



## TAXONOMIC NOTES ON *GUARANYPERLA* (PLECOPTERA: GRIPOPTERYGIDAE)

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### ABSTRACT

The males of *Guaranyperla guapiara* Froehlich 2001 and of *G. nitens* Froehlich 2001 are described. The larva designated as "spec. A" in Froehlich (2001) is confirmed to be *G. nitens*.

**Keywords:** Plecoptera, Gripopterygidae, *Guaranyperla*, male descriptions, larval descriptions, Brazil

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### INTRODUCTION

The gripopterygid genus *Guaranyperla* is restricted to Southeast Brazil, recorded from its four states, Minas Gerais, Espírito Santo, Rio de Janeiro and São Paulo (Froehlich 2001, Avelino-Capistrano & Nessimian 2013). This genus currently includes three species, *G. beckeri* Froehlich 2001, *G. guapiara* Froehlich 2001 (type of the genus), and *G. nitens* Froehlich 2001. *Guaranyperla beckeri* was described from a single male. *Guaranyperla guapiara* was based on females and larvae, and the male is described here. *G. nitens* was described from a single female, and the male is described here. The larva designated as *Guaranyperla* sp. A in Froehlich, 2001 is confirmed by rearing to be *G. nitens*.

### MATERIALS AND METHODS

The associations of larvae and adults were obtained by rearings. All included specimens are preserved in ethanol 80% and are deposited in the Museum of Zoology of the University of São Paulo. Collectors: AES - Ana Emilia Siegloch, ARC - Adolfo Ricardo Calor, ASM - Adriano Sanches

Melo, CGF - Claudio Gilberto Froehlich, EN - Elynton Nascimento, LSL - Lucas Silveira Lecci, MRS - Marcia Regina Spies, RAM - Rafael Alberto Moretto, RM - Rodolfo Mariano, VR - Valdelânia De Ribeiro.

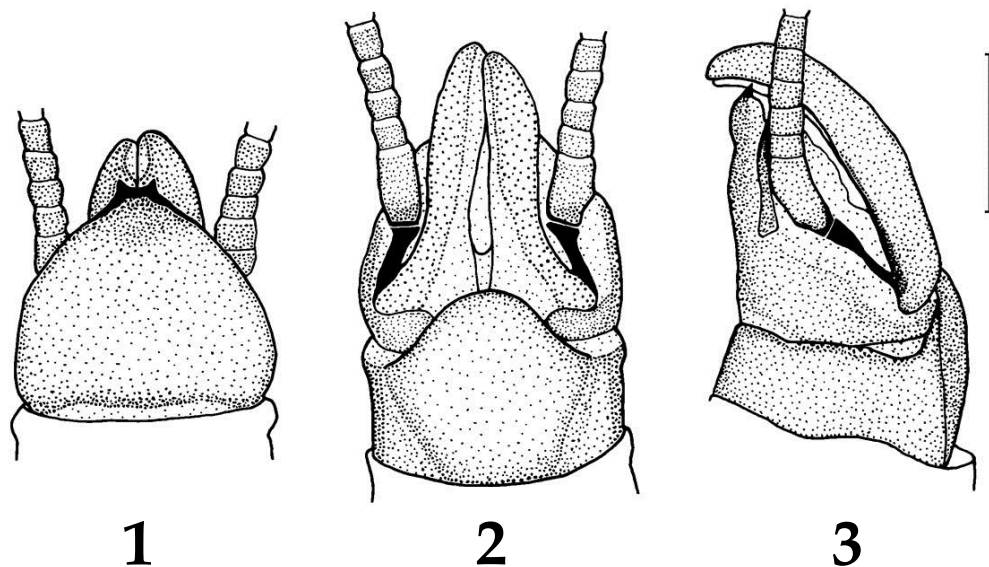
### RESULTS AND DISCUSSION

#### *Guaranyperla guapiara* Froehlich 2001 (Figs. 1-3, 5)

*Guaranyperla guapiara* Froehlich, 2001: 378.

*Guaranyperla guapiara* was described from adult females and from larvae from the Intervalles State Park (around 24°18'S, 45°27'W) and from one larva from the Biological Reserve of Paranapiacaba (around 23°46.8'S, 46°19'W).

**Material examined. Brazil.** Holotype, female, São Paulo, Iporanga, Parque Estadual Intervalles, 08/VIII/1997, CGF, VR. Additional material, adults: Jundiaí, Reserva Biológica da Serra do Japi (HQ, 23°13'53"S, 46°56'09"W, 1050m), 1 male, 04/IX/1998, ASM; 1 male, ib. but 09/IX/1998; 1 female, ib. but



Figs. 1-3. *Guaranyperla guapiara* Froehlich, male terminalia. Fig. 1, dorsal view; Fig. 2, ventral view; Fig. 3, lateral view. Scale bar 0.5mm.

28/VIII/2007, LSL, RAM, EN; Pindamonhangaba, Fazenda São Sebastião (HQ, 22°46'19"S, 45°27'29"W), Rio Cedro, 1 male, 18/IX/2006, AES; Campos do Jordão, Parque Estadual, 1 male plus exuviae, 10/X/2005, MRS; 1 male plus exuviae, 1 female plus exuviae, 1 female, 24/X/2005, MRS. Larvae: Jundiá, Reserva Biológica da Serra do Japi, 1 larva, 27/III/2007, LSL, EN; 1 larva, 29/V/2007, LSL, EN; 4 larvae, 11/III/2008, LSL, EN.

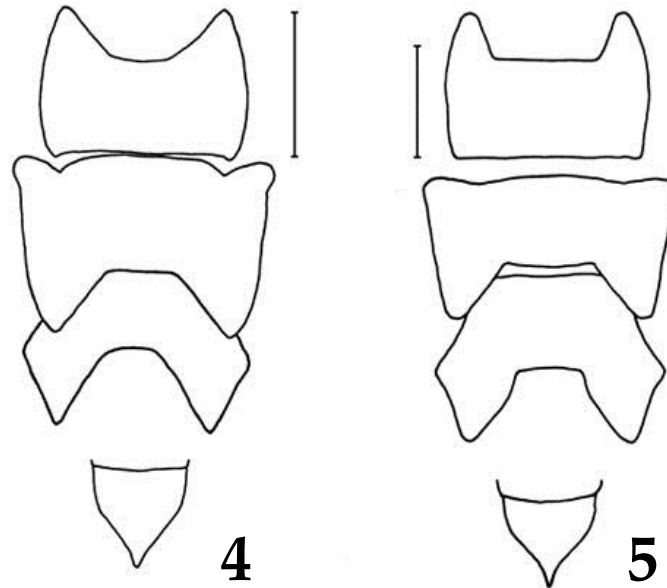
**Males** with forewings 8.2 to 9.0mm long, antennae approximately 1.1 times longer than the forewings and the median number of cercomeres is 17.5. Females with forewings 9.5 to 11.0mm long, antennae length as in males, and the median number of cercomeres is 16.5. Wings with one or none costal cross-veins and one or none pterostigmatic cross-veins. RP may end unforked or present a short fork.

Terminalia of the male from Pindamonhangaba is illustrated (Figs. 1-3). Subgenital plate broadly rounded (Fig. 2). T10 entire, apically ends in a pair of short points (Fig. 1). Median epiproct absent, but basal arms present, originating under sides of T10 and connected to form a bar under T10. Paraprocts

long and rather thick, exceeding slightly T10 apex; inner surface membranous, lateral surface lightly sclerotized (Fig. 3).

*Guaranyperla guapiara* has been recorded from the coastal mountains of São Paulo state. Avelino-Capistrano & Nessimian (2013) listed this species from Serra dos Órgãos, Rio de Janeiro state. The new collections list herein extends the distribution of this species to Serra do Japi and Serra da Mantiqueira in São Paulo. The larvae from Serra do Japi collected by ASM in 1995 and 1997 and listed as *G. spp.* in Froehlich (2001), belong to *G. guapiara*.

The discovery of males of *G. guapiara* shows that they are very similar to *G. beckeri* Froehlich 2001, from Poços de Caldas Municipality, Minas Gerais state. However, the subgenital plate is more broadly rounded and the paraprocts slightly larger in *G. guapiara*. A half-grown larva from Ouro Fino, cited in Froehlich (2001) (in addition to the data listed originally article, a label has the information "spring of the brook Boaventura, an affluent of the River Mogy Guassu, in the southern part of the state of Minas Geraes, 1300m, rather swift current on stones"), differs from those of *G. guapiara*



Figs. 4-5. *Guaranyperla*, half-grown nymphs, outline of the nota and abdominal T10. Fig. 4. *G. sp.* Ouro Fino, Minas Gerais state. Scale bar 1.0mm. Fig. 5. *G. guapiara* Froehlich, Serra do Japi, São Paulo state. Scale bar 0.5mm.

particularly in the shape of the thoracic nota (Fig. 4). In *G. sp.*, the pronotum has a rounded anterior margin, the mesonotum has more prominent "shoulders", and the hind margin of the metanotum is broadly rounded. The abdominal T10 is acute, as in *G. guapiara*. For comparison, a figure of a half-grown larva of *G. guapiara* from Serra do Japi is presented (Fig. 5). A full-grown larva is shown in Froehlich (2001). As Ouro Fino is not far from Poços de Caldas, ca. 50-60 km south and is located in the same mountainous area, the occurrence of a different species in the region suggests more collections are needed before considering a synonymy.

**Larvae** were collected in first to fifth order rivers with stony bottoms. Adults were on the wing from August to October. The narrow flying period indicates that the species is univoltine.

#### *Guaranyperla nitens* Froehlich 2001

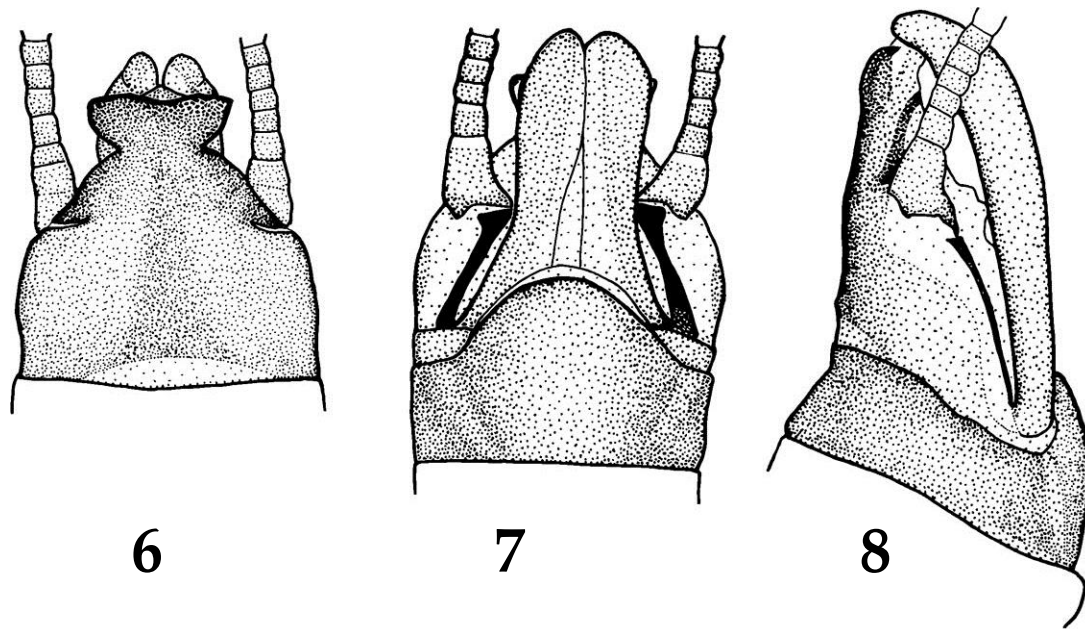
(Figs. 6-8)

*Guaranyperla nitens* Froehlich 2001:381.

*Guaranyperla sp. A* Froehlich 2001:381.

**Material examined. Brazil.** São Paulo, Campos do Jordão, Parque Estadual, Córrego Galharada, 2 males, 1 female, (date uncertain, between June and August) 2005, MRS; tributary of Ribeirão Coxim, 3 larvae, 30/III/2007, ARC, LSL, RM; Córrego Campo do Meio, 1 male plus exuviae, 08/X/2007, AES.

Two males have a forewing length of 10.0mm. The wings of the third male were not fully extended. The antennae are 10.4 and 11.0 mm long. Cercomeres vary from 18 to 26 (median 21.5). The forewing length of the new female is 13.0mm, the antennae are incomplete. Cercomeres 24. In the



Figs. 6-8. *Guaranyperla nitens* Froehlich, male terminalia. Fig. 6, dorsal view; Fig. 7, ventral view; Fig. 8, lateral view. Scale bar 0.5mm.

wings, 0-2 costal cross-veins and 1-4 pterostigmatic cross-veins. RP may end unforked or present a short fork. As adults were obtained by rearing, both the association of *G. sp. A* larva (Froehlich 2001) and of males with the female type were established.

Figures of the male terminalia are presented (Figs. 6-8). Subgenital plate broadly rounded (Fig. 7). T10 entire, but at about half length with short lateral clefts, as in genus *Gripopteryx* (Zwick 1972, Fig. 1); apically ending in a large broad process with small lateral points (Fig. 6). Basal arms of epiproct originating at T10 clefts, connected to form a bar under T10, median epiproct absent (Fig. 8). Paraprocts long, with rounded apices, similar, overall, to those of *G. guapiara* (Figs. 7-8).

#### ACKNOWLEDGEMENTS

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