropidomantis tenera is a common species of praying mantis in Singapore. Healthy, non-parasitised ootheca are illustrated on Fig. 3 & 4, a nymph is shown on Fig. 5, and an adult on Fig. 6. The diversity of praying mantises in Singapore has not been properly documented, and thus our knowledge of mantid ooths parasites is poor. The present observation may be the first record in Singapore of a mantis ootheca being parasitised by wasps.

References:

Bouček, Z., 2007. A taxonomic revision of the species of Palachiini (Hymenoptera; Torymidae). *Journal of Natural History*. 32 (2): 217-262. doi:10.1080/00222939800770121

Breland, O. P., 1941. *Podagrion mantis* Ashmead and other parasites of praying mantid egg cases (Hym.: Chalcidoidea; Dipt.: Chloropidae). *Annals of the Entomological Society of America*. 34 (1): 99-113. doi: 10.1093/aesa/34.1.99

Coombs, M., 1994. Seasonality and host relationships of insects associated with oothecae of *Archimantis latistyla* (Serville) (Mantodea, Mantidae). *Journal of the Australian Entomological Society*. 33 (3): 295-298. doi: 10.1111/j.1440-6055.1994.tb01232.x

Fagan, W. F. & A. Folarin, 2001. Contrasting scales of oviposition and parasitism in praying mantids. *Population Ecology*. 43 (1): 87-96. doi: 10.1007/PL00012019

Fox, H., 1939. Infestation of oothecae of introduced Asiatic mantids by *Podagrion mantis* Ashmead. *Annals of the Entomological Society of America*. 32 (3): 561-563. doi: 10.1093/aesa/32.3.561

Narendran, T. C. & K. Sudheer, 2004. Descriptions of two new species of Chalcidoidea (Hymenoptera) from Oriental region and notes on the synonymy of a species of *Eupelmus* Dalman. *Journal of Advanced Zoology*. 25 (1): 61-65.

Panis, A. & Y. Laudeho, 2008. A second collection in Mauritania of *Podagrion klugianum* (Westwood, 1847) (Hymenoptera: Torymidae). *Publications de la Société Linnéenne de Lyon*. 77 (9-10): 205. doi: 10.3406/linly.2008.13695

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Fig. 1: Side view of affected ootheca, showing holes where the wasps emerged. Size of ootheca: 8 mm from the dorsal emergence area.

Fig. 2: Lateral view of a wasp that emerged. Scale bar = 0.5 mm. Photograph by Insect Diversity Laboratory, Department of Biological Sciences, National University of Singapore

Fig. 3: Side view of healthy ootheca (about 7 mm from the dorsal emergence area) of with side surface intact.

Fig. 4. Dorsal view of healthy mantis ootheca showing areas where healthy mantids emerged.

Fig. 5: Healthy first instar *Tropidomantis tenera* nymph (about 6 mm) that emerged from unaffected ootheca.

Fig. 6. Dorso-lateral view of an adult *Tropidomantis tenera* of about 25mm.

Except Fig. 2, all photographs by Tiffany Q. H. Lum