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LATE INSTAR LARVA AND METAMORPHOSIS OF *OPHIUSA TRAPEZIUM* (GUENÉE) IN SINGAPORE (LEPIDOPTERA: NOCTUIDAE: CATOCALINAE)

T. M. Leong
Central Nature Reserve, National Parks Board,
601 Island Club Road, Singapore 578775
(*E-mail*: leong_tzi_ming@nparks.gov.sg, banjarana@gmail.com)

INTRODUCTION

Moths of the genus *Ophiusa* Ochsenheimer belong to the family Noctuidae, subfamily Catocalinae, tribe Ophiusini (Holloway, 2005). In Borneo, this genus is represented by five species (Holloway, 2005), whereas in Singapore, records indicate two species thus far, namely *Ophiusa disjungens* (Walker, 1858) and *Ophiusa trapezium* (Guenée, 1852). This article describes and illustrates the diagnostic caterpillar of the latter species, possibly for the first time, and documents its host plant, which is an additional genus/family record for the genus *Ophiusa*.

OBSERVATIONS

While conducting a nocturnal faunal transect along Sime Track in the MacRitchie Reservoir forest on the 27 Dec.2008 (ca. 2300 hours), a lepidopteran larva was observed feeding at waist-level on the leaves of the locally widespread shrub, sendudok, *Melastoma malabathricum* (family Melastomataceae). It was suspected to be a noctuid caterpillar, but its generic/species assignment was uncertain. The caterpillar was then reared in captivity to monitor its development and determine its identity.

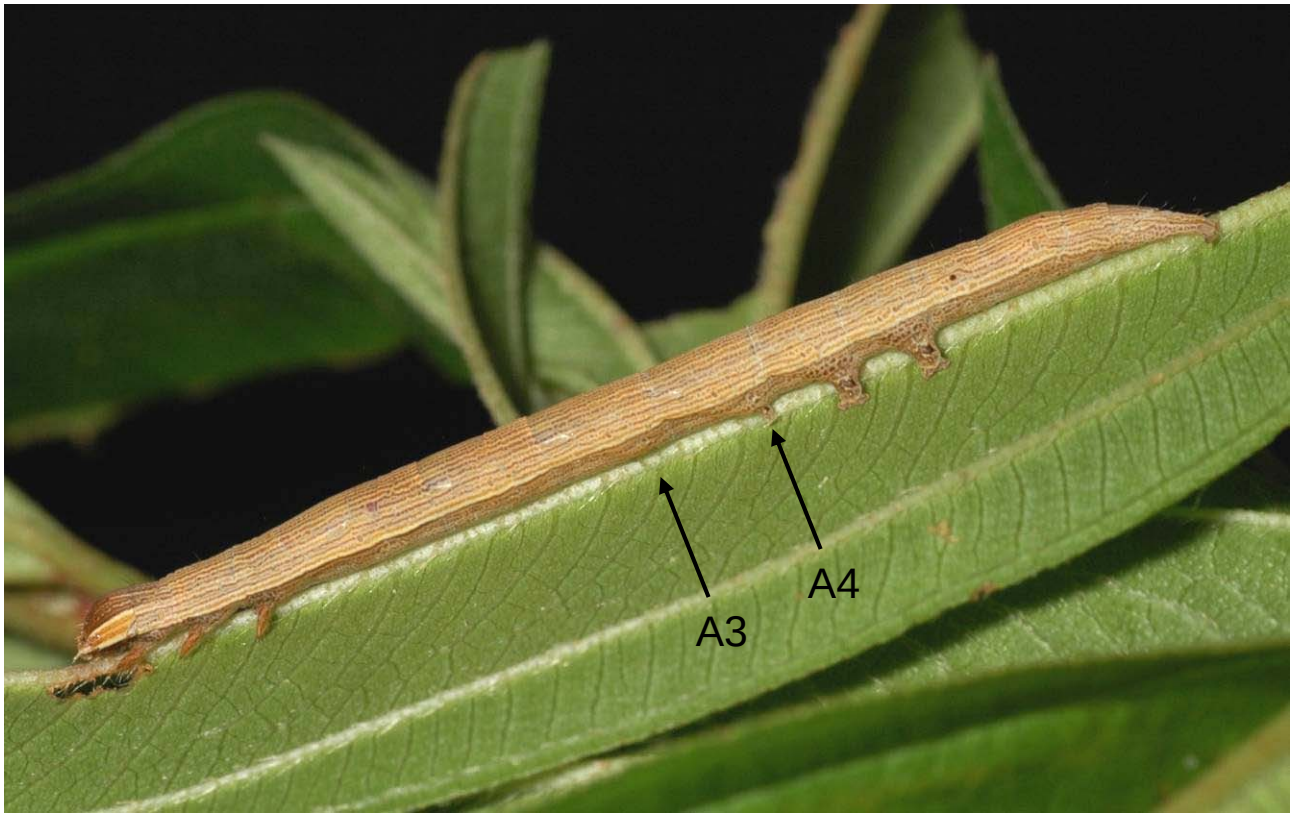

Fig. 1. Lateral view of penultimate instar of *Ophiusa trapezium*, found on its host plant, sendudok (*Melastoma malabathricum*), on the night of 27 Dec.2008 (ca. 2300 hours) along Sime Track, MacRitchie Reservoir forest. The third and fourth pairs of abdominal prolegs (A3 and A4) are noticeably reduced.

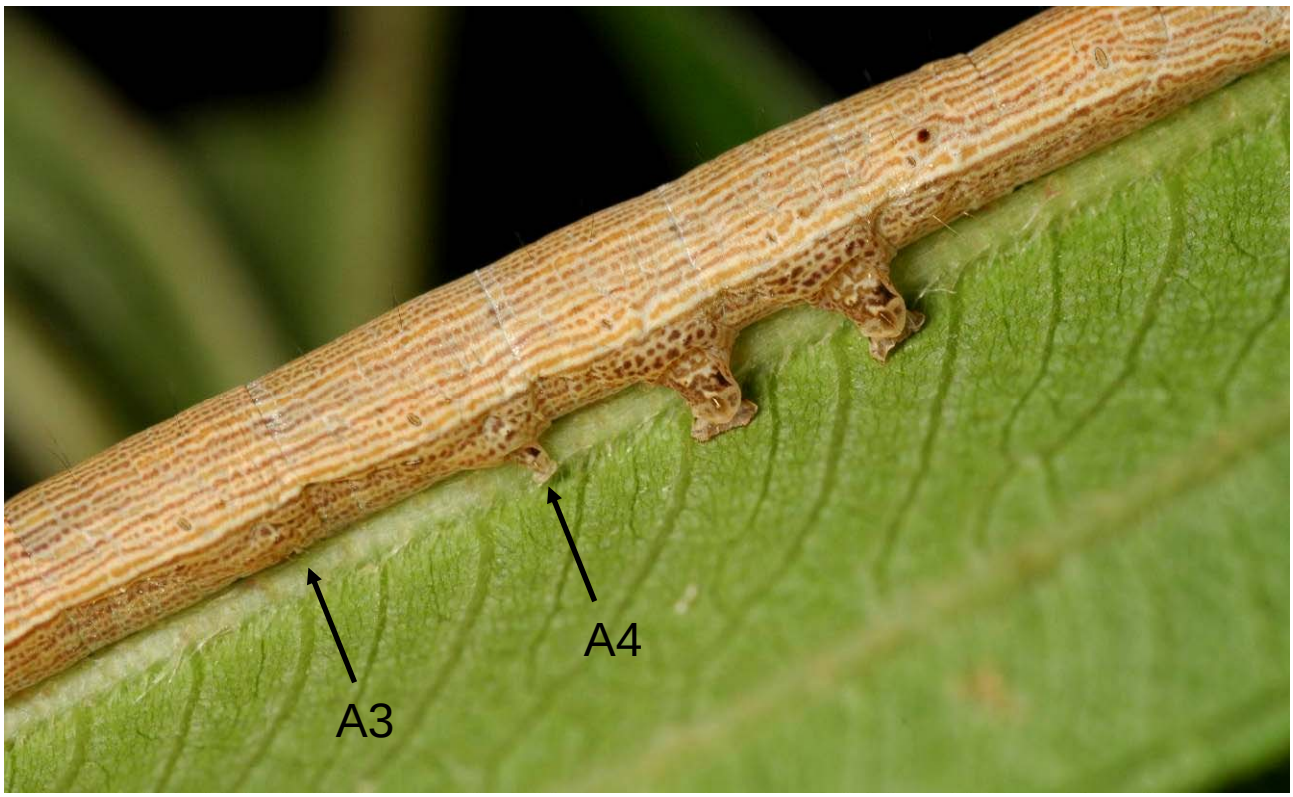

Fig. 2. Lateral close-up of the abdominal prolegs to illustrate the extent of limb reduction on A3 and A4. In particular, the prolegs on A3 have become so drastically reduced that they are almost non-existent.

The caterpillar had an initial body length of 47 mm, with a width of 4 mm. Its body had a light-brown ground colour, with multiple longitudinal rows of darker brown stripes (Figs. 1–3). From the lateral perspective, the reduction of its prolegs on abdominal segments A3 and A4 was readily noticeable, with those on A3 exhibiting such an extreme shrinkage that they may be characterized as vestigial (Fig. 2). The prolegs on the A4 segment were approximately half the size of those on the A5 and A6 segments.

Upon closer examination, a reddish mite was found to be attached to the right flank of the caterpillar, immediately posterior to the metathoracic leg (Fig. 4). However, by the morning of 29 Dec.2008, this ectoparasite had already detached itself from its caterpillar host. On the 30 Dec.2008, the larva appeared to display pre-moulting behaviour with an abrupt decline in feeding and movement. By 31 Dec.2008, it had moulted into its next and final instar. The exuvium was duly preserved. Its body pattern retained the longitudinal striations of the penultimate instar, but the brown colouration was more intense (Fig. 5). The head was dark-brown between the eyes, sharply demarcated by light-orange on the flanks (Fig. 6). There was a sparse scattering of fine hairs over its head and body.

On the 3 Jan.2009, the larva measured 59 mm by 5 mm. By the 5 Jan.2009, it was 69 mm by 6 mm. On the 9 Jan.2009, the larva began to weave leaves around it using fine silken threads. Pupation was complete by 11 Jan.2009, when the silken shroud was carefully teased apart to examine the pupa. The pupa was attached to the silken mat by its cremaster. It was dark, chestnut-brown, with a smooth surface and was 23 mm by 6 mm. The pupa was not photographed.

On the night of 22 Jan.2009, the resultant moth successfully emerged and was determined to be a female *Ophiusa trapezium* (Fig. 7), its distinct wing markings agreeing with that species as illustrated in Holloway (2005: pl. 1–moth no. 23). It was subsequently preserved in the Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research (RMBR), National University of Singapore (ZRC.LEP.126, body length: 22 mm, fore-wing: 21 mm). The eclosed pupa was cleaned and also preserved.

As noted by Holloway (2005), there is noticeable sexual dimorphism in this species, with males known to be larger and having lighter brown forewings. This was observed to be exactly the case in a male voucher specimen from the Central Catchment Nature Reserve, Singapore (ZRC.LEP.127, body length: 29 mm, forewing: 26 mm, coll. T. M. Leong, Bukit Kallang, 21 Jun.2004). This male specimen matched the illustrations in Barlow (1982: pl. 31–moth no. 12) and Holloway (2005: pl. 1–moth no. 22). Additionally, the author also encountered a female of this species that was attracted to a light sheet on the 18 Oct.2008 (late night) in the Upper Peirce Reservoir forest. It was photographed, but not collected.

Fig. 3. Dorsal view of penultimate instar of *Ophiusa trapezium*. Its length was 47 mm and body width was 4 mm. A mite (arrowed) had attached itself onto the right thoracic region of the caterpillar (Fig. 4).

Fig. 4. Lateral close-up of right thoracic region of the penultimate instar. Note the attachment of a reddish, ectoparasitic mite on its flank, immediately posterior to its metathoracic leg. On the morning of 29 Dec.2008, the mite was found to have dropped off, leaving behind a round, blackish wound.

Fig. 5. Dorso-lateral view of the final instar. It attained a total length of 69 mm, with a body width of 6 mm.

Fig. 6. Close-up of head of final instar to illustrate the head patterns and colour.

Fig. 7. Adult female *Ophiusa trapezium* (ZRC.LEP.126, body length: 22 mm, fore-wing: 21 mm), emerged on the night of 22 Jan.2009, after a pupal period of 12 days.

There does not appear to be any previous published account of the larva for this particular noctuid species (Holloway, 2005). Hence, the present observations may very likely be the first reliable larval assignment for *Ophiusa trapezium*. Based on compilations of host plant records for various members of the genus *Ophiusa*, their caterpillars appear to have a polyphagous diet. Cumulative records of 11 species of *Ophiusa* include at least 27 plant families (Robinson et al., 2009). However, this list of known larval hosts included neither *Ophiusa trapezium* nor the host plant, *Melastoma malabathricum*. With our new knowledge of the caterpillar of *Ophiusa trapezium*, we are better prepared to document other potential host plants of that species.

ACKNOWLEDGEMENTS

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