

## FINAL INSTAR CATERPILLAR AND METAMORPHOSIS OF *MECODINA LANCEOLA* GUENÉE, 1852 IN SINGAPORE (LEPIDOPTERA: EREBIDAE)

**Tzi Ming Leong**

Central Nature Reserve, National Parks Board

601 Island Club Road, Singapore 578775, Republic of Singapore

(E-mail: [leong\\_tzi\\_ming@nparks.gov.sg](mailto:leong_tzi_ming@nparks.gov.sg), [banjarana@gmail.com](mailto:banjarana@gmail.com))

### INTRODUCTION

In Borneo, the erebid genus *Mecodina* Guenée is represented by nine species; whereas for Singapore, at least five species have been recorded, based on museum specimens and published literature (Holloway, 2005). The species documented for Singapore include: (i) *Mecodina lanceola* Guenée, 1852 (Holloway, 2005; present larval account and museum specimen), (ii) *Mecodina leucosticta* Hampson, 1926 (Poole, 1989: two male syntypes from Singapore; museum specimen), (iii) *Mecodina albodentata* (Swinhoe, 1895) (Holloway, 2005), (iv) *Mecodina violacea* Holloway, 2005 (photographic record, see Fig. 1), (v) *Mecodina metagrapta* Hampson, 1926 (Holloway, 2005). The present placement of *Mecodina* in the family Erebidae follows the recognition of six well-supported family groups within the Superfamily Noctuoidea in a molecular (DNA) analysis by Zahiri et al. (in press). The Erebidae include all genera covered by Holloway (2005—as Noctuidae: Catocalinae), but subfamily placements would require further resolution. Here, the final instar caterpillar and pupa of *Mecodina lanceola* are described, upon completion of metamorphosis.

### OBSERVATIONS

While conducting a faunal survey within the MacRitchie Reservoir forest on the night of 16 Jan.2010, the final instar of a noctuid caterpillar was sighted on the leaf of its hostplant *Ficus variegata* (family Moraceae). It was perched on a branch ca. 2.5 m above the forest floor. This branch was then carefully lowered to obtain the larva for subsequent observation and rearing to confirm its identity. The caterpillar was attractively-patterned, with a striking composite of closely-spaced, white and olive-green stripes or spots throughout its body (Figs. 2, 3).



Fig. 1. Live specimen of *Mecodina violacea* encountered at the Hindhede Nature Park on the night of 20 Feb.2009 (ca. 2305 hours).



Fig. 2. Lateral view of final instar caterpillar, perched on its foodplant *Ficus variegata* (Moraceae) at the MacRitchie Reservoir forest on the night of 16 Jan.2010.



Fig. 3. Dorsal view of final instar caterpillar (as in Fig. 2). Its total length was 33 mm.

Its head was largely olive-green, variegated with white dorsally. Its thoracic legs and abdominal prolegs were uniform pale-grey. The complete set of prolegs (A3–A6) was evident, although the anterior-most pair (A3) appeared to be marginally-reduced in size. The anal prolegs were well-developed and light translucent-green. Its posterior-most segment was white with three, dark-grey spots dorsally. The total length of this larva was 33 mm.



Fig. 4. Pre-pupal change in colour was observed on the morning of 19 Jan.2010. By the same afternoon, it had begun to enshroud itself with adjacent leaves, employing silken threads for fastening.

In captivity, the larva fed consistently until 18 Jan.2010. On the morning of 19 Jan.2010, it began to exhibit pre-pupal behaviour (stopped feeding, remained motionless) with accompanying colour change. Its entire body had acquired a uniformly rich fuchsia (Fig. 4), a drastic departure from its earlier colour patterns. Later that afternoon, it proceeded to conceal itself with adjacent leaves, attaching them with loose silken threads. By the afternoon of 21 Jan.2010, pupation had been complete. The pupa was a uniform caramel-brown and measured 18 by 6 mm (Fig. 5). Its cremaster exhibited a feeble aggregation of Velcro-like hooks, clearly designed for anchorage onto silk.

On the night of 1 Feb.2010 (ca. 2130 hours), the adult moth eventually emerged (Fig. 6) and was determined to be a female *Mecodina lanceola* (see Holloway, 2005: Pl. 21—moth 18). The specimen was preserved and deposited at the Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research (RMBR), National University of Singapore, with measurements of its body length (BL) and forewing length (FW) acquired. The female moth was catalogued as ZRC.LEP.285 (BL: 16 mm, FW: 20 mm), together with its corresponding larval exuvia and vacated pupal case.

The documented larval hostplants consumed by *Mecodina* include seven genera in six families, namely: *Durio* (Bombacaceae), *Ficus* (Moraceae), *Nephelium* (Sapindaceae), *Theobroma* (Sterculiaceae), *Aglaia* (Meliaceae), *Ichnocarpus* and *Trachelospermum* (both Apocynaceae) (Holloway, 2005; Robinson et al., 2010). It is hoped that subsequent encounters with the respective larvae of other local species of *Mecodina* may provide insights into their comparative morphology and hostplant choice.

#### COMPARATIVE MATERIAL EXAMINED

*Mecodina leucosticta* Hampson, 1926

ZRC.LEP.314 (male, BL: 20 mm, FW: 20 mm), coll. R. Morrell, 30 Oct.1948, MacRitchie Reservoir.

*Mecodina lanceola* Guenée, 1852

ZRC.LEP.322 (female, BL: 17 mm, FW: 19 mm), coll. L. L. Koh, 28–29 Jan.2007, Bukit Batok Nature Park.

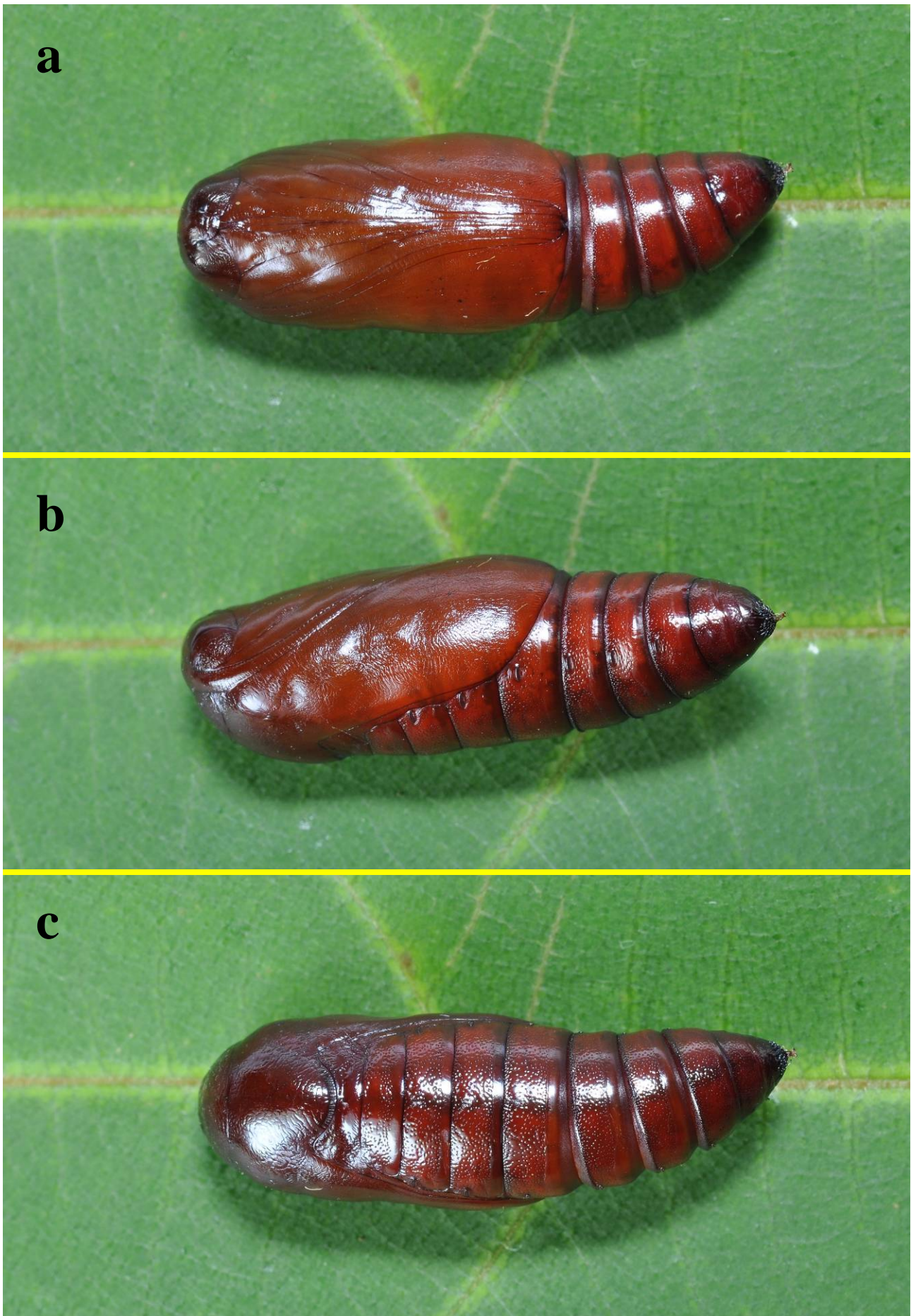


Fig. 5. Ventral (a), lateral (b), and dorsal (c) views of a pupa (18 by 6 mm). Pupation was complete by 21 Jan.2010. There were fine, Velcro-like hooks at the tip of its cremaster.



Fig. 6. Newly-emerged female *Mecodina lanceola* (ZRC.LEP.285, body length: 16 mm, forewing: 20 mm), enclosed on the night of 1 Feb.2010 (ca. 2130 hours).

#### ACKNOWLEDGEMENTS

I wish to express my gratitude to Haji Samsuri bin Haji Ahmad (Herbarium, Singapore Botanic Gardens) for identifying the larval hostplant. My sincere appreciations go to Kelvin K. P. Lim and Lua Hui Kheng for kindly granting access to examine the moth specimens in the Lepidopteran Collection of the Zoological Reference Collection of the Raffles Museum of Biodiversity Research. The manuscript benefited from updates and helpful comments by an efficient lepidopterist reviewer.

#### LITERATURE CITED

- Holloway, J. D., 2005. The moths of Borneo: Family Noctuidae, subfamily Catocalinae. *Malayan Nature Journal*, **58**(1–4): 1–529.
- Poole, R. W., 1989. *Lepidopterorum Catalogus (New Series)*. Fascicle 118. Noctuidae [in 3 parts]. E. J. Brill/Flora & Fauna Publications, New York. 1,314 pp.
- Robinson, G. S., P. R. Ackery, I. J. Kitching, G. W. Beccaloni & L. M. Hernández, 2010. *HOSTS—A Database of the World's Lepidopteran Hostplants*. Natural History Museum, London. <http://www.nhm.ac.uk/research-curation/research/projects/hostplants/>. (Accessed: 18 Jul.2010).
- Zahiri, R., I. J. Kitching, J. D. Lafontaine, M. Mutanen, L. Kaila, J. D. Holloway & N. Wahlberg, in press. A new molecular phylogeny offers hope for a stable family-level classification of the Noctuoidea. *Zoologica Scripta*.