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Diagnostic characters distinguishing the larvae of *Ablabesmyia* and *Paramerina*, and first record of *Paramerina* in Brazil

(Insecta, Diptera, Chironomidae)

Elisabeth Stur and Ernst Josef Fittkau

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Larvae of Tanypodinae were collected from the Bento Gomes river (56°30'W 16°S), Mato Grosso, Brazil. These samples were initially identified as belonging to the genus *Ablabesmyia* according to the key of Tanypodinae of the Holarctic region (Fittkau & Roback 1983). However, investigations into the thoracic horn of an associated pupa indicated this was not the case. Further analysis of cephalic setae and sensory points (following Kowalyk 1985) showed that these specimens belong to the genus *Paramerina*. This is the first record of this genus in Brasil.

Elisabeth Stur, Prof. Dr. Ernst Josef Fittkau, Zoologische Staatssammlung, Münchhausenstr. 21, D-81247 München, Germany.

Introduction

The identification of South American chironomid-larvae, even at generic-level, often causes great difficulties as usually there is no associated material (for example larva with associated pupa, or reared material) available and the larger part of the identification literature deals with the Holarctic fauna of Chironomidae. Furthermore, in only a few cases are the immature stages of Neotropical chironomids known. Working with comprehensive material of chironomid larvae from the Bento Gomes river, Mato Grosso, Brazil, a larva type was found that, using the key for Holarctic Chironomidae, leads up to the genus *Ablabesmyia*. However, because of the presence of an associated pupa, this larval-type can be classified as *Paramerina*.

Paramerina spec.

Larva. Medium sized, head yellowish brown, head capsule slender.

Antenna. A little less than half the length of the head; antennal ratio about 2.4; length ca. 320 µm; basal segment about 10× as long as basal width, with ring organ somewhat beyond middle. (Fig. 1a).

Mandible. Length ca. 95 µm (max. 98 µm, min. 91 µm, N=6) (Fig. 1b).

Maxilla. Basal segment of maxillary palp two-segmented, with ratio (proximal to distal) ca. 0.45. (Fig. 1c).

Ligula. As in Fig. 1d. Distal half dark and row of teeth weakly convex.

Paraligula. Bifid, slender and half length of ligula (Fig. 1d).

Pecten hypopharyngis. 12–14 teeth of various size (Fig. 1e).

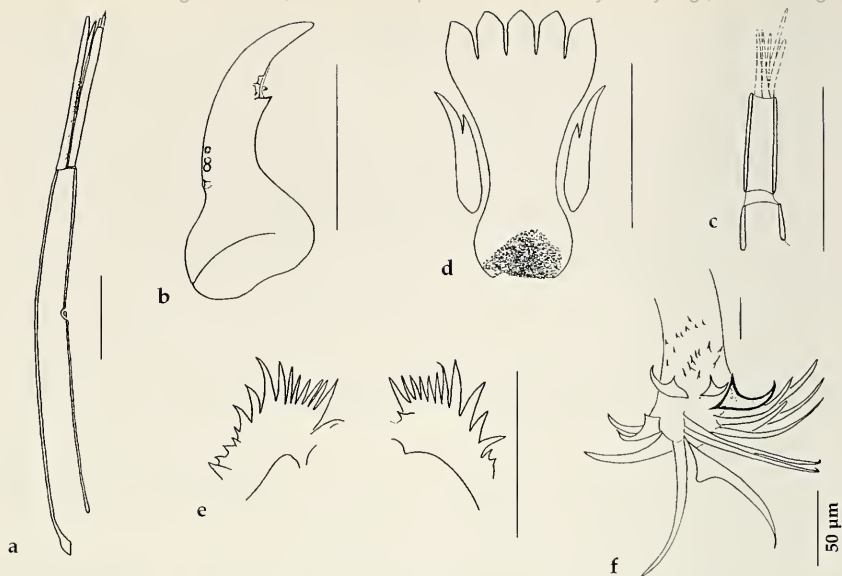


Fig. 1. *Paramerina* sp. Larva. a. Antenna. b. Mandible. c. Maxillary palp. d. Paraligula. e. Pecten hypopharyngis. f. Claws of posterior parapode. Scale: 50 µm.

Body. All claws of posterior parapode simple; one dark claw (Fig. 1f).

Pupa. Total length ca. 3.6 mm

Thoracic horn. As in Fig. 2a; length c. 240 µm; plastron plate opposite the corona; horn sac wall, a reticulate cuticular mesh opposite corona.

Abdomen. Segments VII and VIII with a fine shagreen of isolated spinules only on the ventral side; pattern of dorsal setae as in Fig. 2b. Anal lobe with fine shagreen dispersed on the anterior half; genital-sac of male projecting beyond the end of the anal lobe (Fig. 2c).

Comments

Compared with the immature states of other *Paramerina* species, this Brazilian species seems to be similar to *P. fasciata* Sublette & Sasa, 1994, from Guatemala. Although the dimensions of only one larval head of *Paramerina fasciata* have been published, the size of antenna and mandible, and the ratio of the two-segmented basal segment of the maxillar palp fall within the ranges of the Brazilian species. In Sublette and Sasa's (1994) description, however, the larval antenna has a very short antennal blade (half size of second segment), whereas the Brazilian species has an antennal blade longer than the second segment.

The Brazilian *Paramerina*-species can be distinguished from other *Paramerina*-species from Central and North America, by the following features:

P. anomalus Beck & Beck, 1966 Larva: all claws of posterior parapode pale; ligula, inner teeth and middle tooth points, pale. Pupa: length 3 mm, therefore smaller; genital-sac shorter than in *P. sp.* from Rio Bento Gomes, Brazil.

P. smithae (Sublette), 1964 Larva: posterior parapode, two smaller claws bifid and one smaller claw pectinate. Pupa: three spines subapically on inner margin of segment IX; thoracic horn, plastron plate smaller and neck of plastron plate thicker (Roback 1972).

Of *P. testa* Roback, 1971 (Florida) and *P. fragilis* (Walley), 1925 (South Carolina and probably also Florida) the immature stages are not known (Epler 1995).

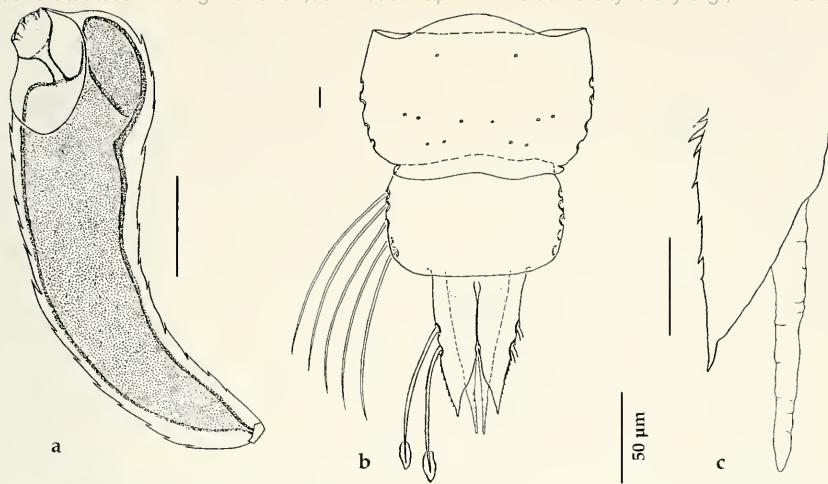


Fig. 2. *Paramerina* sp. Pupa. a. Thoracic horn. b. Segments VII and VIII. c. Part of anal lobe. Scale: 50 µm.

Ecological remarks

The larvae of *Paramerina* sp. are found in the middle reaches of the Rio Bento Gomes (ca. 56° 35'W, 15° 50'S). This intermittent tropical lowland river flows into the northern Pantanal in Mato Grosso, Brazil. During the period of sampling between May 1993 and June 1994, the mean water temperature was 25 °C (range 29 °C-17 °C), the mean pH 7.2 (range 8.0-6.0), and the mean conductivity 180 µS (range 50 µS-290 µS). Single specimens of *Paramerina* were collected during the dry and rainy seasons. The larvae were more numerous at the end of the dry and beginning of the rainy seasons. The larvae occurred in leaf litter, which was either accumulated on the water surface or the river bottom.

Differentiation of *Paramerina* und *Ablabesmyia* in the larval stage

Larvae of *Ablabesmyia* have the basal segment of the maxillary palp subdivided into 2-6 segments (Roback 1985, Fittkau & Roback 1983). Normally, if the basal segment of maxillary palp is divided into two parts, they are subequal in length, or the proximal is longer than half of the distal part (Epler 1995). However, in *Paramerina* the proximal segment is shorter than half the length of the distal segment (see also Tab. 1). One or more claws of posterior parapode in *Ablabesmyia* are usually dark (Cranston 1996, Epler 1995, Fittkau & Roback 1983), with the exception of *A. philosphagnos* Beck & Beck, 1966, which does

Tab. 1. First segment maxillary palp of *Paramerina*: ratio proximal to distal (meshured in the figures of the respective authors). Note that the ratio in *Ablabesmyia* differs from the usual.

species	ratio	source
<i>P. anomalus</i> Beck & Beck	no data given	Beck & Beck, 1966
<i>P. fasciata</i> Sublette & Sasa	0,5	Sublette & Sasa, 1994
<i>P. parva</i> (Freeman)	0,41	Cranston, 1996
<i>P. smithae</i> (Sublette)	0,27	Roback, 1972
<i>P. sp.</i>	0,36	Kowalyk, 1985
<i>P. sp.</i> [Brazil]	0,45	
<i>A. philosphagnos</i> Beck & Beck	0,46	Roback, 1985
<i>A. sp.</i>	0,45	Kowalyk, 1985

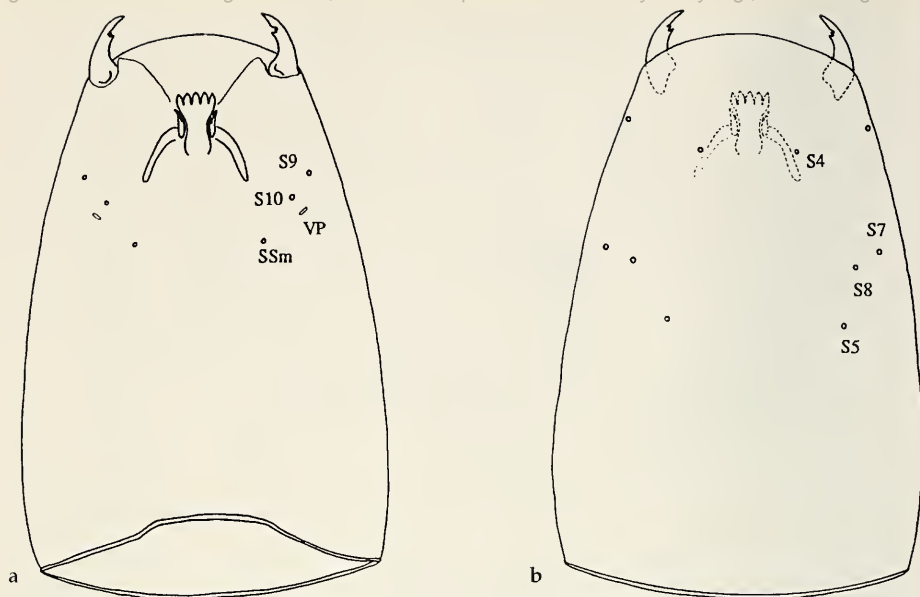


Fig. 3. *Paramerina* sp., Brazil, Rio Bento Gomes, with cephalic setae and sensory pores. a. Ventral view. b. Dorsal view. Abbreviations: DP: dorsal pore; S4-S10: cephalic setae; SSm: submental setae; VP: ventral pore.

not have dark claws on the posterior parapodes (Roback 1985). On the other hand, *Paramerina* is supposed not to have these dark claws (Cranston 1996, Epler 1995, Fittkau & Roback 1983), but one dark claw is present in the Brazilian *Paramerina*-larva.

In the subfamily Tanypodinae the analysis of the submental setae and sensory pores of the larval-heads makes it possible to distinguish the different genera in the larval stage (Kowalyk 1985) (Figs 3, 4). These setal pits and sensory pores result in a certain pattern which does not seem to vary within a genus. Kowalyk (1985) compared the patterns of various species of *Ablabesmyia*-larvae and did not find differences in the pit-patterns, and Cranston (1996) used these patterns to distinguish Australian genera. *A. annulata*, which also differs in other characters of ligula, procercus and posterior parapode from the remaining *Ablabesmyia*-species (Fittkau & Roback 1983), showed an other arrangement of the setae. Although the pit patterns of cephalic setae of *Ablabesmyia*-species are reasonable well known, to date the patterns only three *Paramerina*-species have been described. Kowalyk (1985) compared the patterns of the cephalic setae of *Paramerina* from *P. fragilis* (Walley), 1925, and *P. sp.* (Kowalyk 1985), and Cranston (1996) investigated those of *P. parva* (Freeman), 1961.

The clearest features to differentiate *Ablabesmyia* from *Paramerina* are the position of the submental setae S9, S10 and SSm, and the ventral pore Vp (Figs 3 A and 4 A). These patterns correspond with those mentioned by Kowalyk (1985) and Cranston (1986) for the respective genera.

Resumo

Entre as larvas de Tanypodinae do Rio Bento Gomes (56°30'W 16°S) Mato Grosso foi encontrado um tipo de larva que não pode ser diferenciada das do gênero *Ablabesmyia*, pela chave de Tanypodinae holárticos (Fittkau & Roback 1983). A forma do corno torácico indicou tratar-se de um outro gênero, e ainda uma análise das setas submentais possibilitou sua inclusão no gênero *Paramerina*, segundo Kowalyk (1985).

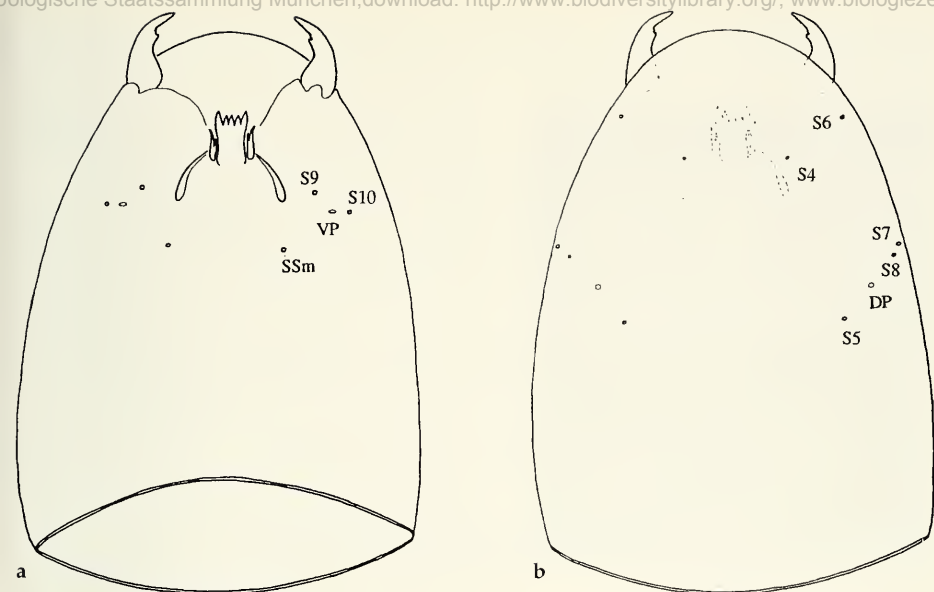


Fig. 4. *Ablabesmyia* sp., Brazil, Rio Bento Gomes, with cephalic setae and sensory pores. a. Ventral view. b. Dorsal view. Abbreviations: DP: dorsal pore; S4-S 0: cephalic setae; SSm: submental setae; VP: ventral pore.

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Autor(en)/Author(s): Stur Elisabeth, Fittkau Ernst Josef

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