



Description of the last instar larva of *Neoneura kiautai* Machado (Odonata: Protoneuridae)

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The Neotropical genus *Neoneura* Selys, with 29 described species (Garrison *et al.*, 2010) is the largest one within Protoneuridae. Its species are distributed from southern North America to northern Argentina, but the region of the Amazonas River shows the highest diversity (Machado, 2005). The immature stages of the genus are poorly known, with only the larvae of *N. carnatica* Selys, 1886, *N. fulvicollis* Selys, 1886, *N. joana* Williamson, 1917, and *N. maria* (Scudder, 1866) described (Needham, 1939; De Marmels, 2007; Geijskes, 1954; Westfall, 1964), representing 14% of the known species. The larva of *N. aaroni* Calvert, 1903 is included in the key of Westfall and May (2006), but it was not formally described. The larva of *N. ethela* Williamson, 1917 is currently being described (Souza & Pepinelli, pers. comm.). All known *Neoneura* larvae possess one pair of premental setae and a well marked nodus on the caudal lamellae.

Here we describe the last instar larva of *Neoneura kiautai* Machado, 2007 based on specimens collected in Rio de Janeiro State, Brazil, therefore increasing the known distribution area of this species formerly known only from Minas Gerais and Espírito Santo States (Machado, 2007).

Neoneura kiautai Machado, 2007

(Figs. 1–8)

Neoneura kiautai Machado 2007: 25–32, figs.1–10 (description of male and female; illustration of head, thorax, male S10 and female prothorax).

Last instar larva description (Figs. 1–8). *Head* (Fig. 1): almost two times as wide as long, posterolateral margins concave, occipital lobes rounded, not protruding laterally and covered with several short spines. Posterior margin concave. Antenna seven-jointed; third flagellomere the longest, longer than first and second flagellomeres together. Premental articulation reaching first coxae, prementum (Fig. 2) short and broad, semi-oval, about 1.1 times as long as wide, anterior margin strongly convex and slightly crenulated, with two premental setae on each side; lateral sides with a row of short spine-like setae at distal half. Palp (Fig. 3) external margin with a row of short spine-like setae and three long setae, apical margin with typical curved end hook and three small teeth external to it, movable hook slender and sharp, about half the length of external margin. Mandibular formula (Figs. 4–5) as follows (*sensu* Watson, 1956): L 1+2 345 0 ab; R 1+2 345 y a.

Thorax: pronotum rounded laterally. Wing pads reaching anterior margin of S4. Legs light brown. Femur I entire length with one row of spine-like setae on extensor margin and two rows on flexor margin, femora II and III entire length with a row of spine-like setae on extensor and flexor margins; tibiae with distal hair-like seta on flexor margin; ventral side of tarsi covered by hair-like setae.

Abdomen: cylindrical, light brown, without visible marking. Male cerci and gonapophyses as in figs. 6–7. Row of lateral and distal spine-like setae on S7–10. Lateral caudal lamellae (Fig. 8) light brown, lanceolated, almost six times as long as wide, apex acute; nodus at about mid-length, with a transverse suture separating a more sclerotized basal half from a less sclerotized distal half. Basal half of ventral margin with 25 short spine-like setae; basal half of dorsal margin with 5–6 basal short spine-like setae and a few distal hair-like setae, distal half of ventral margin with a few basal spine-like setae and several distal hair-like setae; central carina with 14–27 short spine-like setae on its basal half. Central lamella: distal half lost, dorsal and ventral margin with 3–4 spine-like setae, central carina with 7–12 spine-like setae.