

Tiomanaptera schwendingeri, a new apterous
carventine flat bug from Malaysia
(Hemiptera: Heteroptera: Aradidae)

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Abstract. New species of apterous Carventinae, *Tiomanaptera schwendingeri* sp. nov., belonging to the so far monotypic genus *Tiomanaptera* Heiss, 2010, is described from Malaysia (Terengganu State). The new species is illustrated and compared with the previously described *T. malickyi* Heiss, 2010.

Key words. Hemiptera, Heteroptera, Aradidae, Carventinae, *Tiomanaptera*, new species, aptery, Malaysia, Oriental Region

Introduction

Stable habitat conditions and food source existing in untouched rainforests are essential for development and survival of wingless taxa of Aradidae. Central mainland Malaysia and the small islands Tioman, Redang and Berhentian Besar off the East coast of the Malayan Peninsula can still offer such conditions, and the few apterous Carventinae recorded from Malaysia were described from there: *Apteraradus* Drake, 1957, *Kiritshenkiana* Kormilev, 1976, *Morphocoris* Kormilev, 1980 (described as *Glyptomorpha* Kormilev, 1977, preoccupied); *Cameronaptera* Heiss, 2010a, and *Tiomanaptera* Heiss, 2010b (DRAKE 1957; KORMILEV 1976, 1977, 1980; HEISS 2010a,b). Recently a single specimen from Berhentian Besar shares the unusually long neck and preapical spines on middle and hind femora, characteristic for the monotypic island genus *Tiomanaptera*; thus it is recognized as a new species of this genus which is described and figured herein.

Material and methods

The specimen this study is based on is preserved in the Muséum d'Histoire Naturelle de Geneve (MHNG). Incrustations obscuring the body were removed, and the body was cleaned to study its structures. Colour photographs (Figs 1–4) were taken by Leica MSV266. Drawings were made using stereoscopic microscope SZP 11 ZOOM.

Measurements, given in millimeters, were taken with a micrometer eyepiece.

A slash (/) separates the lines when citing the text on the labels attached to the specimen. Abbreviations used: deltg = dorsal external laterotergite (connexivum), mtg = mediotergite.

The following specimen was studied and figured for the comparative purposes:

T. malickyi Heiss, 2010: ♀ (MHNG): 'AS-WM07/7 W-Malaysia / Tioman Island, path from / Kg. Paya to Gunung / Kajang, 200-600m, / 02°46'84"N, 104°07'63"E / 6.-7.VI.2007, leg. A. Schulz. / AS-WM07/7'.

Taxonomy

Tiomanaptera schwendingeri sp. nov.

(Figs 1, 3, 5, 6)

Type locality. Malaysia, Terengganu State, Pulau Perhentian Besar, trail across island from Teluk Pauh to Teluk Dalam, 5°53'51"N 102°44'53"E), 50–100 m a.s.l.

Material examined. HOLOTYPE: ♀, 'THMA-08/01: W- / Malaysia: Terengganu / State, Pulau Perhentian / Besar, trail across island, / from Teluk Pauh to Teluk / Dalam (5°53'51"N / 102°44'53"E), 50-100m / (evergreen rainforest), 2- / 4 VI 2008, leg. P. Schwendinger THMA-08/01'; printed label. This specimen is designated as holotype and labelled with printed red label: 'HOLOTYPE / *Tiomanaptera / schwendingeri* sp. nov. / des. E. HEISS & P. BAÑAR 2013'. Deposited in MHNG. Antennal segments III and IV on left antenna are missing.

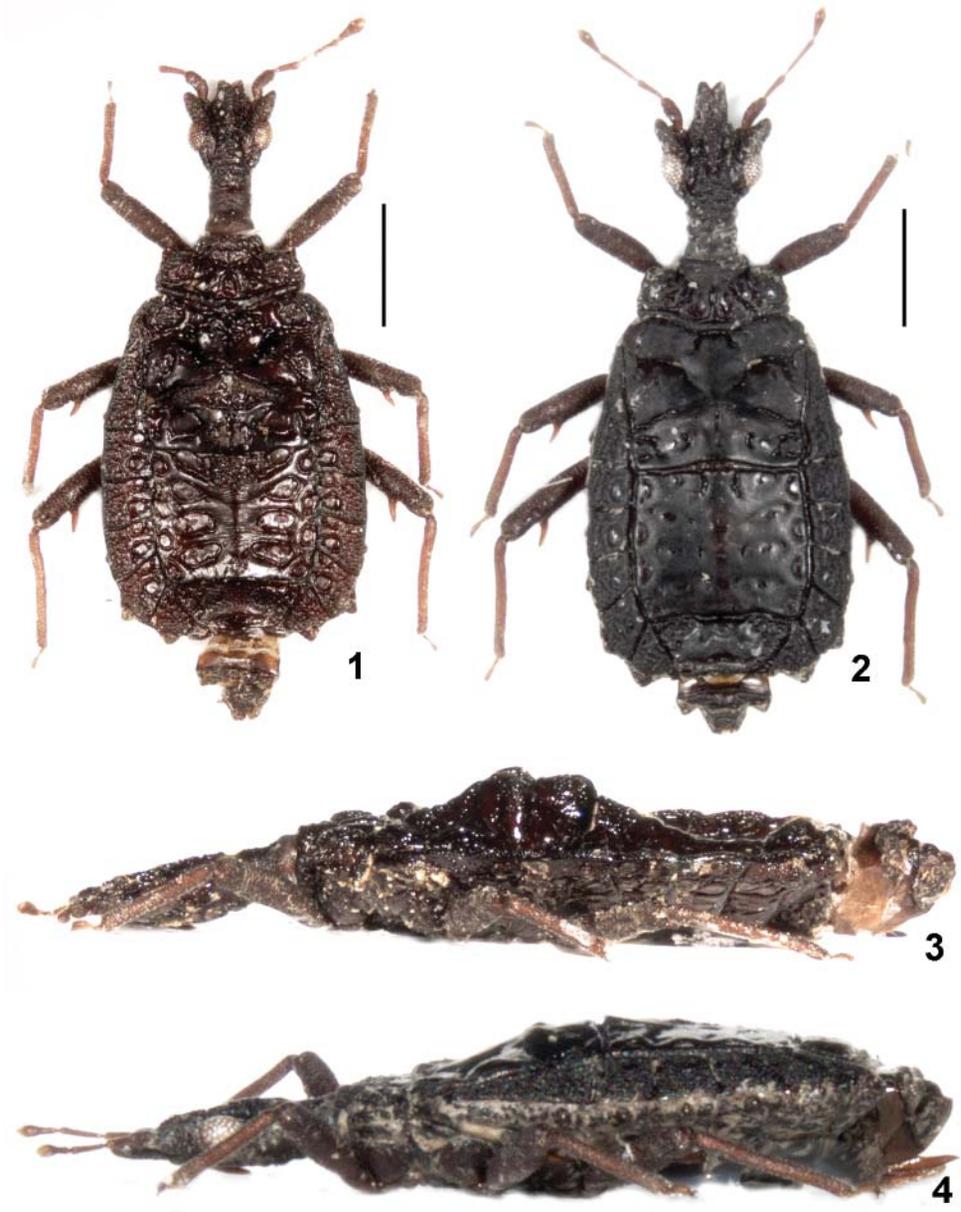
Description. Apterous female of medium size (5.1 mm); surface of body rugose and glabrous, colouration piceous brown; middle and hind femora with preapical spines.

Head. Including neck distinctly longer than width across eyes (1.35/0.75 mm); clypeus embraced by anteriorly contiguous, laterally expanded genae, reaching 0.5 antennal segment I; antenniferous lobes directed anterolaterally, apex rounded; antennae with segment I thickest and curved, II thinner and shorter than segment I, III thinnest and longest, IV fusiform, antennal formula (longest segment first): III-I-IV-II. Eyes oval, postocular lobes granulate, converging to neck; neck long and cylindrical; vertex raised medially, flanked by 2 (1+1) oval impressions. Rostrum arising from a slit-like atrium, shorter than head, rostral groove deep with carinate borders, closed posteriorly.

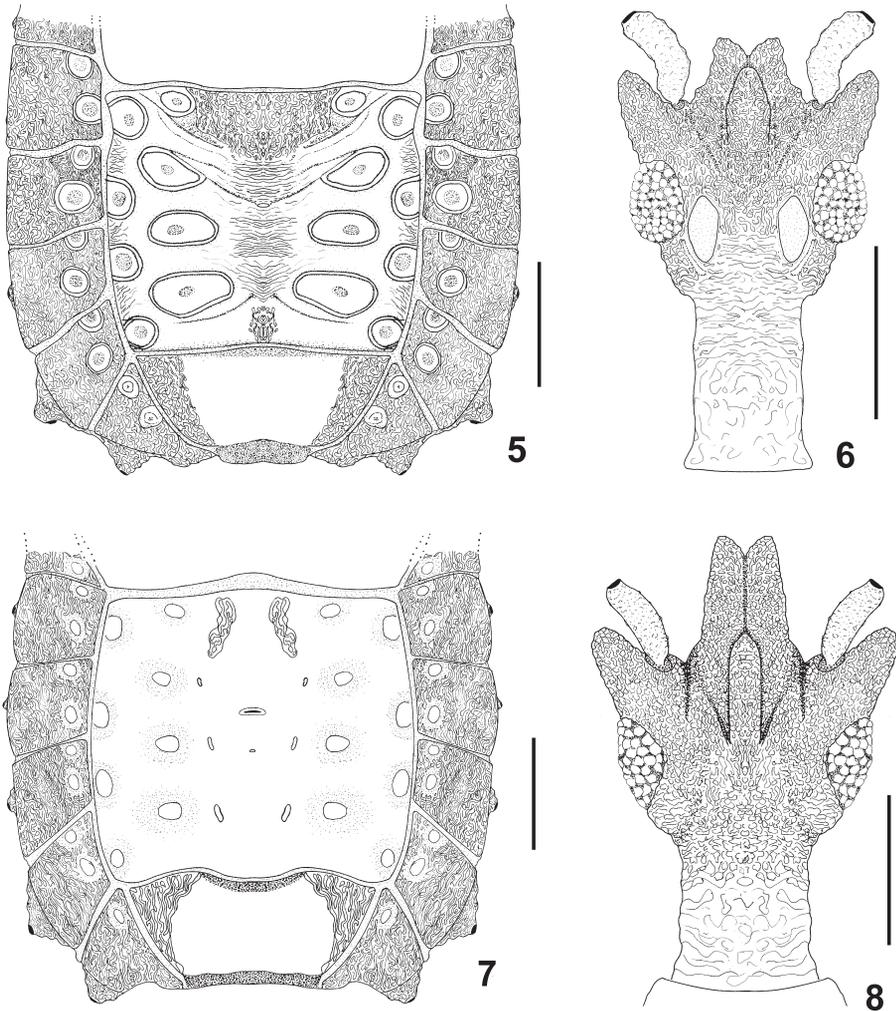
Pronotum. Rectangular, twice as wide as long (1.3/0.65mm); consisting of a narrower ring like anterior collar which is triangularly produced posteriorly and separated from posterior lobe by a deep suture; lateral margins of posterior lobe parallel, anterolateral angles with a distinct tubercle, surface with rugosities, granulate on lateral lobes; posterior margin delimited by a transverse, slightly convex carina separating it from mesonotum.

Mesonotum. Median rhomboidal plate rugose at base, smooth and raised posteriorly; lateral sclerites consisting each of a small oval elevation and raised lateral lobes with rugose surface, fused to metanotum, separated by a thin suture.

Metanotum. Split medially by the triangular projection of mesonotal elevation, which reaches anterior margin of mtg I+II, into two lateral triangular sclerites, their surface smooth on inner angle and rugose on lateral lobes.



Figs 1–4. Habitus of *Tiomanaptera* species. 1, 3 – *T. schwendingeri* sp. nov., holotype female; 2, 4 – *T. malickyi* Heiss, 2010, female, Tioman Island; 1, 2 – dorsal view; 3, 4 – lateral view. Scale bar = 1.0 mm.



Figs 5–8. *Tiomanaptera* species. 5, 6 – *T. schwendingeri* sp. nov., holotype female; 7, 8 – *T. malickyi* Heiss, 2010, female, Tioman Island; 5, 7 – tergite plate; 6, 8 – head. Scale bar = 0.5 mm.

Mediotergite I+II. Fused and medially raised with fusion line marked by a transverse suture; elevation of mtg I consisting of 2 (1+1) posterolaterally inclined ridges separated by a cleft, sloping laterally; elevation of mtg II narrower and rounded, a longitudinal suture separating the two lobes; posterior margin straight, a deep groove separates it from tergite plate.

Abdomen. Median elevation increasing in size and height towards mtg III, highest on anterior margin; laterally with deep depressions marking the apodemal impressions; deltg I+II fused to a triangular sclerite reaching anteriorly to midlength of mesonotum; deltg III–VII separated by sutures, lateral margins subparallel, rounded posteriorly, their surface with round

callosities on inner half, laterally rugose; posterolaterally produced tubercles of deltg VI and VII. Due to the displaced segments VIII+IX no structural details can be given.

Venter. Prosternum with a triangular median elevation, fused to meso- and metasternum and sternite II, fusion lines marked by transverse sutures; median plate of meso-metasternum and sternite II with a shallow depression; sternites III–VII separated by distinct sutures, surface of sternites III–VI smooth in middle, lateral parts and pleural regions of thorax with rugosities; spiracles II placed on a lateral tubercle and visible from above, III+IV sublateral and hardly visible, V lateral and visible, VI and VII apical on prominent posterolateral angles, VIII terminal on paratergites VIII.

Legs. Middle and hind femora with long preapical spines, tibiae cylindrical, tarsi two-segmented, claws with long pulvilli.

Measurements. Body length 5.1 mm; length / width ratio of mesonotum 0.5 / 1.6 mm, width of metanotum 1.55 mm; length / width ratio of mtg I+II 0.7 / 1.5 mm; length / width ratio of tergal plate 1.15 / 1.45 mm; width of abdomen across tergites: II – 2.25 mm, III – 2.30 mm, IV – 2.305 mm, V – 2.30 mm, VI – 2.1 mm, VII – 1.6 mm.

Differential diagnosis. Only one species is described in the apterous Carventinae genus *Tiomanaptera* (HEISS 2010b) – *T. malickyi* (Figs 2, 4, 7, 8) from the Tioman Island east of mainland Malaysia. The new species shares with that species the general habitus and femora armed with distinct preapical spines. It differs, however, from the latter in shorter genae, longer neck, strongly elevated median ridge of meso- and metanotum and fused mtg I+II, and in more distinct apodemal impressions on tergal plate.

Etymology. The species is named in honour of our friend and collector of this interesting species, Dr. Peter Schwendinger, curator at the Muséum d'histoire naturelle de la Ville de Genève.

Habitat. The single specimen of *T. schwendingeri* sp. nov. was sifted in primary rainforest close the footpath along tiny stream.

Distribution. West Malaysia, Perhentian Besar Island, largest island from group of Perhentian Islands.

Discussion

In Aradidae, the elongate cylindrical neck is shared only by the Oriental Carventinae genera *Apteraradus* and *Tiomanaptera*. Considering the variation in size and body structures among the 6 species of *Apteraradus* described to date (KORMILEV & FROESCHNER 1987), the striking difference between these two genera is in the presence of spines on middle and hind femora of both sexes in *Tiomanaptera*; they are missing in *Apteraradus*. As the new species was collected also on an island east of mainland Malaysia (Berhentian Besar is about 380 km northwest of Tioman Island, the original locality of *T. malickyi*), the question may be raised if the development of femoral spines was related to isolated island conditions, or further species with this character are yet to be discovered in rainforests of mainland Malaysia.

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