

**DESCRIPTION OF THE LARVA OF  
MACROTHEMIS MEURGEYI DAIGLE  
FROM THE LESSER ANTILLES  
(ANISOPTERA: LIBELLULIDAE)**

F. MEURGEY

Muséum d'Histoire Naturelle, 12 rue Voltaire, F-44000 Nantes, France  
Francois.Meurgey@mairie-nantes.fr

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The last instar larva is described and illustrated for the first time, and compared with the known congeneric larvae from the Caribbean. Its peculiarities are: size reduction of dorsal hooks, the presence of a dorsal hook on segment 2, and the absence of dorsal hooks on segments 6-9. *M. meurgeyi* has a triangular ligula with 10 premental setae and 6 palpal setae. Notes on the ecology of this lotic sp. are provided.

**INTRODUCTION**

Since *Macrothemis pumila* Karsch was recently moved to the genus *Gynothemis* (GARRISON et al., 2006) the genus *Macrothemis* currently comprises 40 species (cf. DAIGLE, 2007), of which *M. meurgeyi* from Guadeloupe occurs in the Lesser Antilles. Its previously unknown larva is here described and illustrated.

**MACROTHEMIS MEURGEYI DAIGLE**

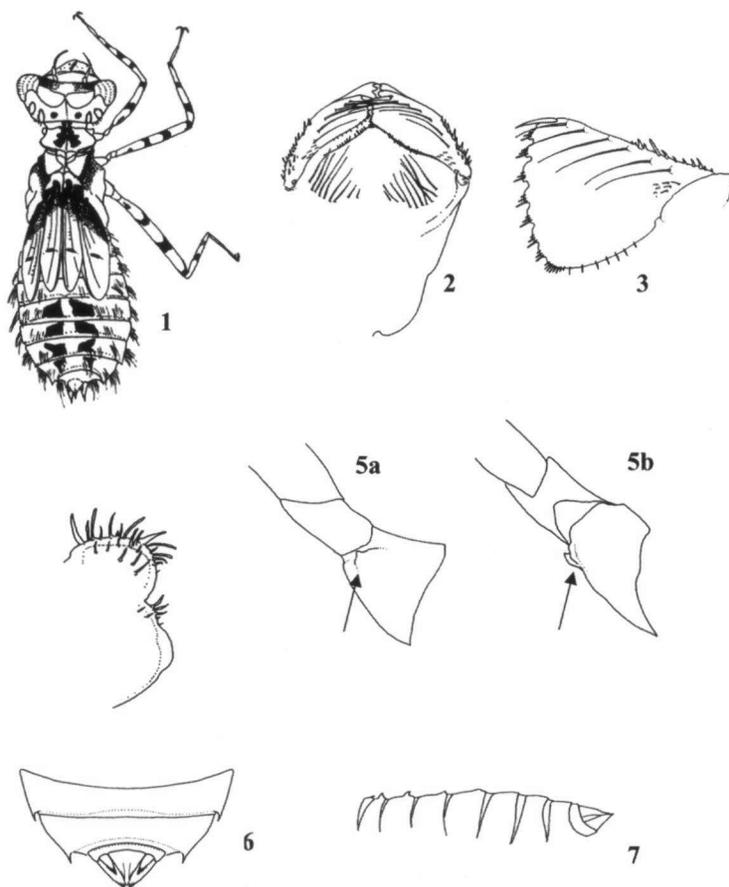
Figures 1-7

**M a t e r i a l.** – 36 last instar larvae (22 reared). GUADELOUPE : Rivière Corrossol, 9-VI-2007, F. Meurgey leg.; – Rivière Bras David, station INRA Duclos, 6-II-2006, F. Meurgey leg.; – Etang Madère, Capesterre, alt. 638 m a.s.l., 27-III-2005, F. Maddi, leg. – All material is deposited in the Natural History Museum of Nantes, France.

**DESCRIPTION.** – Exuvia patterned light brown with black streaks, body stout. Numerous integumental setae long (Fig. 1).

**H e a d.** – Twice as wide as long at eye level, almost square and moderately

narrowed posteriorly. Small compound eyes pearly white with dark bands across their surface, protruding dorsally more than laterally on each side of the head. Cephalic lobes poorly developed but not bulging, and covered with long setae with a black spot anteriorly. Antennae 7-segmented, 3rd segment the longest. Occipital margin nearly straight, with two rounded black spots on each side. Mask spoon-shaped, the prementum-mentum articulation reaching posterior margin of mesocoxae. Prementum (Fig. 2) with 10 setae, lateral margins with small, stiff setae. Ligula very prominent, 0.34 as long as its base with distal margin finely serrated with setae. Labial palp (Fig. 3) with 6 setae plus a row of long, robust se-



Figs 1-7. *Macrothemis meurgeyi*: (1) general aspect, dorsal view; - (2) labium, dorsal view; - (3) right palpal lobe, dorsal view; - (4) right proepimeron, dorsal view; - (5a) right leg metacoxal process, ventero-lateral view; - (5b) right leg metacoxal process, dorsal view; - (6) last abdominal segments, dorsal view; - (7) dorsal hooks, lateral view.

tae on basal half of outer margin. Movable end-hook long and incurved, shorter than palpal setae. Distal margin of palpal lobe with 9 deep crenations, decreasing in depth from outer margin inward. Each crenation with three (sometimes four) setae; one large and two smaller. Inner margin of palpal lobe with a single row of stiff setae. Palpal lobe sprinkled with variable dark spots.

**T h o r a x.** – Prothorax brownish yellow with an distinct inverted black V mark in the middle. Lateral and posterior margin almost straight, only slightly convex. Anterior margin of proepisternum with long setae (Fig. 4), anterior margin of propleuron strongly convex. Surface of synthorax light brown with a broad dark band on each, and sprinkled with variable dark spots. Wing case light brown, black at base with a small dark spot distally each. Wing cases reaching posterior margin of abdominal segment 5. Legs long, the posterior pair surpassing anal pyramid when extended. Femora and tibiae marked with black rings, dorsal and external surface covered with long, stiff setae. Mesocoxae and metacoxae with a ventrolateral spine-shaped process distally (Fig. 5a-b), most visible in dorsal view.

**A b d o m e n.** – Brown, dorsally patterned with black on segments 6-9 (Fig. 1). Dorsal spines/protuberances present on segments 2-5, well developed on 2-4 (Fig. 7), vestigial or absent on remainder segments. Dorsal hook on segment 2 minute, spiniform. Segments 3-4 dorsal hook large and slightly directed backward. Segment 5 dorsal hook the smallest. Segment 5 protuberance vestigial. Short lateral spines present on segments 8 and 9 (Fig. 6). Segment 8 lateral spine parallel to the margin of the body, segment 9 lateral spine slightly more divergent. Cercus sharply pointed, slightly shorter than the paraproct. Epiproct and paraproct pyramidal, acutely pointed with paraproct minutely longer than epiproct.

**M e a s u r e m e n t s** (mm). – Total length (excluding antennae): 14.8-15.0; prementum length: 4.9-5.0; prementum width 3.52-3.65.

**DISCUSSION.** – The closest relative to *Macrothemis meurgeyi* is *M. imitans* Karsch, as stated by DAIGLE (2007) which occurs only on Trinidad in the Caribbean. Unfortunately, the larvae of *M. imitans* is still undescribed. Only two other *Macrothemis* species occur in the Caribbean. *M. celeno* is known from Cuba, Jamaica, Haiti, the Dominican Republic, and Puerto Rico in the Greater Antilles. *M. pseudimitans* is known only from Trinidad. Neither species occur on Guadeloupe where only *M. meurgeyi* has been found. *M. meurgeyi* larvae can be separated from both of these species by the presence of a dorsal hook on segment 2 and the absence of dorsal hooks on segments 6-9. Overall, the size of the dorsal hooks in *M. meurgeyi* is much reduced when compared to the dorsal hooks of *M. celeno* and *M. pseudimitans* (NEEDHAM et al, 2000). *M. meurgeyi* has 10 premental setae, but *M. celeno* and *M. pseudimitans* have only 8-9 premental setae. It also differs from larvae of *M. pseudimitans* by the presence of a well developed, spine-like metacoxal process (Figs 5a-b) which is absent in *M. pseudimitans*.

**ECOLOGICAL NOTES.** – In Guadeloupe, *M. meurgeyi* is present only on Basse-Terre, where it is a montane forest species. Adults can be found between six and

750 meters high on the leeward coast and between 200 and 1000 meters high on the windward coast. Mating takes place along forest margins. Unattended females lay their eggs by tapping the water surface several times in rocky streams and rivers. Emergence takes place early in the morning on rocks, usually between the water surface and up to 15 centimeters high.

Calm areas with gravel and rocks covered with mud or algae are the preferred habitat, and larvae can be seen through the water surface, sprawling on rocks or gravel in shallow water. Shrimps (*Macrobrachium* sp.) and water snails (*Melania tuberculata*) usually occur in this habitat also. It is interesting to note that larvae of *Brechmorhoga archboldi* (Donnelly) were also collected in faster flowing sections of the same rivers, above and below the slower areas of *Macrothemis meurgeyi* habitat. This could mean that there is no competition between the two species in the same rivers.

At the Bras-David river, the water was coloured by ferrous sediments and the bottom of the basin was covered with a layer of ferrous silt. Exuviae were found on the rocks, or on the abrupt banks. All the exuviae were covered with a thick deposit of ferrous mud, which further indicates that this species lives in the bottom substrate.

L'Étang Madère is a non-permanent cold mountain lake on Basse-Terre. Larvae and exuviae were found in an entering spring that periodically ceases to flow during the dry season. Exuviae were covered with mud which would indicate again that larvae are bottom substrate dwellers. Companion species at these sites were *Argia concinna* Rambur, *Protoneura romanae* Meurgey, and *Dythemis sterilis* Hagen.

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