Brazilian Plecoptera 4. Nymphs of perlid genera from southeastern Brazil

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Nymphs of the three perlid genera known from southeastern Brazil, Anacroneuria, Kempnyia and Macrogynoplax, are distinguished morphologically and a key is provided for their determination.


L'auteur précise les caractères morphologiques propres à chacun des trois genres de Perlidae du Sud-Est du Brésil, Anacroneuria, Kempnyia et Macrogynoplax, et il propose une clef de détermination de ces larves.

In southeastern Brazil three well-defined genera of the subfamily Acroneuriinae (the only Neotropical Perlidae) occur, viz., Anacroneuria Klap., Kempnyia Klap. and Macrogynoplax End. The only nymphs to have been described and figured are those of Anacroneuria (Needham & Broughton 1927, and especially Hynes 1948; figures of head, mandible and maxilla are given in Illies 1964), although those of Macrogynoplax have been briefly characterized by Froehlich (1984). In the present paper a comparative discussion of some nymphal characters is presented, based on a study of late instar nymphs of three species of Anacroneuria, five species of Kempnyia (of which only K. gracilenta (End.) has been determined to species), and one species of Macrogynoplax (M. veneranda Froehlich). All nymphs come from stony streams of the coastal range of the State of São Paulo.

The general shape of the body is perlid-like and similar in the three genera (for Anacroneuria see Hynes, I.e., Fig. 1 A). The body is clothed with dark hairs but the clothing hairs of the head may be thinner and lighter in colour in some species of Anacroneuria and Kempnyia, and in Macrogynoplax. Anacroneuria (Fig. 1) and Macrogynoplax possess two ocelli; in the latter genus they are nearer to each other in the nymphs than in adults (Fig. 3). Kempnyia has three ocelli, the median one being smaller than the others (Fig. 2); probably in some species, as in the adults, the median ocellus may sometimes be minute or absent. There is no occipital ridge.

The mouth parts are, on the whole, rather uniform. Macrogynoplax differs from the other two genera by the long, thin maxillary and labial palpi (Figs. 6 and 7), and by the more protruding basal teeth, and by the wide angle between the mesial brush and the ventral row of bristles of the mandibles (Fig. 5). For comparison, a mandible, a maxilla and the labium of a Kempnyia are shown in Figs. 8-10.

The front legs, which are unmodified in Anacroneuria and Kempnyia, form in Macrogynoplax a pair of raptorial structures (Fig. 4). The femora are thickened and bear anteriorly a receiving groove for the tibiae. The groove is clothed with thickly set short hairs and is guarded in the basal half by two rows of bristles. The tibiae are curved towards the femora, and clothed with thickly set short hairs on the side that fits into the femoral groove. The posterior fringe of long hairs is moderately dense on the femora, thinner and with shorter hairs on the tibiae.

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Fig. 1-3. Outlines of head and prothorax; 1, Anacroneuria sp.; 2, Kempnyia sp.; 3, Macrogynoplax veneranda.

Fig. 4. Macrogynoplax veneranda, fore leg, dorsal view.
Fig. 5-7. *Macrogynoplax veneranda*, mouth parts, ventral view; 5, right mandible; 6, lacinia, galea and palpus of right maxilla; 7, labium. Fig. 8-10. *Kempnyia* sp., mouth parts, ventral view; 8, right mandible; 9, lacinia, galea and palpus of right maxilla; 10, labium.
Kempnvia (Fig. 11) and Macrogynoplax have, on each side, two tufts of supra-coxal gills on the pro- as well as on the mesothorax (gills C1 and C2 of Hynes 1941), and one pair of pleural (substigmal) gills, each gill with three main branches, between the pro- and the mesothorax, and between the meso- and the metathorax (gills I and II of Hynes). Above and posterior to the metathoracic legs there are three gill tufts, of which two are probably gills C3, and the third, a displaced, single-branched gill III. A pair of anal gills is present, except in one species of Kempnvia. The three species of Anacroneuria have gills as described by Hynes 1948. Gills I, II and III have three main branches each, while gill C1 is represented by two tufts (Fig. 12). Gills C2 and C3, and the anal gills are absent.

A practical key for the determination of late ins- 
tar nymphs of the three genera follows :
1 — Front legs raptorial ............... Macrogynoplax
Front legs not modified ............... 2

2 — Thoracic gills C1, C2 and C3 present.
Usually with three ocelli and anal
2 — Thoracic gills C2 and C3, and anal
gills present. ..................... Kempnvia
Kempnvia have, on each side, two tufts of supra-coxal gills on the pro-
gills and anal gills present. ............. Anacroneuria

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Fig. 11-12. Ventral view of thorax showing the gills, legs removed from the left side; 11, Kempnyia sp.; 12, Anacroneuria sp.