

## FINAL INSTAR CATERPILLAR AND METAMORPHOSIS OF *CHASMINA CANDIDA* (WALKER, 1865) FROM SINGAPORE (LEPIDOPTERA: NOCTUIDAE: BAGISARINAE)

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### INTRODUCTION

Until recently, the noctuid genus *Chasmina* Walker was placed in the subfamily Amphipyriinae (see Holloway, 1989). It is currently recognised as belonging to the subfamily Bagisarinae (see Holloway, 2010). In Borneo, three representatives are known, namely *Chasmina candida* (Walker, 1865), *Chasmina coremata* Holloway, 1989, and *Chasmina sundana* Holloway, 1989 (see Holloway, 1989). In Singapore, only *Chasmina candida* has been recorded thus far. Here, an account of its final instar larva is provided, based on a successful attempt at rearing to metamorphosis.

### OBSERVATIONS

On the night of 13 May 2010 (ca. 2045 hours), an individual caterpillar was found to be feeding under a leaf of the sea hibiscus shrub (*Talipariti tiliaceum* = *Hibiscus tiliaceus*, family Malvaceae) in the back mangroves of Pasir Ris. The caterpillar was perched ca. 2 m above ground and after repeated attempts to lower the branch to gain access to it, it dislodged itself and descended to the ground. It was then reared in captivity to confirm its eventual identity. The caterpillar was an overall pale greyish green, with a longitudinal pair of pale-yellowish stripes along the entire length of its dorsum (Figs. 1, 2). At its 2<sup>nd</sup> and 3<sup>rd</sup> thoracic segments (T2 and T3), a symmetrical arrangement of small, black spots were noticeable dorsally (Fig. 2). The spiracles were light beige. Its total length was 33 mm. There was a sparse distribution of short, primary setae over its body, with most of them originating from a tiny white dot.



Fig. 1. Lateral view of the final instar caterpillar of *Chasmina candida* on its larval hostplant *Talipariti tiliaceum* (Malvaceae), encountered at the Pasir Ris back mangroves on the night of 13 May 2010 at ca. 2045 hours.



Fig. 2. Dorsal view of the final instar caterpillar (as in Fig. 1). Its body length was 33 mm.

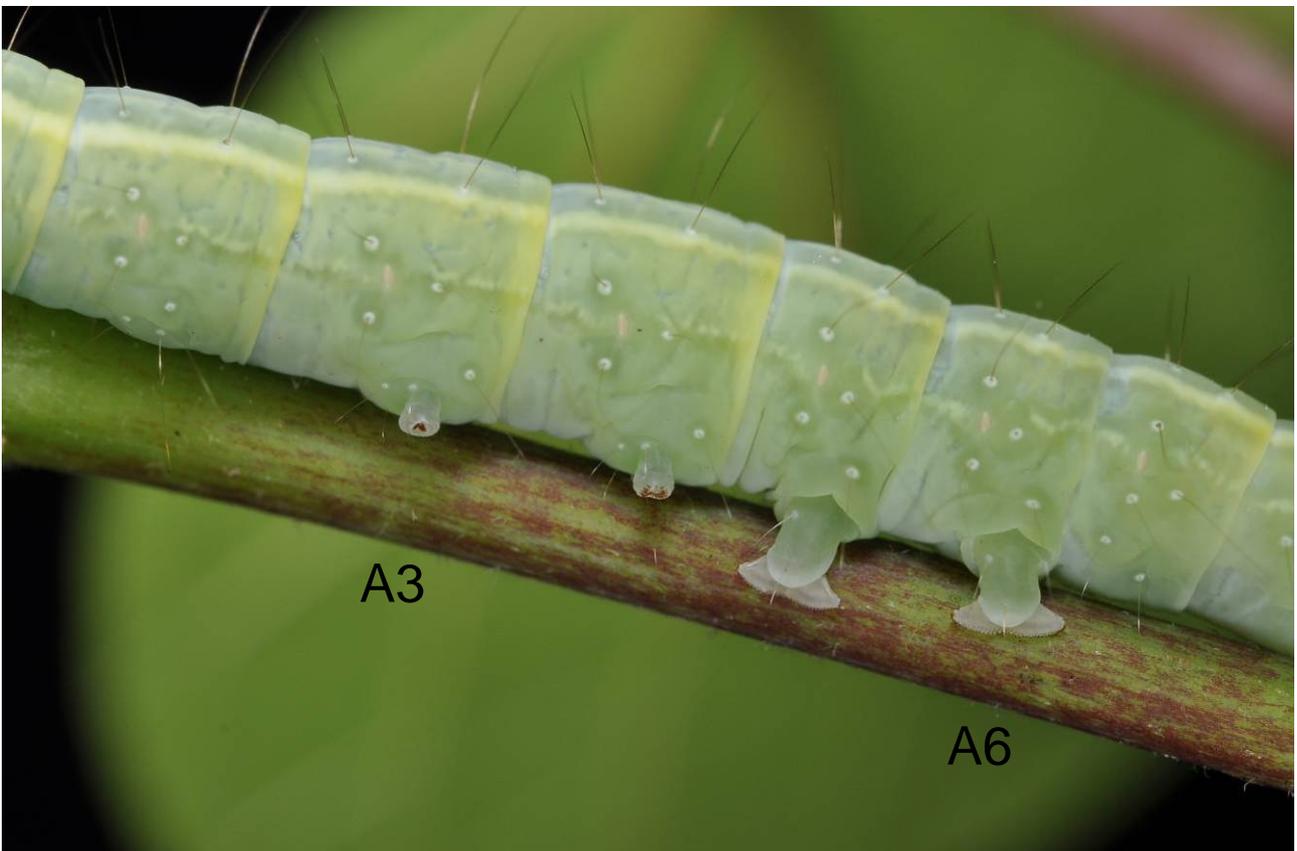


Fig. 3. Lateral close-up of mid-section of final instar caterpillar (head towards left) to appreciate the significant reduction in prolegs of the 3<sup>rd</sup> and 4<sup>th</sup> abdominal segments (A3 and A4), in contrast with those of the 5<sup>th</sup> and 6<sup>th</sup> segments (A5 and A6). Note also the sparse arrangement of setae over its body.

There was noticeable reduction in the prolegs at abdominal segments three and four (A3 and A4), which had been reduced to short stumps with a remnant ring of crochets at their apices (Fig. 3). Those of A5 and A6 still retained their full morphology, size and function. The caterpillar fed well and on 17 May 2010, it had already exhibited pre-pupal colouration and behaviour. Its body had deepened in intensity to a dark fuchsia, as it began to spin loose silk around itself. By 19 May 2010, pupation was complete. The pupa measured 21 × 7 mm and was a uniform dark-brown initially. On the 30 May 2010, the pupa had become a pale caramel-brown, with the underlying limbs of the adult moth clearly visible. At this point, a row of evenly spaced black dots on the tibia of the first pairs of limbs could be seen.

On the night of 31 May 2010 (ca. 2200 hours), the moth eventually emerged and was positively identified as a female *Chasmina candida* (Figs. 4, 5). As it held its wings back to allow for wing expansion, the frenulum was clearly noticeable (Fig. 4). Its first pair of limbs was coloured orange, with the tibia bearing black dots on its anterior face. The apices of its palps were also endowed with a similar shade of orange. Otherwise, the rest of its body and wings were an immaculate, snowy white.

This moth was subsequently preserved as a voucher specimen 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) taken. It was catalogued as ZRC.LEP.302 (female, BL: 19 mm, FW: 20 mm), together with the exuvia of its final instar and its vacated pupal case.

At the ZRC, a male *Chasmina candida* specimen was examined: ZRC.LEP.315 (BL: 22 mm, FW: 18 mm), coll. Samantha Lee, 6 Jan.1992, National University of Singapore, Sheares Hall (Fig. 6). The shape of its forewing was consistent with that of males of this species (see Holloway, 1989: 187, Pl. 6—moth 27), as it exhibited a square apex and concave costa. Apart from this distinct sexually dimorphic character, the male specimen also possessed similar shades of orange on its first pair of limbs and its palps. At present, these two specimens (ZRC.LEP.302, 315) appear to be the only representatives for the species in Singapore.



Fig. 4. Lateral view of the freshly emerged female (ZRC.LEP.302, body length: 19 mm, forewing: 20 mm) with its wings still held back and almost fully expanded. It had emerged on the night of 31 May 2010 at ca. 2200 hours. Note orange colouration on its first pair of limbs, as well as its palps.



Fig. 5. Dorsal view of female (as in Fig. 4) at rest, with wings fully extended.



Fig. 6. Specimen of a male *Chasmina candida* (ZRC.LEP.315, body length: 22 mm, forewing: 18 mm), found on 6 Jan.1992 from Sheares Hall, National University of Singapore, Kent Ridge Campus, Singapore. Note square apex and concave costa of the forewing, characteristic of the males of this species.

Earlier larval hostplant records for *Chasmina candida* have consistently indicated *Talipariti tiliaceum* (= *Hibiscus tiliaceus*), based on accounts from the Solomon Islands and Andaman Islands (Holloway, 1989; Veenakumari & Prashanth, 2009; Robinson et al., 2010). There has also been an instance of this species feeding on *Thespesia populnea* (also Malvaceae) from Guam (Robinson et al., 2010). Another species, *Chasmina tibialis* (Fabricius, 1775)

demonstrates a similar preference for *Talipariti tiliaceum* as a larval foodplant, with reports from Australia, Fiji, and Southern Africa (Robinson et al., 2010).

#### ACKNOWLEDGEMENTS

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#### LITERATURE CITED

- Holloway, J. D., 1989. The Moths of Borneo: Family Noctuidae, trilineal subfamilies: Noctuinae, Heliiothinae, Hadeninae, Achronictinae, Amphipyriinae, Agaristinae. *Malayan Nature Journal*, **42**(2–3): 57–226.
- Holloway, J. D., 2010. The Moths of Borneo: Family Noctuidae, subfamilies Pantheinae (part), Bagisarinae, Acontiinae, Aediinae, Eustrotiinae, Bryophilinae, Araeopteroninae, Aventiinae, Eublemminae and further miscellaneous genera. *Malayan Nature Journal*, **62**(1–2): 1–240.
- 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).
- Veenakumari, K. & M. Prashanth, 2009. A note on the entomofauna of mangrove associates in the Andaman Islands (Indian Ocean: India). *Journal of Natural History*, **43**(13–14): 807–823.