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A new genus and species of apterous Carventinae from Malaysia (Heteroptera, Aradidae)¹

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A b s t r a c t : A new genus of apterous Carventinae, *Tiomanaptera* nov.gen. with the type species *T. malickyi* nov.sp., from the Malaysian island Tioman is described and figured. This genus differs from all Oriental Carventinae by conspicuous preapical spines on the middle and hind femora of both sexes.

K e y w o r d s : Heteroptera, Aradidae, Carventinae, new genus, new species, apterous, Malaysia, Tioman.

Introduction

Only few apterous Carventinae genera are known to date from peninsular Malaysia with its still extended tropical rainforests: *Apteraradus* DRAKE 1957, *Kiritshenkiana* KORMILEV 1976, and *Morphocoris* KORMILEV 1977, 1980.

Now a new genus and species is described from Pulau Tioman, a rather small but densely forested island 32km east of the Malaysian east coast in the South China Sea. Apterous Aradidae occur only in habitats with a stable food source (fungal hypha), as is present in tropical rainforests. Because of a very limited range of potential distribution such taxa are mostly endemic to the area where they are found, which can be assumed also for *T. malickyi* nov.sp.

Material and methods

The type series was collected by the author already in 1992 when visiting Tioman Island for holidays and was preserved unmounted until recently. The usual incrustation covering the body of apterous Carventinae is very reduced in this species but was removed for the study of the abdominal fusion lines and structural details (see photos). The specimens are kept in the collection of the author.

Measurements were taken with a micrometer eyepiece, 20 units = 1 mm.

¹ Dedicated to my friend Hans Malicky on occasion of his 75th birthday and in recognition of his outstanding contributions to the knowledge of Palaearctic and Oriental Trichoptera.

Taxonomy

***Tiomanaptera* nov.gen.**

Type species: *Tiomanaptera malickyi* nov.sp.

D i a g n o s i s

The long slender neck region resembles strongly the Oriental genus *Apteraradus* DRAKE 1957. The new genus differs however by shorter antennae (ratio length of antennae / width of head 1.37-1.41 // 1.7-2.47 in *Apteraradus* spp.) and shorter neck (ratio length of neck from eyes to pronotum / width of head 1.46-1.58 // 1.7-2.0); by genae longer than antennal segment I (shorter in *Apteraradus*); mesonotum without granulate rounded lateral lobes; by middle- and hind femora with a preapical spine in both sexes (not developed in *Apteraradus*); and all spiracles lateral and visible from above (at most V-VII in *Apteraradus*).

D e s c r i p t i o n

Head: Distinctly longer than wide, genae producing over clypeus, contiguous in front; antennae about 1.4x as long as width of head, segment I shorter than genae; eyes large, oblong and inserted in head; vertex longitudinally raised at middle; neck long and narrow with parallel lateral margins; rostrum arising from a slit-like atrium shorter than head.

Pronotum: Anterior margin with a ring-like collar, posterior margin carinate and sinuate, anterolateral angles rounded and shorter than collar.

Mesonotum: Consisting of a rhomboidal median sclerite and 2 (1+1) lateral lobes, these separated from each other and from pro- and metanotum by deep sulci; their surface smooth with an anterolateral callus; lateral margins rounded.

Metanotum: Lateral subrectangular plates fused to mediotergites (mtg) I+II, anterolateral angles acute, disk smooth with few rugae.

Abdomen: MtgI fused to mtgII, anterior margin raised laterad of a median furrow, sloping posteriorly; lateral parts with a large ovate plate delimited by ring-like sulci; tergal plate formed by fused mtg III-VI with smooth surface and scar-like impressions marking the apodemal impressions; dorsal external laterotergites (deltg = connexivum) I+II fused, triangular, anteriorly reaching to posterior margin of pronotum; deltg II-VII separated by sulci, surface with irregular punctures; mtg VII raised medially, rugose laterally; spiracles II-VII lateral and visible from above; VII terminal on paratergites VIII.

Venter: Prosternum keel-like, basally with 2 (1+1) conical tubercles directed toward coxae; meso- and metasternum fused but a weak fusion line is visible, surface concave and each with 4 (2+2) conical tubercles in apposition to middle and hind coxae respectively; sternites I-III fused, IV-VII separated by deep furrows with the usual pattern of apodemal impressions.

Legs: Trochanters fused to femora; anterior femora unarmed, middle and hind femora with a large curved preapical spine; tarsi two-segmented with thin claws and long curved pseudopulvilli; preapical comb on anterior tibiae present.

Etymology: Refers to Tioman Island east of Malaysia, where this taxon was discovered.

***Tiomanaptera malickyi* nov.sp. (Fig. 1-3, Photo 1-4)**

H o l o t y p e : ♂, Malaysia, Pahang, Pulau Tioman, Telek rainforest 16-22 VI 1992 E. Heiss lg.;
p a r a t y p e s : 1 ♂, 2 ♀ collected with holotype.

D i a g n o s i s

The only species included so far in *Tiomanaptera* n.gen. can be recognised by the characters given in the generic description.

D e s c r i p t i o n

Male: apterous; colour uniformly dark brown with lighter antennal segments II-IV.

Head: Much longer than wide (27/17), ratio length of neck / width of head 1.54 (17/11); genae produced anteriorly over clypeus, contiguous and cleft at apex, antenniferous lobes finger-like, diverging anteriorly; antennae 1.41 x as long as width of head (24/17); segment I curved and thickest, II shortest and thin, gradually thickened anteriorly, III longest and cylindrical, pedunculate at base, IV fusiform and pilose at apex; length of antennal segments I/II/III/IV = 6.5/4.5/7/6; eyes oblong inserted in head; postocular lobes in a straight line converging to elongate cylindrical neck; vertex carinate and rugose, laterally delimited by a deep furrow; rostrum shorter than head, rostral groove with carinate lateral margins, closed posteriorly.

Pronotum: About 2.26x as wide as long (26/11.5), collar distinct, anterior margin straight, posterior one convex; surface smooth and feebly transversely elevated, separated by a furrow from subrectangular posterior lobe, the latter with slightly converging lateral margins and subrectangular anterolateral angles; posterior margin delimited by a distinct transverse carina separated from posterior pronotal lobe and mesonotum by a deep furrow; disk with a longitudinal sulcus at middle and 2 (1+1) larger and several smaller plates laterally.

Mesonotum: Median rhomboid plate posteriorly fused to metanotum and mtg I+II but separated by deep sulci anterolaterally from lateral ovate sclerites and posterolaterally from metanotal plates, its disk with a short deep median sulcus at base, the surface smooth and convex at middle; lateral ovate sclerites with 2 (1+1) inclined ridges anterolaterally, anterolateral margins rounded.

Metanotum: Fused to mtg I+II, the transverse fusion line marked by a thin sulcus; consisting of two subrectangular plates which are connected at middle, triangularly projecting anterolaterally; disk with smooth surface and few short furrows.

Abdomen: Mtg I+II fused, mtg I medially raised into transverse oval callosities separated at middle by a deep furrow; mtg II twice as long as mtg I, smooth and sloping medially toward tergal plate, lateral oval apodemal impressions surrounded by deep furrows; fused tergal plate only slightly raised medially, the usual apodemal impressions marked by sulci; mtg VII raised medially, deeply rugose laterally; deltg I-II fused and triangularly produced anteriorly reaching to pronotum; deltg III-V rectangular, VI trapezoidal, VII pentagonal; lateral margin feebly convex, posteroexterior angles of deltg II-V not projecting, of VI truncate and VII triangularly projecting posteriorly; spiracles II-V lateral and visible from above, those of deltg VI+VII dorsolateral on a triangular rim formed by the dorsally reflexed ventral laterotergites VI+VII and also visible from above, VIII terminal.

Genitalic structures: Pygophore of ovate outline, sloping posteriorly, median oval elevation with smaller, lateral parts with larger rugosities; parameres truncate at apex, this depressed at middle and a finger-like twisted extension at base (Fig. 1-3).

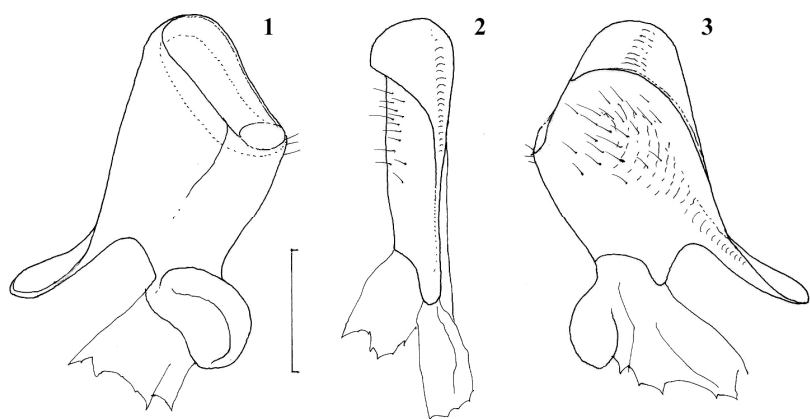


Fig. 1-3: *Tiomanaptera malickyi* n.gen., nov.sp., left paramer in different positions; scale 0.1 mm.

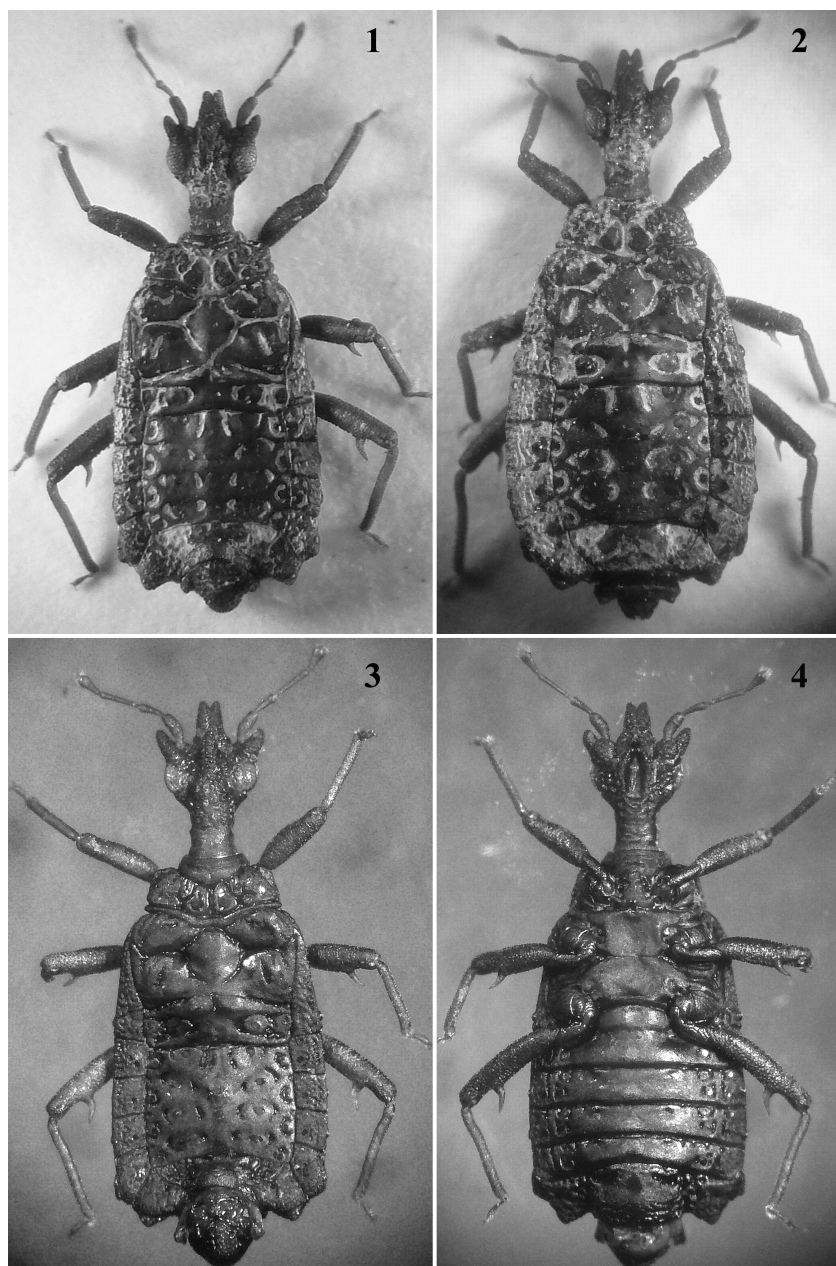


Photo 1-4: *Tiomanaptera malickyi* n.gen., nov.sp.; (1) holotype male, dorsal view with incrustation; (2) paratype female, dorsal view; (3) paratype male incrustation removed; (4) ditto ventral view.

Female: Generally as the male but of larger size, abdomen wider and more rounded and attenuated anteriorly; tergite VIII 5x as wide as long, tergite IX triangular, tergite X feebly projecting over tergite IX, cleft at middle.

Measurements. Holotype male: Length 4.95mm; width of abdomen across tergite V 1.85mm; paratype male, length 5.4mm, width of pronotum 1.35mm, width of abdomen 2.1mm. Females: Paratypes length 5.9/6.0mm; ratio length of neck / width of head 1.58/1.50mm; ratio length of antennae / width of head 1.37/1.37; width of pronotum 1.45/1.47mm; width of abdomen across tergite V 2.6/2.55mm.

E t y m o l o g y

Named to honour my friend Hans Malicky.

L a r v a l s t a g e V (Photo 5)

The two specimens collected with the type series are assumed to belong to *Tiomanaptera* as well, showing the same abdominal structure of fused sclerites; the larger one might develop into a female, the smaller one into a male specimen.

S h o r t d e s c r i p t i o n

Larger specimen. Uniformly dark brown; antennal segments II- IV anterior and posterior margin of pronotum and tarsi yellowish; surface of body and appendages finely granulate.

Head: Slightly shorter than wide (20/21); antenniferous lobes diverging anteriorly with blunt apex; genae finger-like produced over clypeus and longer than antennal segment I, apex cleft; antennae stout 1.48x as long as width of head (31/21), segment I thickest and cylindrical, II shortest, thinner and gradually thickening apically, III pedunculate, IV fusiform with pilose apex; length of antennal segments I/II/III/IV = 10/6.5/7.5/7; eyes inserted in head, postocular lobes large and as long as eye reaching to outer margins of the latter; neck region not developed.

Pronotum: Trapezoidal, lateral margins strongly converging anteriorly, subapical with a carinate elevation; posterior margin sinuate; a distinct longitudinal suture extends from the anterior margin of pronotum to posterior margin of mtg II.

Mesonotum: Consisting of a median subrectangular sclerite and 2 (1+1) lateral plates, these raised at lateral margin; posterior margin sinuate.

Metanotum: Median sclerite is the width of mesonotum, lateral plates ovate; lateral margins straight and slightly carinate.

Abdomen: Posterior margin of tergite I raised medially where it is widest, sloping toward metanotum, tergite II consists of two transverse plates at a lower level than tergite I lateral of median suture, bearing 4 (2+2) granulate apodemal impressions; tergites III-VI fused medially but separated laterally by sutures, surface with typical pattern of apodemal impressions (2:2:1); tergite VII-IX semicircular, X knob-like; spiracles II-V sublateral but not visible from



Photo 5: *Tiomanaptera malickyi*
n.gen., nov.sp., larval stage V.

above, VI and VII dorsolateral placed on dorsally reflexed rim of ventral laterotergites, VIII terminal.

Legs: Femora and tibiae cylindrical, unarmed; claws with curved thin pseudopulvilli.

Measurements: Length 5.2mm; length / width of pronotum 12/35.5; width across tergite I+II 40, across tergite IV 42; length of the second specimen 4.3mm.

Discussion

The most striking characters of the adults – the elongate neck and the subapical spines of middle and hind femora are not yet developed. Other structural details as the genae longer than clypeus and antennal segment I, the already separated median sclerite of mesonotum, and the position of spiracles VI and VII are a strong evidence, that the larval stage belongs to the same taxon.

Acknowledgments

For the linguistic improvement of the article I thank my friend Carl W. Schaefer (Storrs, USA).

Zusammenfassung

Von der Malaysischen Insel Tioman wird eine neue aptere Gattung der Unterfamilie Carventinae: *Tiomanaptera* n.gen. mit der Typusart *T. malickyi* nov.sp. beschrieben und abgebildet. Diese Gattung unterscheidet sich von allen bekannten Gattungen Orientalischer Carventinae allein durch die auffallende Ausbildung eines preapikalen Dorns an den Schenkeln der Mittel- und Hinterbeine bei beiden Geschlechtern.

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