PROC. ENTOMOL. SOC. WASH.
91(3), 1989, pp. 360–366

A NEW SPECIES OF NEOTROPICAL WATER BUG, *PARAVELIA BIAE*, FROM BRAZIL (HETEROPTERA: VELIIDAE)

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Abstract.—A new species of veliid water bug, ***Paravelia biae***, from Pará, Brazil, is described and compared with the species *Paravelia platensis* Berg and *Paravelia williamsi* Hungerford, which it resembles; distinguishing characters are illustrated by line drawings and scanning electron micrographs. The habitat is discussed and illustrated.

Key Words: Heteroptera, Veliidae, Brazil, *Paravelia biae* n. sp.

In 1986, several biologists from the Smithsonian Institution participated in a survey of the fauna of an area on the Xingu River about 60 km south of Altamira, Pará, Brazil, that is scheduled for impoundment following the construction of a large hydroelectric dam on the river. The attractive water-strider described below was collected during the survey.

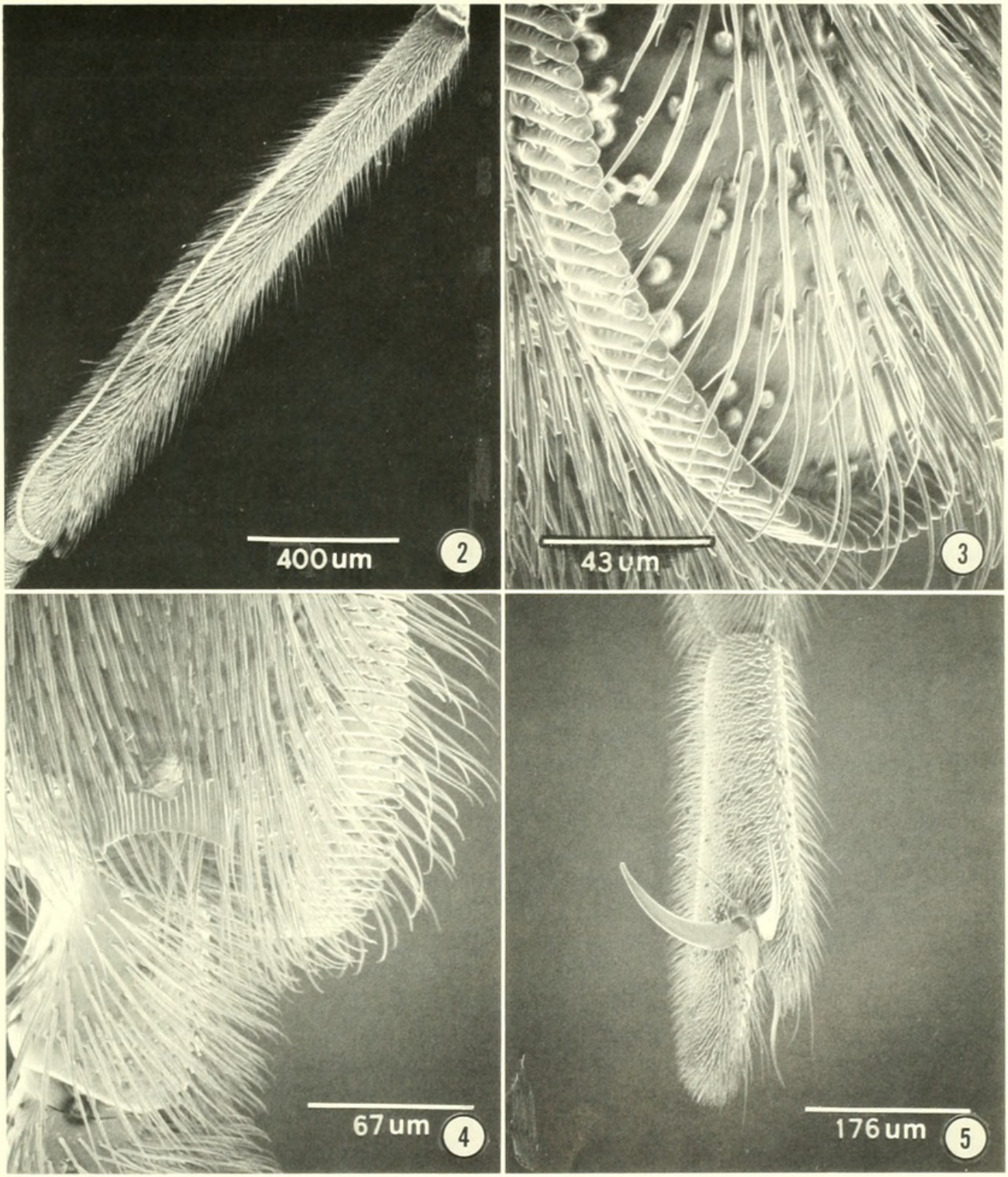
Paravelia biae Spangler, New Species
Figs. 1–8, 15, 16

Macropterous holotype male (Fig. 1).—*Size:* Length, 6.45 mm; greatest width, 2.50 mm.

Color: Black except coxae and base of rostrum slightly reddish brown and each hemelytron with a bright yellow macula near base and another, oval in shape, on membranous apex; therefore, with wings in normal position over abdomen, 3 yellow maculae readily visible. Cuticle covered with dense yellowish-brown pubescence.

Head: Width between eyes, 0.50 mm. Cuticle finely pubescent; with sparse, long, slender, black setae among shorter, dense,

Fig. 1. *Paravelia biae*, male, habitus view, ×14.



Figs. 2–5. *Paravelia biae*, male: 2, Protibial grasping comb, ×70. 3, Distal end of protibial grasping comb, ×450. 4, Protibial grasping comb and grooming comb, ×700. 5, Protarsal claws, ×170.

reddish-brown setae. Rostrum extending to anterior margin of mesocoxal cavities. Antennae with fine, dense, reddish-brown to yellowish pubescence and a few longer, darker setae interspersed; segment 1 arcuate, narrowest at base then distinctly swollen and parallel sided on distal four-fifths, distinctly thicker and a fifth longer than segment 2; segment 2 more slender and slightly longer than segment 3; segment 4

more slender and about a fifth longer than segment 3.

Thorax: Pronotum narrowest apically, sides diverging, moderately arcuate, strongly gibbose laterally slightly before midlength; lateral margins behind gibbose area broadly rimmed; with low median longitudinal carina on meson; terminating in a moderately long, robust, finger-like process projecting posteriad. Cuticle with 2 sparse, coarsely punctate, transverse rows on anterior seventh; disc with most coarse punctures separated by 4 to 5 times their diameter; also with an oblique row of coarse, distinct punctures laterad of procoxae. Protibia with distal grasping comb extending about three-fourths length of tibia (Figs. 2–4) and grooming comb on apex (Fig. 4). Protarsal claws slender (Fig. 5).

Abdomen: Cuticle with fine, dense, short, yellowish pubescence intermixed with sparser, longer setae. Laterotergites moderately reflexed above abdominal terga. Segment 7 (sixth visible) with a strong angular gibbosity on each side of meson along posterior margin of segment; ovate genital capsule twice as long as segment 7 on midline.

Genitalia: Proctiger with posterior half pubescent and heavily sclerotized at basodorsal angle (Fig. 6). Clasper sinuate; with cluster of setae basally and a row of evenly spaced, erect stiff setae on upper margin (Fig. 8).

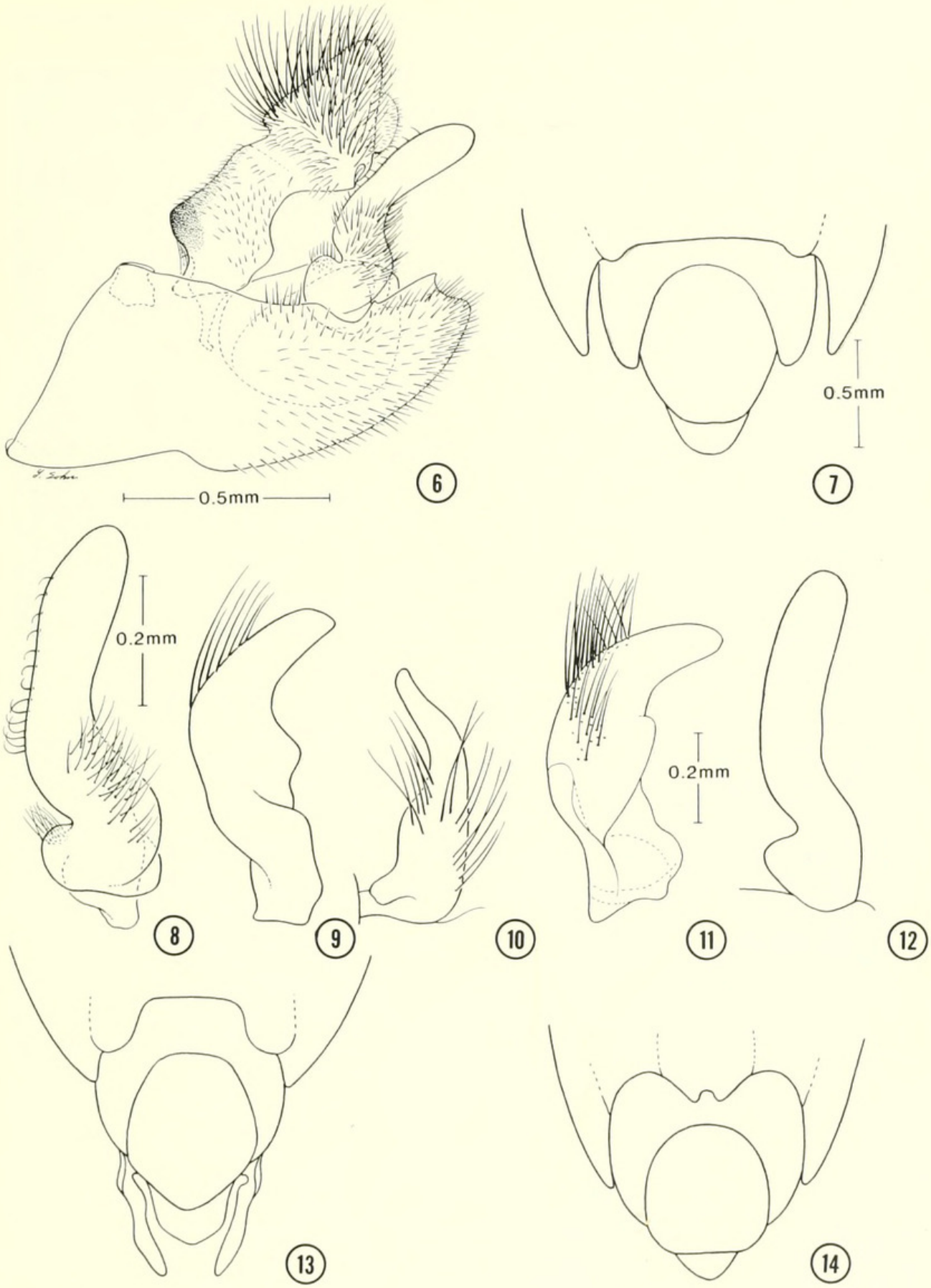
Female.—Similar to male but lacks angular gibbosities on posterior margin of abdominal segment 7 and genital capsule is replaced by an extensible ovipositor.

Comparative notes.—*Paravelia biae* is most similar to *Paravelia platensis* Berg, 1883, and *Paravelia williamsi* Hungerford, 1930, but differs from both by being black instead of chocolate brown, by the low pronotal carina extending from collar to base where it ends in a finger-like lobe, and by its more robust body that is thicker dorsoventrally. In addition, males of *P. biae* have a gibbosity on each side of the meson of sternum 7 that are separated by a very broad and shallow apicomedial emargination (Fig. 7) in contrast to males of *P. platensis* that have a broad longitudinal keel on the meson of sternum 7 (Fig. 14) and males of *P. williamsi* that have a gibbosity on each side of the meson of sternum 7 that are separated by a broad and deep apicomedial emargination (Fig. 13).

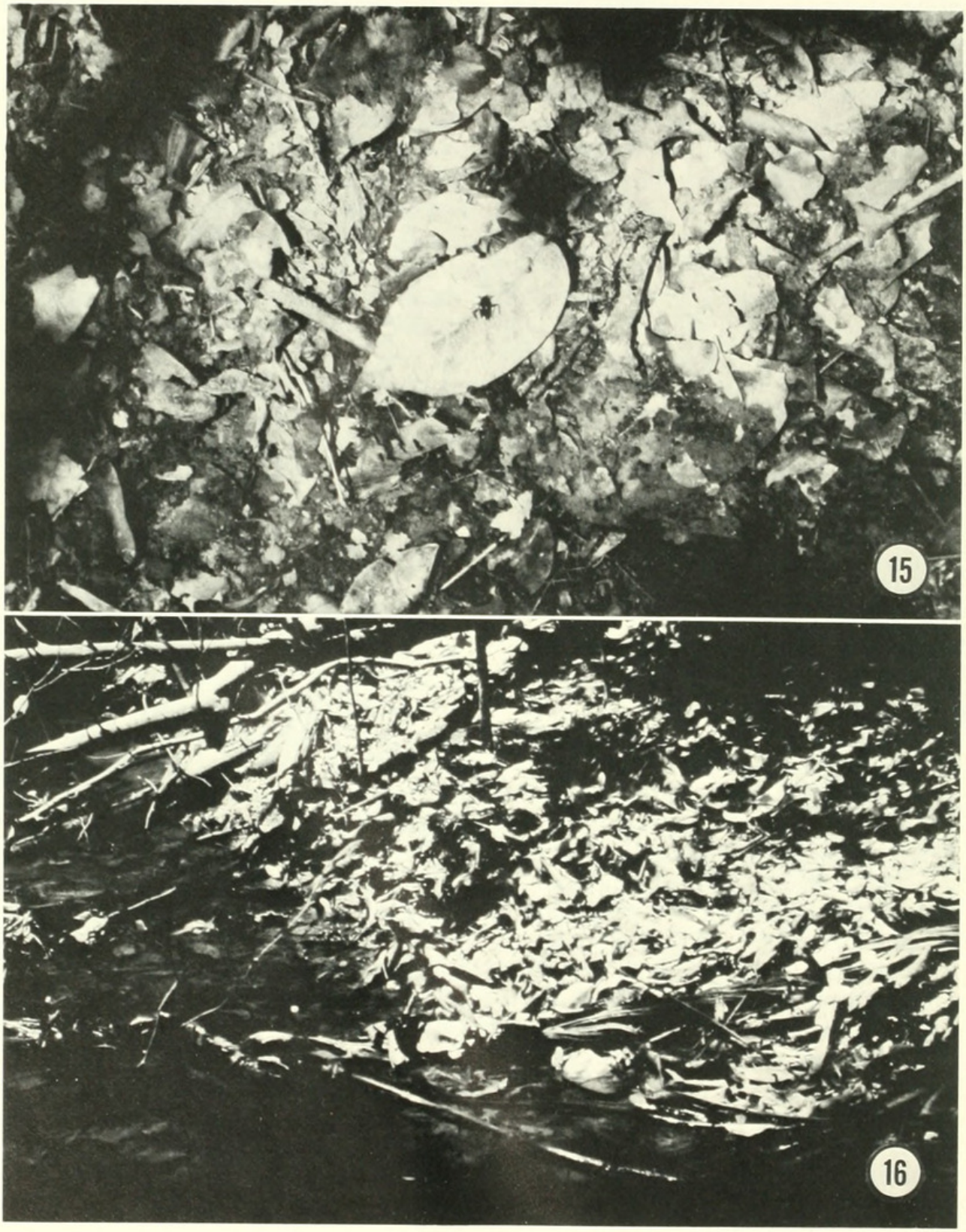
The male claspers of the known species of *Paravelia* are distinctive and the obvious differences between the right (Fig. 9) and left clasper (Fig. 10) in Hungerford's (1930) illustrations of *P. platensis* seemed odd. Both claspers of specimens of *P. biae* and all other species of *Paravelia* that I have examined are symmetrical. The illustration of asymmetrical claspers included by Hungerford suggested that one of the two claspers of his specimen of *P. platensis* is aberrant. Although Hungerford did not mention that, he may have had the same suspicion and, by luck or design, he included figures of both claspers. By dissecting and clearing the genital capsule of a male *P. platensis* in the Drake Collection in the National Museum of Natural History, I found that the claspers are symmetrical as illustrated in Figure 11 and closely approximate Hungerford's figure of the right clasper (Fig. 9). Therefore, I believe his figure of the left clasper (Fig. 10) illustrates an aberrant one.

Type data.—Macropterous holotype male and allotype: BRAZIL: PARÁ: Altamira (60 km S), 52°22′W, 3°39′S, 10 Oct 1986, 1st stream, trail 4, coll'n #19, P. Spangler & O. Flint; deposited in the Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil.

Paratypes: Same data as holotype, 147 ♂, 267 ♀; same locality and data except: 13 Oct 1986, 5 ♂, 14 ♀; 19 Oct. 1986, in flight intercept trap, 1 ♂, 2 ♀; 21 Oct. 1986, in flight intercept trap, 1 ♂, 1 ♀. BRAZIL: PARÁ: Itaituba: São Lonis, 15.3.41, leg. H. Sioli, S16, 1 ♂, 1 ♀. Paratypes will be deposited in the Museu de Zoologia, Universidade de São Paulo, São Paulo; the American Museum of Natural History, New York, New



Figs. 6–14. 6–8, *Paravelia biae,* male genitalia: 6, genital capsule, lateral view; 7, abdominal venter; 8, left clasper. 9–11, *Paravelia platensis,* male genitalia: 9, right clasper; 10, left clasper; 11, left clasper (specimen in Drake Collection). 12–13, *Paravelia williamsi*: 12, left clasper; 13, abdominal venter. 14, *Paravelia platensis,* abdominal venter. Figures 9, 10, 12, 13, 14—after Hungerford, 1930.



Figs. 15–16. *Paravelia biae*: 15, exposed after overturning leaves. 16, biotope; 60 km south of Altamira, Pará, Brazil.

York; the British Museum (Natural History), London; the California Academy of Sciences, San Francisco, California; the Canadian National Collection, Ottawa; Institut Royal de Histoire naturelles de Belgique, Bruxelles; Instituto de Zoologia Agricola, Facultad de Agronomia, Universidad Central Venezuela, Maracay; Laboratorium voor Zoologische, Oecologie en Taxonomie, Utrecht; the Muséum National de Histoire Naturelle, Paris; Museo Argentino de Ciencias Naturales, Buenos Aires; Universidad Nacional de La Plata y Museo, La Plata; the National Museum of Natural History, Smithsonian Institution, Washington, D.C.; the Snow Entomological Museum, University of Kansas, Lawrence, Kansas; Zoologische Staatssammlung, München (Sioli's specimens); and the collection of John T. Polhemus, Englewood, Colorado.

Etymology.—This species is named *biae* for Maria Beatriz (Bia) Riviero do Vallé, conservationist and our kind and efficient host.

Habitat.—Most of the specimens of this new species were collected from a small stream in the lowland tropical forest near our base camp. The stream was about 1.5–2 m wide and about 15–45 cm deep for much of its course as it meandered and flowed slowly through the forest. The stream was mostly shaded throughout the day but the collection site of this veliid was exposed to sunlight for about an hour at noontime. The first few specimens were observed on the water at the shoreline (Fig. 16). When attempts were made to net them, they ran onto the leaf-covered bank where the leaves had to be brushed aside to find them (Fig. 15). In so doing, I was surprised to find them so abundant under the leaves that many crawled back under the leaves faster than they could be picked up. I quickly obtained 220 specimens within an area of approximately 2 square meters. All specimens were found no farther than 1.25 meters from the water's edge. Additional collecting in the 10 meters downstream, where the bank was shaded, yielded some specimens but distinctly fewer than I found in the sunny area.

Following a heavy rain about a week after the first collections were made, I found 5 specimens of this veliid alive on the rainwater and greatly diluted ethylene glycol in a yellow plastic trough under a flight intercept trap operating about a half kilometer from the stream; evidently the bugs flew from the stream and were captured by the trap. Presumably, the veliid's behavior of moving about on the surface film kept them from drowning as other insects did when they flew into the intercept trap panel and fell into the trough.

Possibly, when the heavy rains begin after the dry season, as happened during this fieldwork, the veliids disperse from areas of dense population to new habitats with less competition for food.

It is also of interest to note that all specimens collected were winged adults. Perhaps breeding begins after the onset of the rainy season when new habitats become available and the presumed dispersal of the adults occurs.

Acknowledgments

For making the fieldwork possible, I thank the following: the Consórcio Nacional de Engenheiros Consultores S.A. (CENEC) for financial support; Paulo Vanzolini, who kindly arranged for our participation in the project; and Maria Beatriz (Bia) Ribeiro do Valle, whose efficient logistical arrangements made the trip so enjoyable.

I also extend my thanks to the following individuals for their contributions to this article: John T. Polhemus for kindly and constructively reviewing the manuscript and providing the specimens collected by H. Sioli of the Max Planck Institute (Plön); Victor Krantz, Photographer, Smithsonian Institution Photographic Laboratory for the habitus photograph; Young T. Sohn, Scientific Illustrator, Department of Entomol-

ogy, for the art work; Robin Faitoute, Museum Specialist for the micrographs; Phyllis M. Spangler, for preparing the specimens for study and typing the manuscript.

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