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THE LARVA OF *PHYLLOMACROMIA TRIFASCIATA* (RAMBUR, 1842) (ANISOPTERA: MACROMIIDAE)

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A ♀ final instar larva from NW Madagascar is described and illustrated. The generic affinities of *Phyllomacromia* are briefly discussed.

INTRODUCTION

Phyllomacromia trifasciata (Rambur) is the type species of the genus; it is endemic to Madagascar and the only known member of the family recorded from the island.

Between 18-23rd April 1999, during the final leg of a three-week visit to Madagascar, larvae and adults were found in six feeder streams close to the river Antsohabe near Sambava in northwestern Madagascar. Larvae were dredged from sandy substrates in streams ranging from 3 to 6 m in width. Despite extensive searches, no exuviae were discovered. Several larvae were brought back to United Kingdom, one female emerged on 30 December 1999.

PHYLLOMACROMIA TRIFASCIATA (RAMBUR)

Figures 1-7

M a t e r i a l. – MADAGASCAR: Sambava-Andapa road (14° 32.62′ S, 49° 59.02′E), 1 ♀ F instar larva. – Additional material: 1 each of F-1 and F-2 exuviae from above specimen; – 1 F-3 exuviae and 1 F-4 exuviae from larvae which subsequently died; – 2 F-1 larvae, 3 F-2 larvae; – 1 F-3 larva; – 1 F-4 larva. – [All larvae preserved in alcohol.]

H a b i t u s (Fig 1). – This is a small (23 mm), rather pale-coloured "Macromia", somewhat oval-shaped overall, with relatively small, slender legs and with anal appendages which protrude only slightly from the end of the abdomen.

H e a d. – In dorsal view (Fig. 2) it has a length / width ratio of 1:2. The pronounced frontal horn (Figs 1-2) is completely covered in short, fine setae. Most of the head is a light colour, the ocelli are slightly darker, whilst the faintly marked occipital processes have dark specks irregularly scattered over and around them. The facetted part of the eye (Fig 3) is knoblike and projects strongly upward and forward.

Lateral occipital protruberances are present near to the baso- lateral angle and in line with the interior border of the eye. Segments 1-7 of the antennae (Fig. 2) have ratios of 1; 0,8; 1; 0,7; 0,8; 0,6; & 0,6. The scape is hairy but the pedicel less so. The unflattened labium (Figs 4, 5) has a length/width ratio of 1,0:0,7; the length from rear hinge to distal margin being 3,5 mm approx. The distal margin of the prementum is smooth and there are indications that the short setae are distributed along its entire length; in this specimen, however, the longest are at the apex and its environs, becoming shorter and dying out approximately 2/3 the way to the palpal hinge. There are 6 long and 3 short right hand side premental setae and 5 long and 3 short on the left hand side. The labial palps bear 5 long setae, with a smaller seta present close to the palpal hinge. The moveable hook is long, measuring approximately 40% the length of the palp. The distal margin has 7 crenations, each armed with a group of setae ranging from a maximum of 8 to a minimum of 4 (several bear signs of wear and tear). The inner margin has setae which continue round from the distal crenation, where they are densest, petering out towards the hinge.

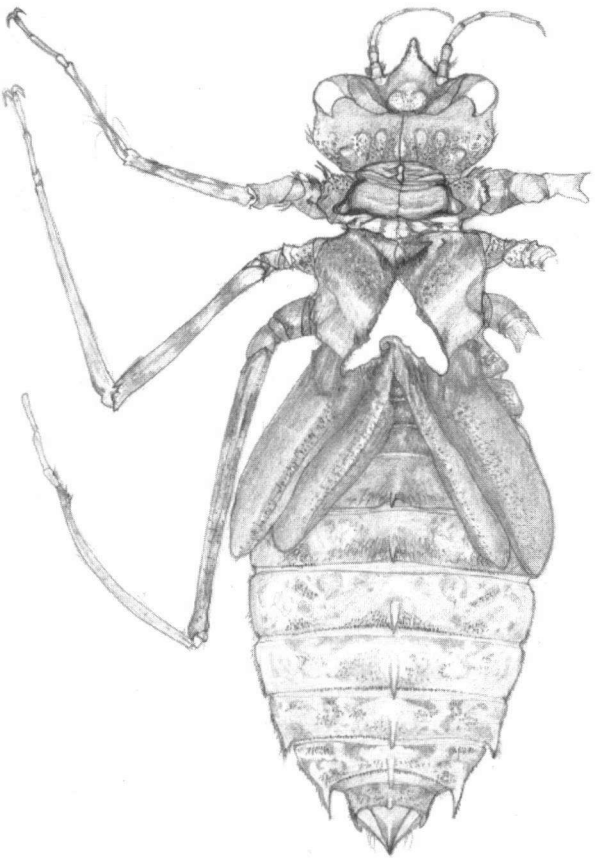


Fig. 1. *Phyllomacromia trifasciata*, final instar exuviae: habitus, dorsal view.

T h o r a x. – In

dorsal view the prothorax (Fig 1) bears a sub-rectangular pronotum, whose lateral margins are darkened and the baso-lateral angles of which are projected into small tubercles. Ventrally lateral processes mark the resting place of the labium and clearly show the constriction between prementum and its articulation with the postmentum. The labial hinge extends backwards to lie between the metacoxae. In lateral view it can be seen that the body is at its highest at the attachment of the wingpads, flattening posteriorly and employing "..... the streamlike principle in reducing resistance....." (LIEFTINCK, 1950).

The legs are relatively short for a "Macromia", the femora and tibia being lightly marked and the tarsal claws being relatively long and only slightly curved.

Wing cases reach to the basal border of seg 6 and are not separated.

A b d o m e n. – It appears slightly flattened in lateral view (Fig. 6), dorsal spines are present on segs 4-10. Of these, 4 is small and pointed vertically, 5-7 are stouter and more recurved, 6 is highest and 7 the largest. Spines on 8 and 9 are more flattened and that on segment 10 rather small, only just reaching over the distal margin of the segment. In dorsal view (Fig. 1) the abdomen is pale coloured with faint marbling. Most of the surface of the distal segments is covered with small black spinules, which mainly occupy the patterned areas. Segments 6-9 have their distal borders armed with similar spinules, while segs 3-5 have a patch of spinules confined to a small area roughly halfway between the dorsal spines and the lateral margins. Lateral spines are present on segs 8 and 9, directed to the rear and not recurved (Fig. 7). The spine on seg. 8 is half the length of that on 9, the latter reaching to the base of the anal pyramid in lateral and ventral views. The abdomen in ventral view is completely smooth and pale in colour. Small recurved spines are regularly spaced along the lateral margins of each segment increasing in size on the distal segments. The distal margin of segment 9 has a scattering of long and fine setae.

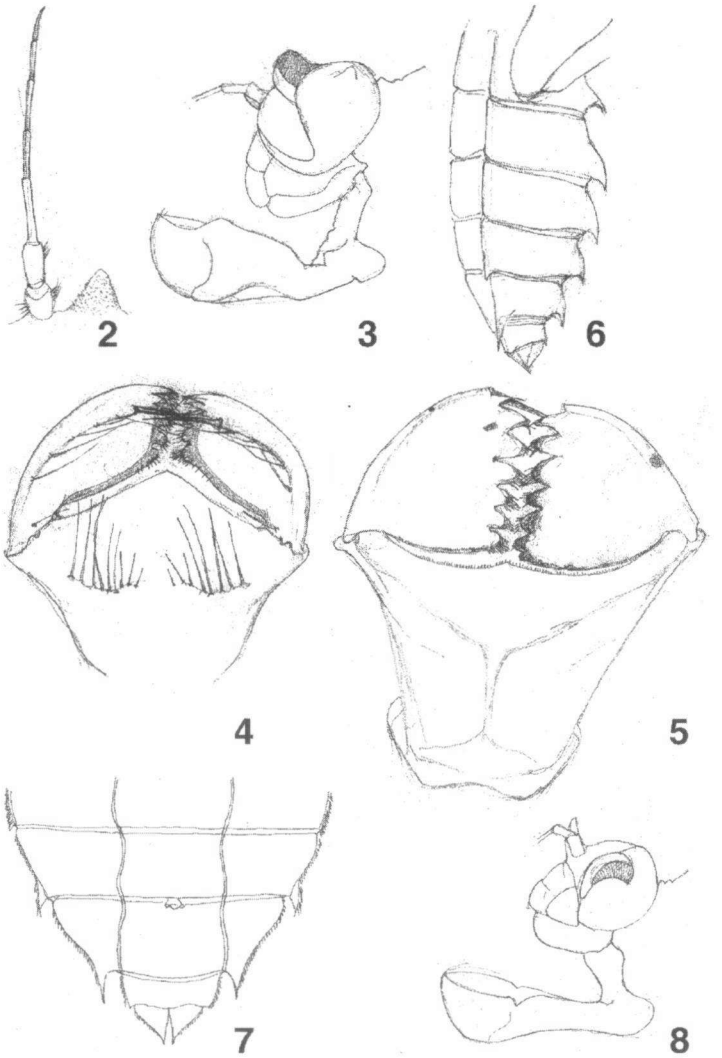
The cerci are very long and reach almost to the tip of the epiproct. The paraprocts are only visible at their tips and extend fractionally beyond both cerci and epiproct.

DISCUSSION

MAY (1997) supports the separation of the genus *Phyllomacromia* from *Macromia*, based on male characters alone. Larval characters both then and now have not yet been published which might support the suggestion that *Didymops* and *Macromia* are closely related, as are *Epophthalmia* and *Phyllomacromia* and that those links are closer than the link between *Macromia* and *Phyllomacromia*. This at present must remain an inviting area for future study.

LIEFTINCK (1950) separates the larvae of *Macromia* into current resisting and current evading types and lists the form and structures by which he classifies them. According to this list *P. trifasciata* would appear to be a current evader which buries itself in the substrate.

P. trifasciata has vertically protruding eyes (Fig. 3) which contrast with those of the



Figs 2-8. *Phyllomacromia trifasciata* (Figs 1-7) and *Macromia m. moorei* (Fig. 8), final instar exuviae: (2) part of head, dorsal view, showing left antenna and frontal horn; – (3) head, lateral view; – (4) labium, dorsal view; – (5) same, ventral view; – (6) abdomen, lateral view; – (7) abdominal segments 7-10 and anal appendages, ventral view; – (8) *M. m. moorei*, head, lateral view.

S.E. Asian species *Macromia m. moorei* (Fig. 8) which tends to cling to material in deeper current. The slender legs, have long tarsae which are useful for anchoring purposes and together with its overall light patterned colour point to it being mainly a sand dweller.

Its abdomen is not strongly carinated in cross section, being slightly flattened, though the ventral surface is not as flat as in those species which use it in order to adhere to leaf surfaces.

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