



Description of the final instar of *Macrothemis heteronycha* (Calvert) (Anisoptera: Libellulidae)

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The Neotropical genus *Macrothemis* comprises 40 species described to date (von Ellenrieder, 2007) of which 22 occur in Brazil. The immature stages of this stream-dwelling genus are poorly known (Costa et al., 2004), as larvae of only nine species have been described: *M. aurimaculata* Donnelly, 1984 (Ramírez & Novelo-Gutiérrez, 1999), *M. celeno* Selys in Sagra, 1857 (Klots, 1932), *M. hahneli* Ris, 1913 (von Ellenrieder, 2007), *M. inacuta* Calvert, 1898 (Novelo-Gutiérrez & Ramírez, 1998), *M. inequiunguis* Calvert, 1895 (Ramírez and Novelo-Gutiérrez, 1999), *M. meurgeyi* Daigle, 2007 (Meurgey, 2009), *M. musiva* Calvert, 1898 (Santos, 1970), *M. pseudimitans* Calvert, 1898 (Limongi, 1989) and *M. ultima* González-Soriano, 1992 (Novelo-Gutiérrez, 2006).

Macrothemis heteronycha (Calvert), described from a male and parts of 6 others plus 2 females and parts of one other, was previously known only from Chapada dos Guimarães, Mato Grosso State, Brazil (Calvert, 1909, as *Brechmorhoga heteronycha*). During 2004, on a trip to Valença, Rio de Janeiro State, we collected a male larva of this species that subsequently emerged in the laboratory; we identified the adult as *Macrothemis heteronycha* based on characters presented by Garrison & von Ellenrieder (2006): 1) spines of hind femur with long and short series; 2) MspI indistinct; 3) vulvar lamina less than 1/3 of S9 and not projected ventrally; 4) CuP in HW arising at anal angle of triangle; 5) FW triangle free; 6) FW discoidal field narrowing, parallel sided.

Macrothemis heteronycha (Calvert, 1909)

(Figures 1–9)

Material. Deposited in the Museu Nacional da Universidade Federal do Rio de Janeiro; Brazil, Rio de Janeiro, 22°14'31" S and 43°42'5" W, 6.III.2004 (alt: 249 m) B. Mascarenhas leg. Ultimate larval instar male emerged 23.III.2004. The exuviae were preserved in 80% ethanol, and adults were dried and preserved in envelopes.

Description. General shape of body typical of Libellulidae, similar to known larvae of *Macrothemis* (Costa et al.) (Fig. 1): Integument light brown, covered with small spiniform setae.

Head. Large, general shape rectangular, almost twice as wide as long in dorsal view (Fig. 1). Occipital margin concave (Fig 1); eyes large and prominent in dorsal view; cephalic lobes rounded, not bulging, covered with minute spiniform setae. Antenna small, 7-segmented, with third antennomere longest (Fig. 2). Labium small, triangular (Fig. 3), as wide as long, with 8 lateral setae on each side of dorsal surface (5 large, 3 small); ligula not prominent, finely crenulated along margin; articulation of postmentum at level of anterior margin of mesocoxa. Labial palps triangular with 5 setae (Fig. 4); movable hook of moderate size, thick, pointed, as long as palpal setae; distal margin of palps with 10 small crenulations, each bearing two to four smaller setae. Mandibles (Figs. 5, 6) with following formula (*sensu* Watson, 1956): L 1 2 3 4 ab/ 1 2 3 4 y abd.

Thorax. Pronotum slightly quadrate. Prothoracic processes large with six teeth in posterior margin (Fig. 7). Wing pads parallel extending to distal end of S6. Legs long, the hind leg surpassing distal margin of anal pyramid when extended to side of body, femora with a row of short stiff setae along dorsal margin and with one dark band near to the distal end (Fig. 1).

Abdomen. Ovoid, with dark mid-dorsal bands on S3; small spines on lateral margin of S8 and 9, S9 curved inward (Fig. 1). Dorsal hooks present on S3–9, segment 3 small; those on segments 6–9 well developed, highest on S7, declining posteriorly (Fig. 8). Anal appendages short (Fig. 9), a little longer than S10. Epiproct surpassing distal end of paraproct; cerci short, not reaching mid-length of epiproct.