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The presence of *Varipes* Lugo-Ortiz & McCafferty (Ephemeroptera: Baetidae) in Brazil, with the description of a new species

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Abstract

Varipes helenae, new species, (Ephemeroptera: Baetidae) is described based on nymphs collected from the State of Mato Grosso, Brazil. The new species is distinguished by setation of labrum, number of denticles in both mandibles, prostheca of right mandible bifid, not reduced, medial hump of maxilla with a spiniform seta, distomedial process of labial palp segment 2 rounded, relatively few setae on femora, and number of spines on the paraproct. This is the first report of the genus *Varipes* from Brazil.

Key words: Ephemeroptera, Baetidae, *Varipes helenae*, new species, Mato Grosso, Brazil.

Introduction

Varipes Lugo-Ortiz & McCafferty is a poorly known genus of small minnow mayflies (Ephemeroptera: Baetidae) known exclusively from nymphs and represented by a single described species, *V. lasiobrachius* Lugo-Ortiz & McCafferty, recorded in South America from Colombia and Ecuador (Lugo-Ortiz & McCafferty, 1998). An undescribed species, examined by Traver & Edmunds (1968), and considered by Lugo-Ortiz & McCafferty (1998) as belonging to *Varipes*, is also reported from Peru.

In this paper, a new species of *Varipes* collected from the State of Mato Grosso, Brazil, is described based on nymphs. Apart from representing the first record of this genus from Brazil, the description of this new species provides new information regarding the diagnoses of *Varipes*.

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***Varipes helenae* Salles & Batista, sp. n.**

Larvae. Body length: 3.4–4.0 mm. Caudal filaments length: 1.4 mm.

Head yellow-brown, with no distinct color pattern. Ocelli dark brown. Labrum (Fig. 1) with anterior margin with median row of robust, branched setae, followed laterally by fine and long simple setae; dorsal surface with three submarginal fine, long, simple setae on each side of midline, and one pair of fine, long, simple setae on each side of midline, located more posteriorly. Hypopharynx as in Figure 2. Left mandible (Fig. 3) with outer and inner set of incisors respectively with four and two denticles; prostheca robust; triangular process at base of mola well developed. Right mandible (Fig. 4) with outer and inner set of incisors respectively with three and four denticles; prostheca bifid, relatively well developed. Maxillae (Fig. 5) with robust, spiniform seta on medial hump; palps two-segmented; palpifer relatively long; segment 2 nearly 0.5x length of segment 1. Labium (Fig. 6) with glossae with four to five short, fine, simple setae medially, and two to three long, fine, apically branched setae distally; dorsum of paraglossae with apical row of long, fine, apically branched setae, and ventrally with a group of three short, fine, simple setae; segment 2 of labial palp with rounded distomedial process, inner margin with long, fine, simple setae, and dorsally with two long, fine, simple setae.

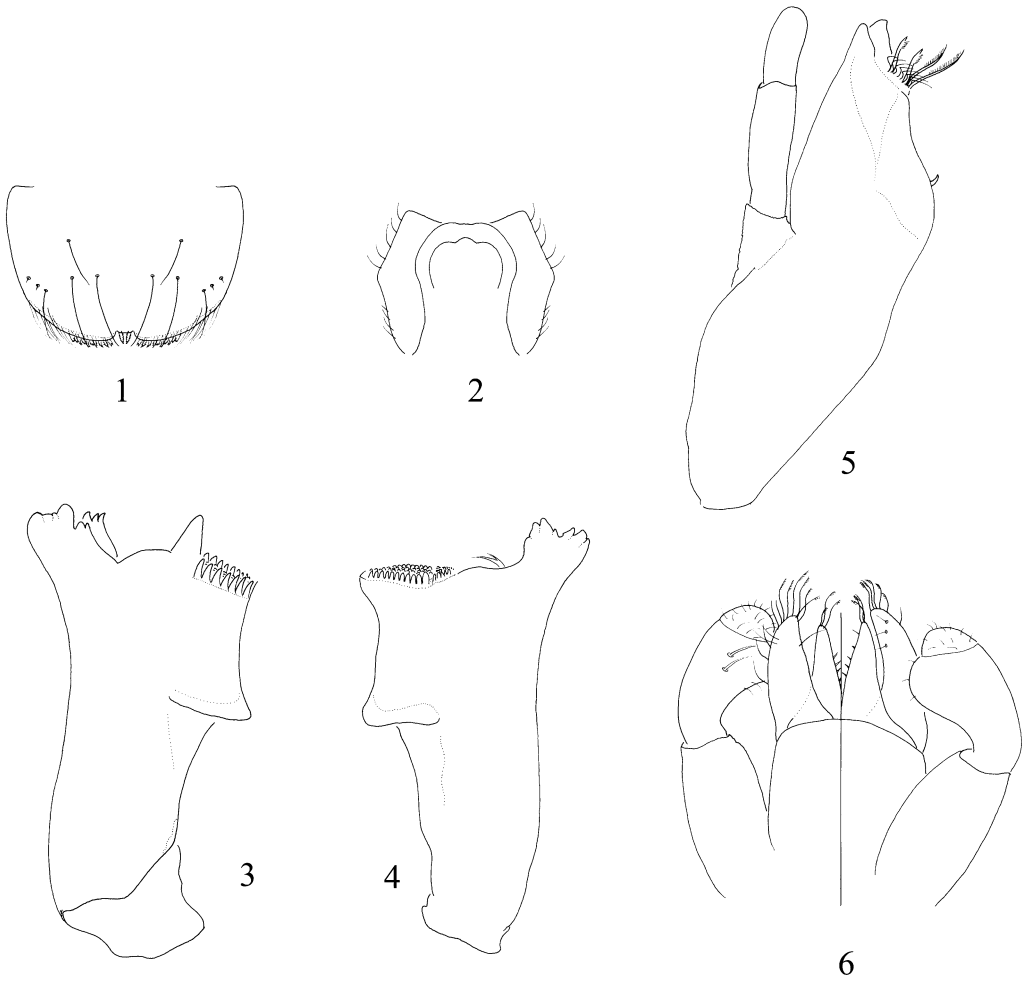
Thorax yellow-brown, except for the tips of the fore wing pads, medium brown; without distinct pattern. Hind wing pads absent. Legs (Figs. 7–10) pale yellow-brown; fore femora (Fig. 7) broader than others, with submedial row of long, robust, simple setae, increasing in size ventrally; dorsally with row of short to long, robust, simple setae; anterior half of ventral margin with long, robust, simple setae, and short and stout simple setae; mid femur (Fig. 9) with anterior row of long, robust, simple setae; hind femur (Fig. 10) with relatively few setae; tibia and tarsi almost bare, except for a few short, fine, simple setae dorsally, and a few short, stout, simple setae ventrally; tarsal claws (Fig. 8) with four to five denticles on lateral and medial margins.

Abdomen pale yellow-brown, except for segments 2, 7, and 8, medium brown; without distinct pattern. Terga (Fig. 11) with posterior triangular spines absent in segments 1–3, segments 4–7 with triangular spines restricted laterally, and segments 8–10 with triangular spines along the posterior margin. Gills as in Figure 12, whitish and weakly tracheated. Paraproct (Fig. 13) marginally with six to seven spines. Caudal filaments whitish.

Adults. Unknown.

Type material. Holotype: Female nymph, Brazil, Mato Grosso, Córrego Taquaral, 15° 42.44'S / 52° 20.44'W, 04/VI/2003, J. D. Batista. Paratypes: three nymphs, same data as holotype. All types are housed in the Coleção de Invertebrados, Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil.

Etymology. The specific epithet is in honor of professor Helena Soares Ramos Cabette, our colleague in the field of entomology, and adviser of the second author.



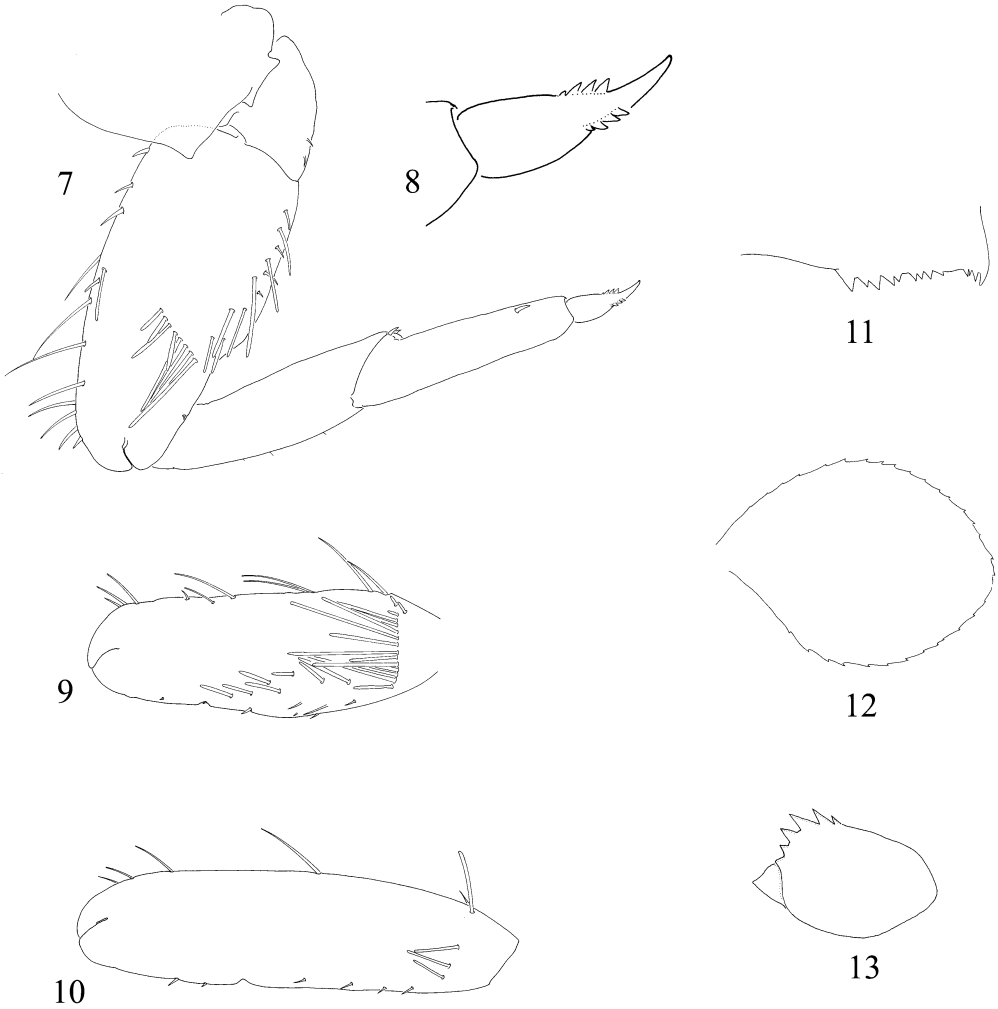
FIGURES 1–6. *Varipes helenae*, sp. n., nymph. 1. Labrum (dorsal). 2. Hypopharynx. 3. Left mandible. 4. Right mandible. 5. Maxilla. 6. Labium (left–dorsal; right–ventral).

Discussion

Varipes helenae can be distinguished from *V. lasiobrachius*, the other described species of the genus, by the following combination of characteristics: setation of labrum (Fig. 1); number of denticles in both mandibles (Figs. 3, 4); prostheca of right mandible bifid, not reduced (Fig. 4); medial hump of maxilla with a spiniform seta (Fig. 5); distomedial process of labial palp segment 2 rounded (Fig. 6), relatively few setae on femora (Figs. 7, 9–10); and number of spines on the paraproct (Fig. 13).

Because *V. lasiobrachius* was the only described species of the genus, the generic concept given by Lugo-Ortiz & McCafferty (1998) for *Varipes* was, somewhat, tentative. As is the case for several South American genera of Baetidae described recently (e.g.

Cryptonympha Lugo-Ortiz & McCafferty, *Iguaira* Salles & Lugo-Ortiz, *Spiritiops* Lugo-Ortiz & McCafferty, *Zelusia* Lugo-Ortiz & McCafferty, among others), only with the description of additional new species will their generic concepts become more consistent. According to Lugo-Ortiz & McCafferty (1998), the right prostheca reduced to a long, fine, simple seta and the peculiar arrangement of denticles on the tarsal claws are unique among baetids, and separate *Varipes* from other known genera of the family. However, the right prostheca of *V. helenae* is bifid and not reduced (Fig. 4). On the other hand, the presence of long, robust, simple setae on the femora, especially on the fore and mid-femora, seems to be an apomorphic state shared by both species. Consequently, we conclude that this last characteristic, in addition to the peculiar arrangement of denticles on the tarsal claws, should be diagnostic for *Varipes*.



FIGURES 7–13. *Varipes helenae*, sp. n., nymph. 7. Foreleg. 8. Detail of tarsal claw. 9. Mid femur. 10. Hind femur. 11. Tergum 4 (detail of posterior margin). 12. Gill 4. 13. Paraproct.

With the description of *V. helenae*, the genus *Varipes* is recorded for the first time from Brazil. The presence of *Varipes* in Mato Grosso is also important because it shows that, although the faunal composition of the family Baetidae in Brazil has received considerable study recently (McCafferty & Lugo-Ortiz, 1995; Lugo-Ortiz & McCafferty, 1995, 1996abc, 1997, 1998; Salles & Lugo-Ortiz, 2002ab, 2003ab; Salles et al., 2003abc), some areas within the country are poorly collected and deserve more attention. The West-central region of Brazil, represented by the states of Mato Grosso, Mato Grosso do Sul, and Goiás, is one of the less documented areas of the country in relation to small minnow mayflies. Besides *Varipes*, the genus *Harpagobaetis* Mol, known at this time exclusively from the type-locality, was also recorded from Brazil based on material collected in Goiás (Salles & Lugo-Ortiz, 2002b). Therefore, to know with more fidelity the faunal composition of small minnow mayflies in Brazil, more surveys of baetids are needed from the West-central part of the country.

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