

Brazilian Plecoptera 4. Nymphs of perlid genera from south-eastern Brazil

C.G. Froehlich¹

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.

Plécoptères brésiliens 4. Les larves des genres de Perlidae du Sud-Est du Brésil.

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. gracilentia* (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, l.c., 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*. *Ana-*

croneuria (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 garded 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.

¹. Departamento de Biologia, FFCLRP, Universidade de São Paulo, 14100 Ribeirão Preto, SP, Brasil.

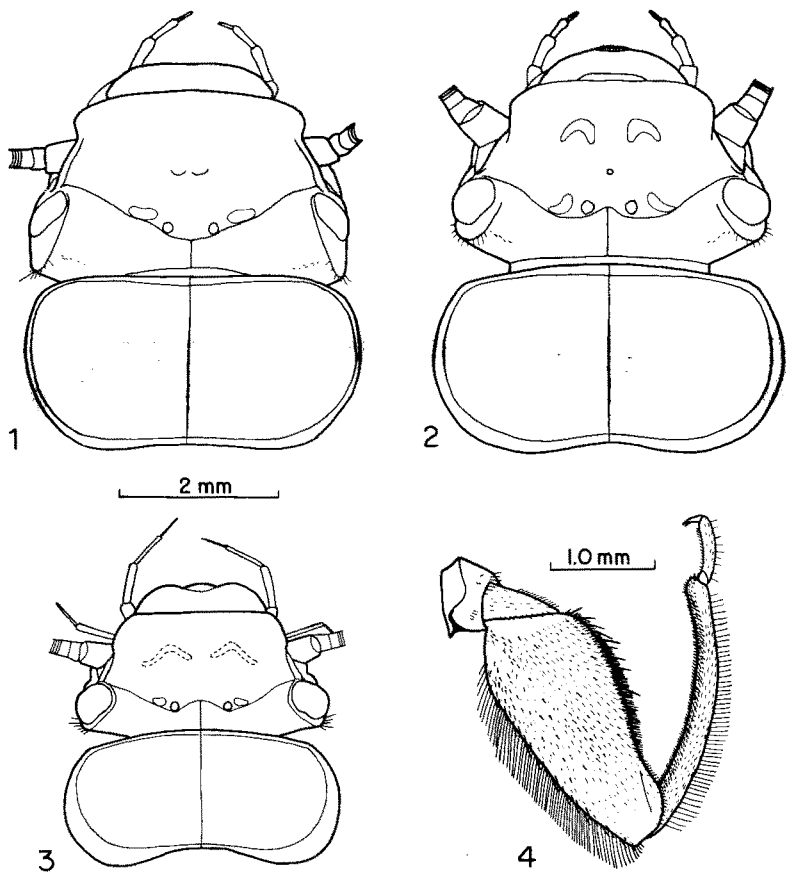


Fig. 1-3. Outlines of head and prothorax ; 1, *Anacroneuria* sp. ; 2, *Kempnyia* sp. ; 3, *Macrogynoplax veneranda*.
Fig. 4. *Macrogynoplax veneranda*, fore leg, dorsal view.

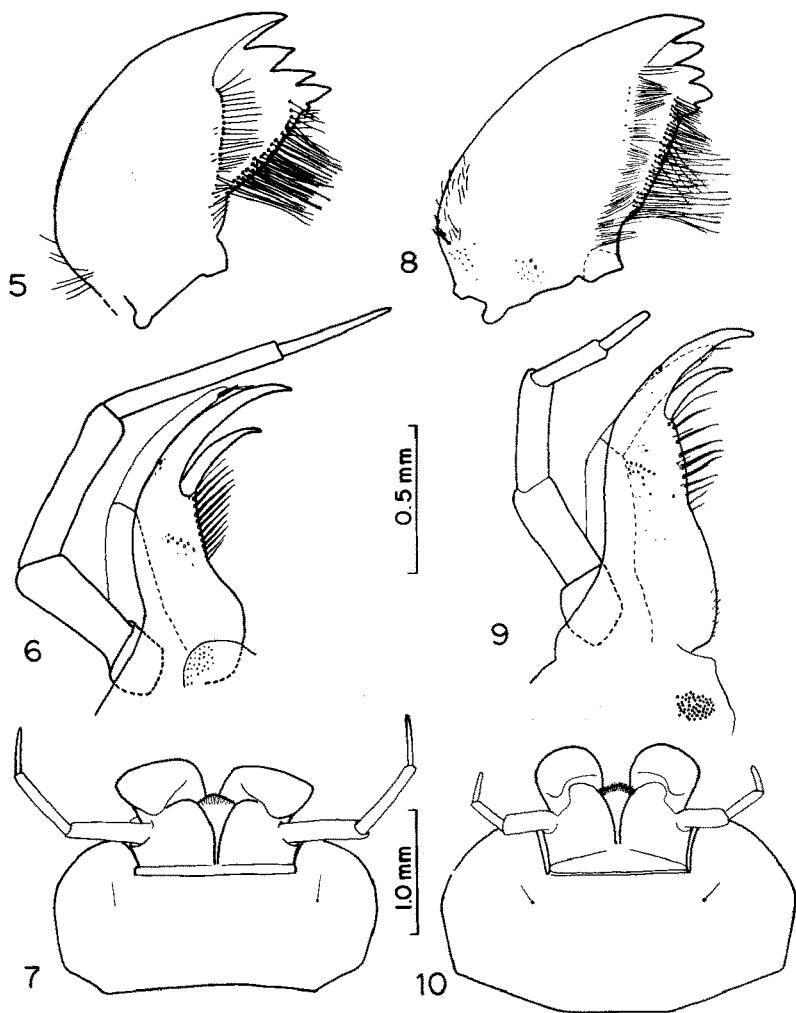


Fig. 5-7. *Macrogyntoplax veneranda*, mouth parts, ventral view; 5, right mandible; 6, lacinia, galea and palpus of right maxilla; 7, labium. Fig. 8-10. *Kemphyia* sp., mouth parts, ventral view; 8, right mandible; 9, lacinia, galea and palpus of right maxilla; 10, labium.

Kempnyia (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 *Kempnyia*. 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 instar 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
 gills *Kempnyia*
 — Thoracic gills C₂ and C₃, and anal
 gills absent. Two ocelli *Anacroneuria*

Literature cited

- Froelich (C.G.). 1984. — Brazilian Plecoptera 3. *Macrogynoplax veneranda* sp. n. (Perlidae Acroneuriinae). *Annls. Limnol.* 20: 39-42.
- Hynes (H.B.N.). 1941. — The taxonomy and ecology of the nymphs of British Plecoptera with notes on the adults and eggs. *Trans. R. ent. Soc. Lond.*, 91: 459-557.
- Hynes (H.B.N.). 1948. — The nymph of *Anacroneuria araucana* Kimmins (Plecoptera, Perlidae). *Proc. R. ent. Soc. Lond.*, (A) 23 (10-12): 105-110.
- Illies (J.). 1964. — Südamerikanische Perlidae (Plecoptera), besonders aus Chile und Argentinien. *Beitr. Neotrop. Fauna*, 3 (3): 207-233.
- Needham (J.G.) & Broughton (E.). 1927. — Central American stoneflies with descriptions of new species (Plecoptera). *J. New York ent. Soc.*, 35: 109-121.

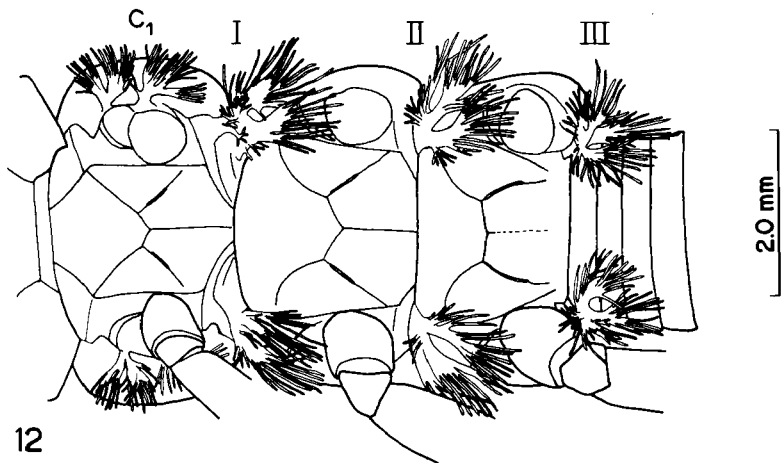
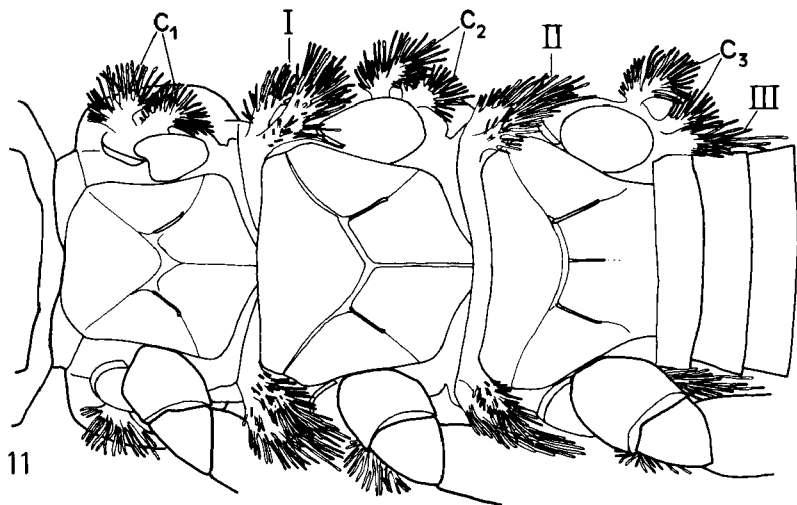


Fig. 11-12. Ventral view of thorax showing the gills, legs removed from the left side; 11, *Kempnyia* sp.; 12, *Anaconeuria* sp.