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A new species of *Papuavelia* Polhemus & Polhemus, 2000 from Papua New Guinea

(Hemiptera, Veliidae, Microveliinae)

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We here describe the second species of the New Guinea endemic riffle bug genus *Papuavelia*: *P. orientalis* spec. nov. from the Simbai area, 1200 m a.s.l., in the Madang Province of Papua New Guinea.

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Introduction

New Guinea and its satellite islands are inhabited by a high number of endemic genera and species of the subfamily Microveliinae (Polhemus & Polhemus 2011, and references therein). Among them is the previously monotypic genus *Papuavelia* Polhemus & Polhemus 2000. *Papuavelia siculifera* Polhemus & Polhemus 2000 is only known from a few localities in the central highlands of Indonesian Papua. It is characterized by having four leaf-like structures (modified claws and arolia) of the imago's pretarsus. In the original diagnosis (Polhemus & Polhemus 2000) such structures were only described for the middle and hind legs, but we found that they are similarly developed on the forelegs. In addition, the male bears a high hump on the medial parts of abdominal sternites 1–5 and has a strongly modified abdominal segment 8 with a dagger-shaped, anteroventrad directed process (Polhemus & Polhemus 2000).

Here, we report the first finding of *Papuavelia* from the central highlands of Papua New Guinea based on a new species that shares the aforementioned characters with *P. siculifera*.

Material and methods

For comparison, specimens (5 males, 5 females) of *P. siculifera* from Papua: Okloma (4°17' S, 139°55' E, 1700 m a.s.l.), identified by D. A. & J. T. Polhemus and housed in the Natural History Museum Vienna, were studied.

Stacked digital images were taken with a Leica DFC camera attached to a Leica MZ16 stereo microscope with the help of Leica Application Suite V3, stacked with ZereneStacker 64-bit, and processed with Adobe Photoshop 7.0.

Taxonomy

Papuavelia orientalis spec. nov.

Figs 1–3

Type locality. Stream, Simbai area, Madang Province, Papua New Guinea.

Type material. Holotype (apterous male, in Zoologische Staatssammlung München) and paratypes (10 apterous ♂♂, 6 apterous ♀♀, in Zoologische Staatssammlung München, Natural History Museum Vienna and Natural History Museum London) from Papua New Guinea, Madang, Simbai area, 1200 m a.s.l., 11.III.2007, 5 13.333S 144 37.611E (–5.222252° 144.626851°), leg. A. Kinibel (PNG 153).

Non-type material. 1 nymph from the same locality.

Etymology. The Latin adjective *orientalis* means eastern; named for the distribution in the eastern part of New Guinea.

Species diagnosis. Male: grasping comb of foretibia long, occupying 0.56–0.61 of tibia length; hair pad apically on abdominal sternite 3 not medially interrupted, hair directed posteriorly; process of sternum 8 broad, at apex not strongly acuminate. – Female: connexivum 6 with tuft of black hair, similarly long as on connexivum 7.

Description of apterous male (Figs 1, 3)

Body length 3.10–3.47 (mean 3.25; holotype: 3.13); maximum body width 1.29–1.42 (mean 1.34; holotype: 1.35); head width 0.84–0.89 (mean 0.86; holotype: 0.84).

Colour: Trunk chiefly blackish. Head dorsally dark brown, laterally and ventrally yellow. Pronotum anteriorly pale brown, anteromedially yellow. Propleura and all acetabula pale yellow; mesopleura pale brown to orange coloured. Connexiva with narrow yellow margin occupying less than half of laterotergites at segments 4–5. Abdominal tergites either entirely blackish, or hind margin of tergite 6 and entire tergite 7 orange to pale brown. Abdominal sternites 4–7 medially, segment 8 and genitalia pale brown to orange coloured. Antenna pale brown, yellowish at base. Rostrum yellow, black at apex. Legs yellow, femora at extensor side, tibiae and tarsi variously infuscated.

Pilosity: Short pilosity rather dense, brownish. Pronotum anteriorly with some silverish pilosity. Tergite 1 with conspicuous patches of silverish pilosity at sides. Entire trunk with relatively short, inconspicuous, standing or subcumbent setae, but medial areas of sternites and segment 8 with very long setae. Antennomere 1 and metatibia with several long, stout, black setae. Relatively long, thin setae on ventral parts of all legs.

Structures (measurements refer to holotype): Head acuminate; apices of protruded ventral lobes visible in dorsal view. Minimum distance of eyes hardly smaller than half of head width. Rostrum moderately long, reaching to base of mesocoxa. Lengths of antennomeres 1–4, 1.05, 0.73, 0.73, 0.81. Pronotum long, entirely covering meso- and metanotum; length 0.80, width 1.30. Propleura just behind eye with large deep pit. Lateral evaporatorium with short channel, situated close to metacetabulum, terminally with dense brush of long setae. Legs long and slender, weakly modified. Metafemur slightly thicker than pro- and mesofemur. Protibia with long grasping comb, its length 0.56–0.61 times (\varnothing 0.58;

holotype: 0.61 times) protibia length. Relative lengths of leg segments: profemur 1.34, protibia 1.24, protarsus 0.52, mesofemur 1.84, mesotibia 1.91, mesotarsus 0.54 + 0.65, metafemur 1.66, metatibia 2.26, metatarsus 0.41 + 0.50. Abdomen dorsally unmodified, tergites relatively flat, laterotergites steep. Abdominal venter strongly modified. Sternites 1–4 raised to form a high hump; sternite 5 moderately raised. Medial part of sternite 3 strongly protruded caudad, completely covering the slightly protruded middle of sternite 4. Sternites 5 and 6 with impressed midline. Sternite 7 with wide shallow groove and low, narrow median carina. Segment 8 posteroventrally with long medial, symmetrical process that reaches anteriorly to sternum 6, and with bunches of long setae at both sides of this process. Process broad-lanceolate, with a small and very thin, transparent apex; on ventral surface at basal midline with some short setae. Genitalia completely retracted in the ventrally situated opening of segment 8, very small and unmodified.

Description of apterous female (Fig. 2)

Body length 3.51–3.67 (mean 3.61); maximum body width 1.47–1.55 (mean 3.52); head width 0.88–0.92 (mean 0.90).

Colour and pilosity similar as in male. Sternites largely black, only connexiva and a large medial patch on sternite 7 yellow. Lateral margins of laterotergites 6 and 7 each with a conspicuous tuft of black setae in posterior half, directed posteromedially; patch on segment 6 broader and denser than that of segment 7, but of similar hair length. Lateral margin sternite 7 with a clearly confined, elongated field of setae.

Structures similar as in male. Legs unmodified; protibia without comb; metafemur hardly thicker than mesofemur. Abdominal venter unmodified. Connexiva strongly converging, subparallel on segment 7; posterior corner very blunt. Tergites 7 and 8 longer than wide, the latter directed posteroventrally. Tergite 8 and the small, knob-like protiger completely covering the genitalia.

Notes. The characters given in the diagnosis separate *Papuavelia orientalis* spec. nov. from *P. siculifera*. In *P. siculifera* the protibial grasping comb of the male is shorter (occupies about 0.5 of tibia length), the black hair pad on sternite 3 has a distinct parting or is medially separated, the process of sternite 8 of the male is strongly acuminate and its apex not thin and transparent (Fig. 4), and the female has only inconspicuous pilosity on connexivum 6. In addition *P. siculifera* is paler in colour, e.g., some or all abdominal tergites brown, connexiva with broad yellow stripes, abdominal venter in larger extent or-



Figs 1–4. 1–3. *Papuavelia orientalis* spec. nov. 1. male; 2. female; 3. abdominal venter of male; insert: segment 8 process in double magnification. 4. *Papuavelia siculifera*, idem.

ange coloured to pale brown. In the female, tergite 8 is less sloping in *P. siculifera* than in *P. orientalis* spec. nov. Polhemus & Polhemus (2000) described the female of *Papuavelia* with large, exposed gonocoxae and protruded proctiger, but this is not the case in

any of the females of both species studied by us; in contrast tergite 8 and proctiger cover the entire posterior opening of segment 7.

Habitat. Collected from a stream.

Distribution. Only known from the type locality. *Papuavelia* is a montane genus and endemic to the Central Highlands of New Guinea. Elevational records range from 1050 to 2105 m a.s.l. (Polhemus & Polhemus 2000; this study).

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