

FINAL INSTAR CATERPILLAR AND METAMORPHOSIS OF *EUDOCIMA DISCREPANS* (WALKER) IN SINGAPORE (LEPIDOPTERA: NOCTUIDAE: CALPINAE)

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INTRODUCTION

The noctuid moth, *Eudocima discrepans* (Walker, 1857) is known to occur in northeast Himalaya, western China, Thailand and throughout Sundaland (Holloway, 2005). This species may have been previously referred to as “*Rhytia discrepans*” by other authors (e.g. Barlow, 1982). Singapore is the type locality for this species and the type specimen resides at the Natural History Museum, London (Poole, 1989). In Singapore, records of this moth appear to be confined to remnant forests of the Bukit Timah Nature Reserve and the Central Catchment Nature Reserve. The diagnostic final instar caterpillar of this moth is described and illustrated here, possibly for the first time.



Fig. 1. Final instar caterpillar of *Eudocima discrepans* feeding on its hostplant, *Tinomiscium petiolare* (Menispermaceae) and encountered at Bukit Kallang, MacRitchie Reservoir forest on the night of 4 Aug. 2009. Its total length was 78 mm.

OBSERVATIONS

On the night of 4 Aug.2009 (ca. 2200 hours), the final instar larva of *Eudocima discrepans* was encountered beside a forest trail at Bukit Kallang, MacRitchie Reservoir forest, Central Catchment Nature Reserve. It was perched at knee-level and feeding on the leaves of its hostplant, *Tinomiscium petiolare* (Menispermaceae), an understorey climber of Singapore's remnant forests (Fig. 1). At the slightest provocation, the larva would immediately adopt its characteristic defensive posture of raising the front and rear ends, clearly advertising its pair of false eyes on the second and third abdominal segments (Fig. 2). The caterpillar was adorned with various shades of brown and speckled with multiple pale blue and white dots, outlined in black. At A8, there was a pronounced dorsal hump, tipped with orange. Its spiracles were coffee-brown, ringed with black. Its total length was 78 mm. The false eyes were also prominently displayed when viewed from above (Fig. 3). The bottom margin of the ocellus just comes into contact with the upper portion of the spiracle. There is an irregular, small, pale blue shape just above the spiracle (Fig. 4).

In captivity, this larva continued to feed well and on 7 Aug.2009, it displayed the first signs of pre-pupal behaviour by spinning silk onto adjacent leaves to enshroud itself. On 8 Aug.2009, it had already begun to contract its body and release its fluids simultaneously. By 9 Aug.2009, the pupation process had been completed. The pupa was an almost metallic dark-brown and 32 mm long by 13 mm wide (Fig. 5). The inter-segmental constrictions at the posterior half of its abdomen were clearly noticeable.

On the night of 22 Aug.2009, the adult moth finally emerged and was determined to be a female (Figs. 6, 7). On the top of its head and thorax, there was a light, purplish-blue sheen on the scales. The form, colour and patterns of this moth agreed closely with previous illustrations of the female of this species (Barlow, 1982: Plate 36—moth 1; Holloway, 2005: Plate 18—moth 7). The female moth was subsequently preserved as a voucher specimen at the Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research, National University of Singapore, with measurements taken of its body length (BL), forewing length (FW) and catalogued as ZRC.LEP.196 (BL: 34 mm, FW: 42 mm).

The ZRC's Lepidoptera Collection has at least three additional voucher specimens (all male) of *Eudocima discrepans* from Singapore. The earliest is ZRC.LEP.223 (BL: 39 mm, FW: 47 mm), collected by V. Knight from Fort Canning on 3 Dec.1920. The other two are ZRC.LEP.224 (BL: 38 mm, FW: 43 mm) and ZRC.LEP.225 (BL: 39 mm, FW: 45 mm), both collected by H. K. Lua from Hindhede Drive, Bukit Timah on 24 Oct.1989 (Fig. 8). As previously noted by Barlow (1982), the males of this species do not exhibit the two white spots on their forewing.



Fig. 2. Defensive posture of final instar (as in Fig. 1). Note the striking pair of false eyes on its second and third abdominal segments (A2 and A3).



Fig. 3. Dorsal close-up of A2 and A3 to show false eyes from above.



Fig. 4. Lateral close-up to show detail of startling false eyes. Its head is towards the right.

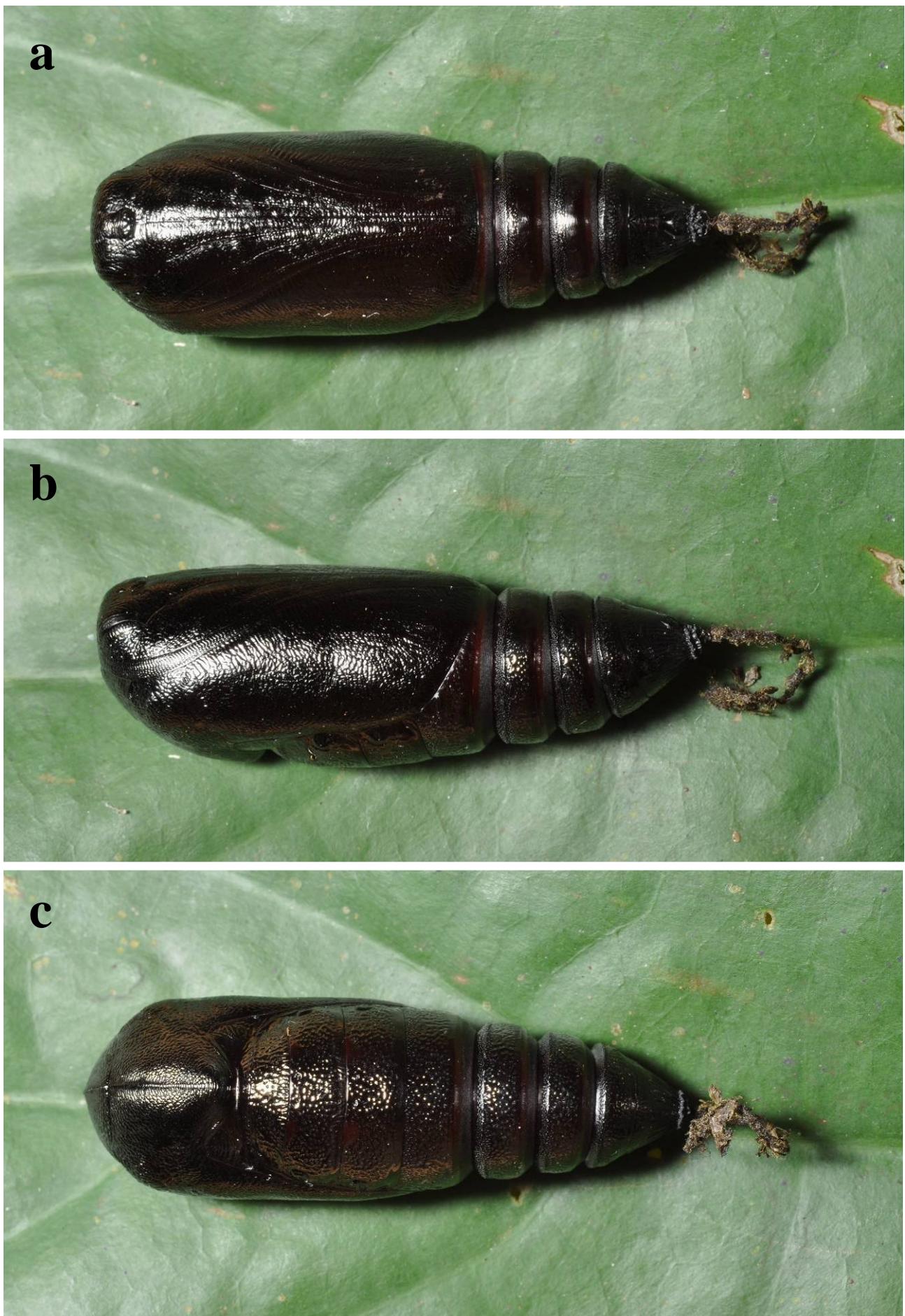


Fig. 5. Ventral (a), lateral (b) and dorsal (c) views of the pupa. It measured 32 mm by 13 mm. Note remnants of silk attached to its cremaster.



Fig. 6. Dorsal view of female individual (ZRC.LEP.196, body length: 34 mm, forewing length: 42 mm), freshly eclosed on the night of 22 Aug. 2009.



Fig. 7. Lateral view of the female individual (as in Fig. 6). Note the two, prominent white dots on its forewing.



Fig. 8. Dorsal view of a male individual (ZRC.LEP.225, body length: 39 mm, forewing length: 45 mm, from Hindhede Drive, Bukit Timah, 24 Oct. 1989). Note the absence of the white dots on its forewings, a sexually dimorphic character.



Fig. 9. Lateral view of the penultimate instar in defensive mode, encountered at the Bukit Timah Nature Reserve on 16 Sep. 2008.



Fig. 10. The penultimate instar (as in Fig. 9) as viewed from beneath.

At the Bukit Timah Nature Reserve, I had previously encountered the penultimate instar larva of *Eudocima discrepans* along a forest trail on the afternoon of 16 Sep. 2008 (ca. 1230 hours). It was perched beneath the horizontal stem of a shrub at waist level and apparently in a pre-moult condition (Figs. 9, 10). The larva was collected for rearing and it moulted on the evening of 17 Sep. 2008, after which it consumed its entire exuvium. However, the caterpillar did not survive subsequently, as it was presumed to have been attacked by endoparasites in the following days.

Prior to this recent attempt at rearing the caterpillar of *Eudocima discrepans* to metamorphosis, there have been no records of its larval hostplant (Robinson et al., 2009). Neither has there been any published account of its confirmed larval identity (Holloway, 2005; J. D. Holloway, pers. comm.). One other species of *Eudocima* recorded to feed on *Tinomiscium* is *Eudocima phalonia* (Linnaeus, 1763) (Holloway, 2005).

Previously, the caterpillar of another species, *Eudocima smaragdipicta* (Walker, 1857) has also been successfully reared (hostplant: *Fibraurea tinctoria*, Menispermaceae) from the Central Catchment forest of Singapore (Leong, 2009). The strong preference by these fruit-piercing moths for larval hostplants in the liane family, Menispermaceae has been a well established fact (Holloway, 2005). It has been postulated that the variation in alkaloid composition associated with certain menisperm genera may offer explanations for particular moth-hostplant relationships (Fay, 1996). Based on personal sightings and examination of museum specimens, there are at least two other species of *Eudocima* occurring in the forests of Singapore, namely *Eudocima phalonia* (Linnaeus, 1763) and *Eudocima homaena* (Hübner, 1827). Hopefully, subsequent finds and documentation of their respective caterpillars in the field may allow us to make better comparisons of their larval morphology and preferred genera/family of hostplants.

ACKNOWLEDGEMENTS

My sincere appreciation goes to Jeremy D. Holloway (Natural History Museum, London), for kindly confirming the identity of the moth. I wish to thank Gwee Aik Teck (Singapore Botanic Gardens Herbarium, National Parks Board) for his identification of the larval hostplant. I am grateful to Kelvin K. P. Lim and Lua Hui Kheng (Raffles Museum of Biodiversity Research) for granting access to examine the *Eudocima* specimens in the Lepidoptera collection.

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