

## A new species of *Pseudohenschiella* (Heteroptera: Enicocephalidae) from Madagascar

Petr BAŇAŘ<sup>1)</sup> & Pavel ŠTYS<sup>2)</sup>

<sup>1)</sup> Department of Forest Protection, Forestry and Game Management Research Institute, Jíloviště – Strnady, CZ-156 04 Praha 5 – Zbraslav, Czech Republic; e-mail: petrbanar@seznam.cz

<sup>2)</sup> Charles University in Prague, Faculty of Science, Department of Zoology, Viničná 7, CZ-128 44 Praha 2, Czech Republic; e-mail: pavelstys@gmail.com

**Abstract.** *Pseudohenschiella hauseri* sp. nov. from central Madagascar is described, and the apicitibial and tarsal armature of the foreleg and its sensilla illustrated and described in detail. All known species of this endemic Madagascan genus are keyed.

**Key words.** Heteroptera, Enicocephalidae, *Pseudohenschiella*, Madagascar, taxonomy, new species, foreleg armature, foreleg sensilla, key

### Introduction

The genus *Pseudohenschiella* Villiers, 1958, (type species *P. usingeri* Villiers, 1958, by original designation) was established for two species from northern Madagascar (VILLIERS 1958). In his Afro-Madagascan monograph, VILLIERS (1969) revised this endemic Madagascan genus, keyed its species, and described additional two new species. Nothing has been published subsequently on this genus and other Madagascan enicocephalomorphans, except that ŠTYS (2002) keyed all genera and suggested some changes in their ranking.

In this paper, we describe and key out a new species of *Pseudohenschiella* and provide the first account of the foreleg sensilla and armature in the genus.

*Pseudohenschiella* species are known from single specimens, some represented by males and some by females. The macropterous condition of all of them suggests that both sexes fly.

### Material and methods

This study is based on the examination of a single specimen mentioned under Type material below. Label data are cited precisely, using a slash (/) to separate rows on the label. Drawings of the foreleg and its organs as well as the photograph of the foretibia were prepared from glycerine mounts, and the remaining photographs from the dry-mounted specimen.

## Taxonomy

### *Pseudohenschiella hauseri* sp. nov.

(Figs. 1-13)

**Type locality.** Madagascar, Antananarivo prov., Ankaratra hills, Manjakatempo Forest Station, 1980 m a.s.l.

**Type material.** HOLOTYPE: ♀, 'Mad-89/23: Madagascar (Prov. / Antananarivo, sous-préf. / Ambatolampy): Massif Ankaratra, / Station Forestière Manjakatempo, / près du sommet du Anosiariovo, forêt / primaire, sous écorces, 1980m; / 26.xi. 1989; leg. B. Hauser'. The specimen bears the red type label 'HOLOTYPE / Pseudohenschiella / hauseri sp.nov. / Baňář & Štys det. 2006'. Holotype slightly damaged (midtibiae partially broken), card-mounted, right foreleg mounted separately on another card; to be deposited in the collection of Muséum d'Histoire Naturelle, Geneva (Switzerland).

**Description.** Measurements (all in mm; L = length, W = width, max. = maximum, min. = minimum). Total L – 2.75; **head:** anterior lobe L – 0.26, posterior lobe L – 0.18, posterior lobe W – 0.25, distance of eye to apex of antennifer – 0.13, diatone (max. W across eyes) – 0.24, min. interocular distance, dorsal – 0.15, min. interocular distance, ventral – 0.11, eye L – 0.08; **labium:** total L – 0.44; **antenna:** segment 1 L – 0.11, segment 2 L – 0.24, segment 3 L – 0.22, segment 4 L – 0.21; **pronotum:** total L (max.) – 0.46, collum L (median) – 0.13, midlobe L (max.) – 0.19, hindlobe L (max.) – 0.14, collum max. W – 0.26, midlobe, max. W – 0.46, hindlobe, max. W – 0.53; **foreleg:** forefemur L – 0.40, foretibia L – 0.33, forefemur max. W – 0.18, foretibia max. W – 0.16; **midleg:** midfemur L – 0.35, midtibia L – 0.30, midtarsus L (without claw) – 0.11, midfemur max. W – 0.10, midtibia max. W – 0.07, midtarsus max. W – 0.05; **hindleg:** hindfemur L – 0.42, hindtibia L – 0.48, hindtarsus L (without claw) – 0.16, hindfemur max. W – 0.13, hindtibia max. W – 0.08, hindtarsus max. W – 0.03.

**Coloration** (Fig. 1). Head and thorax brown; forewing membrane slightly paler, extreme apex of head, labium, forewing veins, legs and antennal segments 1-3 yellowish brown, posterior (inner) faces of femora somewhat infuscate; antennal segment 4 whitish; dorsum and venter of abdomen beige (small isolated sclerites brown).

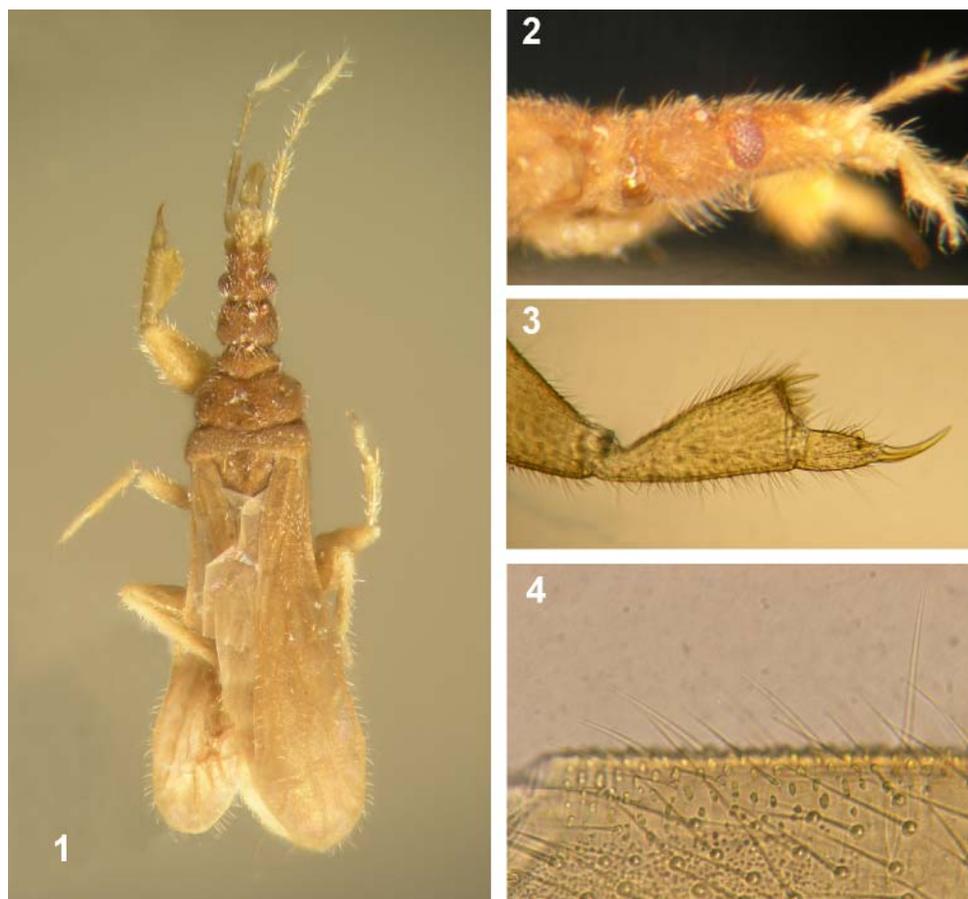
**Cuticle.** Head, thorax and abdomen generally matt, with clearly visible punctuation and minute setigerous tubercles; legs (with some exceptions – see foreleg structures below), antennae, labium and small median impression on midlobe of pronotum smooth and lustrous. Head, thorax and extremities strongly sclerotized, abdomen weakly so.

**Vestiture** whitish, relatively dense. Setae on dorsal face of head prominent, curved anterad, becoming longer towards antennifers. Lateral faces nearly bare. Setae on ventral face of head (Fig. 2) strongly prominent, longer than setae on dorsal and ventral faces; on anterior lobe curved posterad, on posterior lobe curved anterad (excepting the basal part, adjoining the collum).

Collum covered by dense hairs curved irregularly in different directions. Dorsal and lateral parts of mid- and hindlobe of pronotum and 'pleural' parts of thorax covered with dense prominent hairs, these becoming longer ventrally; setae of both dorsum and venter of thorax directed caudad.

Abdomen with adpressed hairs, laterotergites 7-9 with several very long, trichobothria-like setae, sternum 7 and subgenital plate covered with long, dense, semi-erect setae.

Forewing veins pilose, cells bare, very rarely with one seta per cell. Wing margin of four distinct sectors differing in pilosity, as follows: (a) proximal half of anterior margin with one



Figs. 1-4. *Pseudohenschiella hauseri* sp. nov., holotype, female. 1 – total view; 2 – head, lateral view; 3 – right foretibia, anterior view; 4 – ventral face of right forefemur.

row of uniform, short, curved setae; (b) third quarter of anterior margin with same hairs as (a) but complemented by second row of longer, curved hairs, both rows becoming longer distad; (c) beginning of distal quarter of anterior margin with admixed third row of erect bristles, the latter shortly disappearing and the rest of anterior margin, whole apical margin, and distal part of posterior margin (up to entry of last remigial vein) formed by one row of slightly curved, diagonal, alternating short and very long hairs; (d) whole proximal part of posterior margin bare.

**Antennae.** All segments with rather long diagonal setae; distal part of segment 2 and whole segments 3 and 4 also with more erect, subvertical, long, fine setae about twice as long as segment diameter.

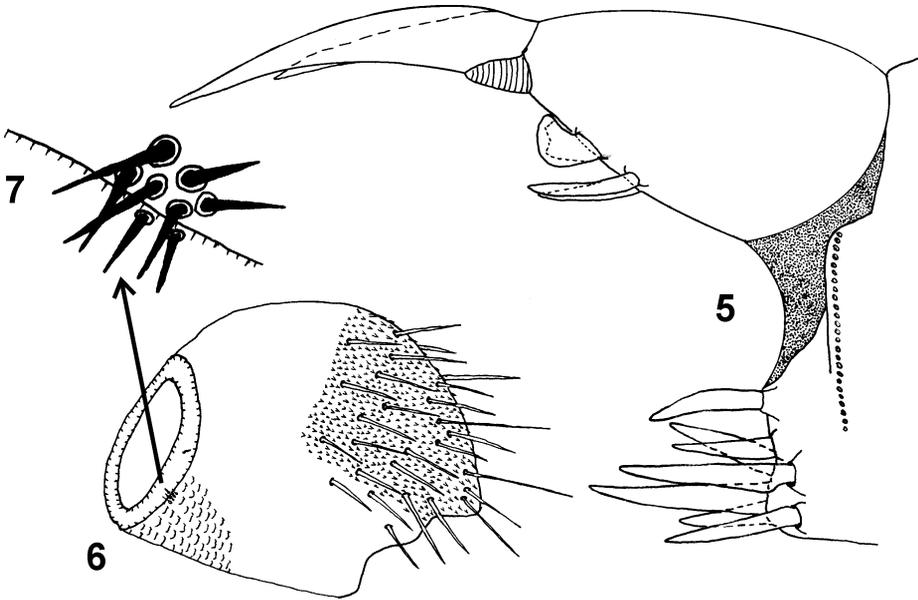
**Labium** with dense, semi-erect, slightly curved pilosity, particularly long and conspicuous at dorsal surface of segment 3.

Forelegs with two types of setae: (a) long, prominent trichobothria-like setae (tr-setae); (b) shorter, semi-erect, denser setae. Coxa and trochanter antero- and posteroventrally with numerous (ca 20-30) semi-erect setae and several (3-5) tr-setae. Dorsal face of trochanter with rows of five setae, one longest, other four subequal in length. Femur and tibia covered more densely and regularly on all surface, with exception of small bare area on antero-basal part of femur. Femur with 15-20 regularly distributed tr-setae with exception of anterior face. Tibia with 10-12 tr-setae, distributed especially on posterodorsal face, tarsus with 4-5 tr-setae.

Mid- and hindlegs. Both the mid- and hindfemur with a conspicuous, outstanding, curved and long setae in two thirds of dorsal face, ventral face with shorter, adpressed setae. Mid- and hindtibiae and tarsi with dense, semi-erect setae on all faces.

**Head** (Fig. 2). Slightly shorter than pronotum (ratio 0.95). Anterior lobe cylindrical, longer than posterior lobe (ratio 1.44). Postocular constriction deep. Posterior lobe transverse, lateral margins irregularly rounded, with slightly visible median groove, widest in basal third, ratio length to maximum width 0.72. Ratio length of eye to distance eye – apex of antennifer 0.62. Eyes medium-sized, dark reddish brown. Ocelli on small tubercles, directed antero-laterad, each with narrow carmine ringlet on base. Dorsal ocular index 5.3, ventral ocular index 3.7. Neck very short.

**Antennae** (Fig. 1) relatively short and thin, shorter than head and pronotum together, antennal formula (longest segment first): 2-3-4-1 (length differences 2, 3, 4 very small). Segments 2 and 3 moderately subfusiform, 4 fusiform.



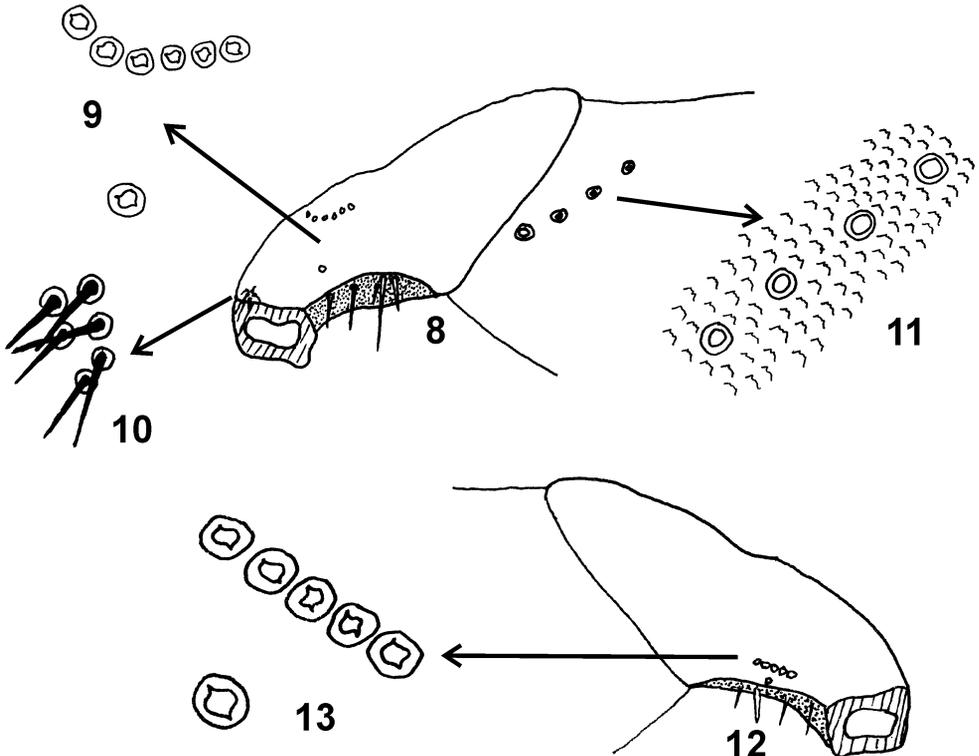
Figs. 5-7. *Pseudohenschiella hauseri* sp. nov., holotype, female. 5 – right foreleg, anterior view; 6 – apex of tibia and tarsus, hairs omitted; 7 – coxa; 8 – coxal rim organ.

**Labium** (Fig. 2) very short, thick, directed anterad, labial formula (longest segment first) 3-4-2-1, segment 1 minute, 3 basally constricted, and with medially inflated ventral side.

**Pronotum** (Fig. 1). Collum thick, simple, without lateral tubercles, precollum narrow, transverse impression between collum and midlobe strikingly deep and wide, broadly V-shaped. Lateral margins of midlobe rounded, its median marked by broad, inversely T-shaped impression (its stalk shallow, interrupting anterior margin; its transverse bar deep, rounded, distant from posterior margin), disc with a pair of deep anterolateral pits; lateral and medial parts of posterior margin rounded, sublateral ones shallowly concave. Hindlobe moderately wider than midlobe, widest in middle, lateral sides very moderately rounded, posterolateral angles roundedly subrectangular, posterior margin shallowly concave.

**Mesoscutellum** large, triangular, disc elevated with anterior row of 2+2 muscle impressions and unpaired posterior impression, apex produced in rounded mucro.

**Fore acetabula** open, 'proepimeral lobe' (*cum* posterior prosupracoale) reaching half width of forecoxa.



Figs. 8-13. *Pseudohenschiella hauseri* sp. nov., holotype, female, right foreleg (8-11 anterior view, 12-13 posterior view). 8 – trochanter and base of femur (cleared, vestiture omitted except coxal guard setae); 9 – condylar trochanteral organ; 10 – anterior trochanteral organ; 11 – anterior femoral organ; 12 – trochanter and base of femur (cleared, vestiture omitted except coxal guard setae); 13 – posterior trochanteral organ.

**Forewings** (Fig. 1). Macropterous; pterostigmal thickening of anteromarginal vein long but narrow. Discal cell unusually long and narrow, with apex pointed; adjoining anterior transverse vein much more distal than the posterior transverse vein. AP undeveloped.

**Foreleg** (Figs. 5-13). Coxa (Fig. 6). Anteroventral face with dense, relatively prominent cuticular thorns. Antero- and posterodorsal, proximal parts of forecoxa covered with rows of cuticular lath-like processes, most with 5-7 small teeth apically.

Trochanter (Figs. 8-12) without cuticular structures, dorsal face with row of five straight setae of different lengths.

Femur relatively stout and short, 2.2 times as long as wide. Bare anterobasal part of forefemur (basalmost part) covered with short and dense cuticular lath-like processes and with 2-3 teeth. Ventral face (Fig. 4) densely covered with granulose cuticular tubercles and setigerous tubercles. Distal two thirds on lateral and dorsal parts with simple cuticular thorns.

Tibia (Figs. 3 and 5) in lateral view strikingly widening distad, 2.1 as long as wide, with bristle comb of 23-25 setae on protruding, lath-like cuticular process. Cuticular structures characteristic of forefemur absent.

Apicitibial armature (Fig. 5) consisting of seven spiniform setae: three ventral (straight), three subventral (posterior one strongly oblique towards tarsus), and one dorsal (curved ventrad). Tarsal armature (Fig. 5) of 1+1 proximal curved spiniform setae and 1+1 distal half-moon-shaped platelets, anterior one broad, regularly rounded, posterior one slightly narrower, indented apically.

Foreleg sensilla on coxa, trochanter and femur. Basal rim of forecoxa anteromesally with coxal rim organ, consisting of cluster of eight differently directed, straight setae (Figs. 6 and 7) and one separate short seta. Condylar trochanteral organ of six short setae (Figs. 8 and 10). Anterior trochanteral organ (Figs. 8 and 9) of 6+1 campaniform sensilla (six in curved row, one isolated); posterior trochanteral organ (Figs. 12 and 13) of 5+1 campaniform sensilla (five in straight row, one isolated). Anterior femoral organ (Figs. 8 and 11) with four subbasal campaniform sensilla in straight row; posterior femoral organ absent.

**Mid- and hindlegs** unusually short and thick, femora incrassate, femora and tibiae laterally compressed, mid- and hind tibiae with very short anteroventral and posteroventral, equally long combs.



Fig. 14. Distribution of the genus *Pseudohenschiella* Villiers, 1958 in Madagascar.

**Terminalia.** Segment 8 clearly subdivided into fully sclerotized tergum, incompletely sclerotized laterotergites (occupying truly lateral position), and ventral, sclerotized subgenital plate. Posteromedial margin of the latter emarginate, the space filled by intersegmental membrane 8-9 provided with small medial sclerite. Segment 9 ring-shaped, fully sclerotized, its ventral (subproctigeral) part narrow. Proctiger globular.

**Differential diagnosis.** *Pseudohenschiella hauseri* sp. nov. differs from *P. minuscula* Villiers, 1969 by longer body, wider foretibia, and shape of posterior lobe of head and collum (very short in *P. minuscula*); from *P. usingeri* and *P. flavipes* Villiers, 1969 by wider foretibia, different dimensions and shape of both mid- and hind- pronotal lobes, and non-opposite position of transverse veins associated with forewing discal cell; from *P. brevipes* Villiers, 1958 by longer collum, different shape and proportions of posterior lobe of head, and by different shape of forewing discal cell (see the Key, and VILLIERS 1969). Dimensions of fore tibia may be sexually dimorphic (tibia distally broader in females); so far all species are only known from single individuals.

**Etymology.** Named after Bernd Hauser (Geneva), collector of the species.

**Bionomy.** The holotype was collected under bark in a primary forest.

### Key to species of *Pseudohenschiella*

- 1(2). Total body length 1.3 mm. Lateral margins of postocular lobe of head nearly straight, diverging posterad. .... *P. minuscula* Villiers, 1969 (sex unknown)
- 2(1). Larger species, total body length at least 2.5 mm. Lateral margins of posterior lobe of head rounded.
- 3(6). Foretibia about twice as long as wide. Anterior transverse vein associated with forewing discal cell much more distal than posterior transverse vein.
- 4(5). Posterior lobe of head approximately twice as wide as long, regularly rounded, widest in middle. Anteroposterior angle of discal forewing cell obtusangular. ....  
..... *P. brevipes* Villiers, 1958 (female)
- 5(4). Posterior lobe of head about 1.4 times as wide as long, irregularly rounded, widest in basal third. Anteroposterior angle of discal forewing cell acutangular. ....  
..... *P. hauseri* sp. nov. (female)
- 6(3). Foretibia about three times as long as wide. Association of anterior and posterior transverse veins with forewing discal cell at equal distance from the cell basis.
- 7(8). Posterior lobe of head 1.66 times as wide as long. Head and pronotum brown. ....  
..... *P. usingeri* Villiers, 1958 (male)
- 8(7). Posterior lobe of head 1.40 times as wide as long. Head and pronotum yellowish. ....  
..... *P. flavipes* Villiers, 1969 (sex unknown)

### Acknowledgements

We are grateful to Peter Schwendinger (Muséum d'histoire naturelle, Geneva) for the loan of the specimen of *Pseudohenschiella* and Martin Fikáček (National Museum, Praha) for technical assistance with photography and electronic processing of the illustrations. The paper resulted from and was financially supported by a project No. 206/01/0849 (P. Štys) of the Grant Agency of Czech Republic.

### References

- ŠTYS P. 2002: Key to genus-group taxa of the extant Enicocephalomorpha of the World, their list, and taxonomic changes (Heteroptera). *Acta Universitatis Carolinae Biologica* **45**: 339-368.
- VILLIERS A. 1958: *Insectes Hémiptères Enicocephalidae*. Faune de Madagascar. Vol. 7. Institut de Recherches Scientifiques, Tananarive – Tsimbazaza, 79 pp.
- VILLIERS A. 1969: Révision des Hémiptères Henicocephalidae Africains et Malgaches. *Annales du Musée Royal de l'Afrique Centrale, Serie in-8°, Sciences Zoologiques* **176**: 1-232.