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Description of immatures associated with adults of two species of *Macrogynoplax* Enderlein and one species of *Enderleina* Jewett (Plecoptera: Perlidae) of the Brazilian Amazon

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Abstract

Nymphs of *Macrogynoplax delicata* Ribeiro-Ferreira & Froehlich, 1999, *M. pulchra* Ribeiro-Ferreira & Froehlich, 1999, and *E. froehlichii* Ribeiro-Ferreira, 1996 were associated with adults by rearing and described for the first time. The known distribution of each species has been increased.

Key words. Stonefly, immature, rearing, aquatic insect, South America

Introduction

The perlid genus *Macrogynoplax* Enderlein, 1909 is known from Suriname, Guyana, Venezuela, Peru, and Brazil. The 14 known species occur at both high and low altitudes. However, the genus is apparently uncommon in the Central Amazon (Ribeiro-Ferreira & Froehlich 1999, Bobot & Hamada 2002, Ribeiro & Rafael 2007, Fochetti & Tierno de Figueroa 2008, Froehlich 2010, 2012). Seven species of *Macrogynoplax* have been previously recorded from Brazil and six of these occur in the Brazilian Amazon (Stark *et al.* 2009, Froehlich 2010).

For most species, as in other perlid genera, species descriptions are based only on adults without immature stages associated. Only a few publications include descriptions of nymphs. The lack of keys for identification of nymphs of *Macrogynoplax* has hindered the study of the systematics and ecology of this genus in the Brazilian Amazon (Froehlich 1984 a, b, Olifiers *et al.* 2004). Only two studies have described nymphs of *Macrogynoplax* from Brazil, Froehlich (1984a) (*M. veneranda* Froehlich) and Stark & Zwick (1989) (*M. neblina* Stark). In the present study, nymphs of two species of *Macrogynoplax* are described and associated with adults for the first time. This increases the number of known nymphs of *Macrogynoplax* from the Brazilian Amazon to four. Previous studies in which *Macrogynoplax* species were described include Ribeiro & Rafael (2007) (*M. anae*), Ribeiro-Ferreira & Froehlich (1999) (*M. delicata*), Stark (1996) (*M. flinti*), Zwick in Stark & Zwick (1989) (*M. geijskesii*), Enderlein (1909) (*M. guayanensis*), Stark (1996) (*M. kanuku*), Bispo & Neves in Bispo *et al.* (2005) (*M. matogrossensis*), Stark in Stark & Zwick (1989) (*M. neblina*), Ribeiro-Ferreira & Froehlich (1999) (*M. poranga*), Ribeiro-Ferreira & Froehlich (1999) (*M. pulchra*), Stark in Stark & Zwick (1989) (*M. spangleri*), Stark 1996 (*M. truncata*), Froehlich (1984b) (*M. veneranda*), and Stark, (1996) (*M. yupanqui*).

The genus *Enderleina* Jewett (1960) is known from Guyana, Venezuela, Peru, and northern Brazil (states of Roraima and Amazonas). Of the six Neotropical species known, four occur in the Brazilian Amazon. Studies in which species of *Enderleina* were described include Stark (1989) (*E. bonita*), Stark (1989) (*E. flinti*), Ribeiro-Ferreira (1996) (*E. froehlichii*), Jewett (1960) (*E. preclara*), Stark (1989) (*E. yano*), and Derka & Tierno de Figueroa (2013) (*E. khazeni*). With this study the number of *Enderleina* nymphs known from the Brazilian Amazon is increased to two.

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