

Stysiofulvius, a new genus of Cylapinae
(Hemiptera: Heteroptera: Miridae)
from the Peninsular Malaysia

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Abstract. *Stysiofulvius* gen. nov., a new genus, and *S. hulinkai* sp. nov., a new species of the plant bug subfamily Cylapinae are described from Malaysia. Illustrations of the dorsal habitus of the male and genitalic structures of both sexes are given.

Key words. Heteroptera, Miridae, Cylapinae, taxonomy, new genus, new species, Malaysia

Introduction

Members of the mirid subfamily Cylapinae are known to occur predominantly in tropical and subtropical regions of the world. More than 360 described species in 80 genera are known in this subfamily (HENRY & PAULA 2004, GORCZYCA 2006, MOULDS & CASSIS 2006, GORCZYCA & WOLSKI 2007). Most of them are reported from the Neotropical, Oriental and Afrotropical Regions. Their biology, distribution pattern and taxonomic richness are still in great need of investigation. Every year new taxa of Cylapinae are described from various warm regions of the World.

Many of them inhabit rotten logs covered with fungi or bark of fallen trees. Some are collected on orchids and other flowers. Although cylapines are considered mycophagous and/or zoophagous, their biology is little known (WHEELER 2001, GORCZYCA 2006, YASUNAGA & MIYAMOTO 2006).

Within the material collected in Malaysia and preserved in the Naturhistorisches Museum in Vienna, the senior author found five specimens of the subfamily Cylapinae which represent a new genus and a new species. The descriptions of the new taxa are given below.

Taxonomy

Stysiofulvius gen. nov.

Type species. *Stysiofulvius hulinkai* sp. nov., here designated.

Description. Macropterous. Body stout, smooth, covered with fine setae.

Head contiguous with the anterior margin of pronotum. Frons flat; clypeus short and narrow; vertex with an occipital carina. Antennae inserted on small tubercles contiguous with the inner margin of eyes. First antennal segment thin, short, thickened towards apex; second antennal segment club-like, covered with thick setae; third and fourth segments thin, covered with fine long and short protruding setae; fourth antennal segment divided medially. Rostrum relatively long, reaching beyond metacoxae; first segment distinctly thicker than second.

Pronotum broad, anterior lobe of pronotum convex, with a small, longitudinal sulcus in the middle, posterior and lateral margins rounded, humeral angles slightly elevated. Anterior angles with a small tubercle bearing a long bristle. Mesoscutum well exposed; scutellum slightly convex.

Hemelytra lacking wide and deep punctation but provided with small orange yellow callosities or patches, covered with fine setae; medial fracture and R + M very short (Fig. 1); costal fracture distinct; cuneus short, broad.

Ventral surfaces. Forefemora enlarged, covered with a row of thick protruding setae in the inner part; meso- and metafemora covered with dense, short setae. Meso- and metafemora bearing only three and four trichobothria respectively. Tibiae and tarsi covered with short setae. Tarsi two-segmented, first segment very short, second segment divided by an oblique suture; claws with a very small, hardly visible subapical tooth.

Male genitalia. Parameres distinctly asymmetrical; phallus membranous, with sclerotised spiculi (Figs. 2-4).

Female genitalia. Vagina complex including numerous sclerites. Inter-ramal sclerites (= A- structures) transversally subdivided by a membranous area.

Etymology. This genus is dedicated to our friend Prof. Pavel Štys in recognition of his invaluable contribution to the study of Heteroptera. It is named for Štys in combination with ‘-fulvius’.

Stysiofulvius hulinkai sp. nov.

(Figs. 1-7)

Type locality. West Malaysia, Perak State, Banjaran Titi Wangsa Ringlet.

Type material. HOLOTYPE: ♂, ‘Holotype *Stysiofulvius hulinkai* n. gen. n. sp. // Malaysia W., Perak / 40 km SE of Ipoh / 900 m, Banjaran Titi Wangsa Ringlet, 29 iii – 15 iv. 2004 / Čechovský Petr Igt.’ (Naturhistorisches Museum in Vienna, Austria). PARATYPES: ♂, ‘Paratype *Stysiofulvius hulinkai* n. gen. n. sp.’ // same data as holotype (Coll. Department of Zoology, University of Silesia, Katowice, Poland); ♀, ‘Paratype *Stysiofulvius hulinkai* n. gen. n. sp. // Malaysia West, Pahang, Cameron Highlands, Tanah Rata, 1200-1500 m, 3. ii. – 19. ii. 2005, Čechovský Petr Igt.’ (Department of Zoology, University of Silesia, Katowice, Poland); ♂ ♀, ‘Paratype *Stysiofulvius hulinkai* n. gen. n. sp. // Malaysia W., Kelantan / Road between Kampong Raja / and Gua Musang 1400 – 1700 m / (Ladang Pandrak), 1.-28. iv.2006 / 4°62' N - 101°45' E / 4°88' N - 101°95' E. / Čechovský Petr Igt.’ (Naturhistorisches Museum in Vienna, Austria).

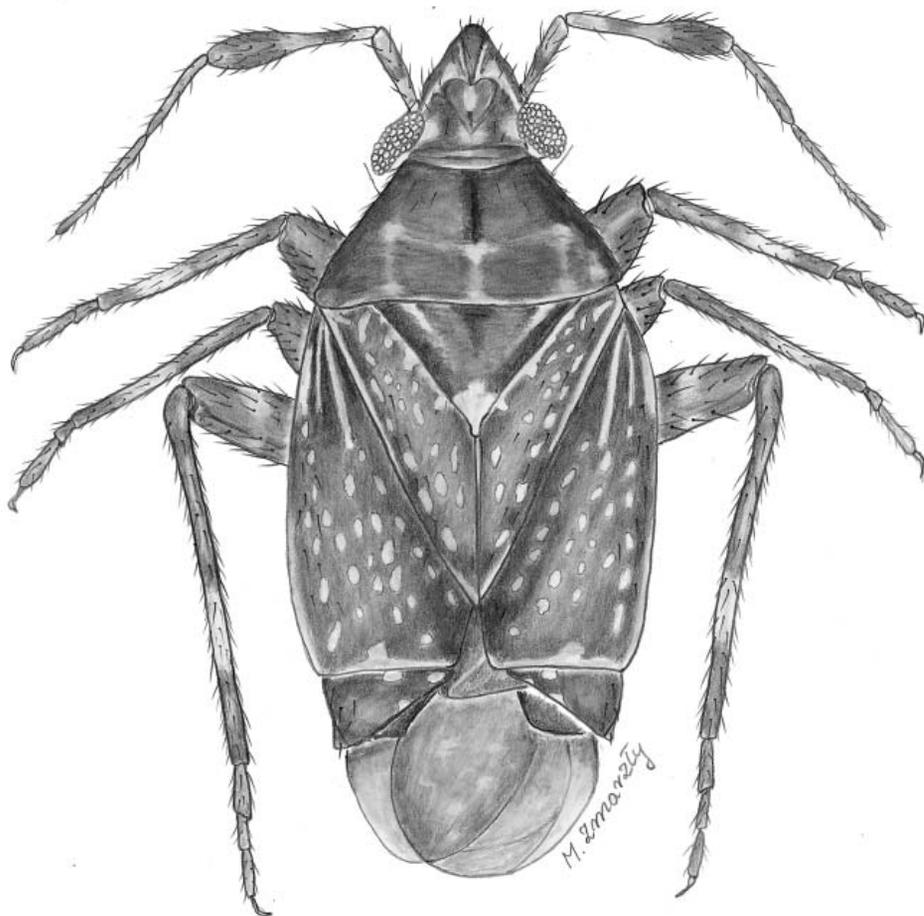
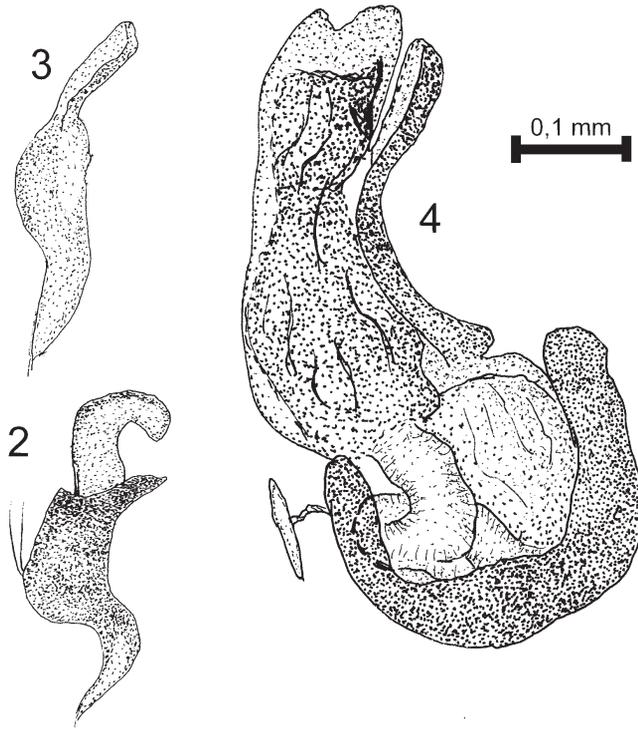


Fig. 1. *Stysiofulvius hulinkai* gen. nov. and sp. nov. Male (holotype), dorsal habitus.

Description. Male. Body dark brown with yellow spots, lines and patches. Length of the body 3.0-3.12 mm, width 1.32-1.34 mm.

Head dark brown with four pale dots on vertex and frons and a W-shaped pale line above clypeus. Clypeus, maxillary and mandibular plates brown with small pale patches. Length of head 0.45 mm, width 0.70 mm, diameter of eye 0.20 mm. First antennal segment pale at base, then pale brown, apical part covered with pale and brown setae. Second segment pale brown at base and apex, covered with dense, dark setae. Third and fourth segments thin, dark, covered with long brown and short pale setae. Lengths of first to fourth antennal segments in mm: 0.30 : 0.64 : 0.44 : 0.42. First rostral segment chestnut; remaining segments dark brown.



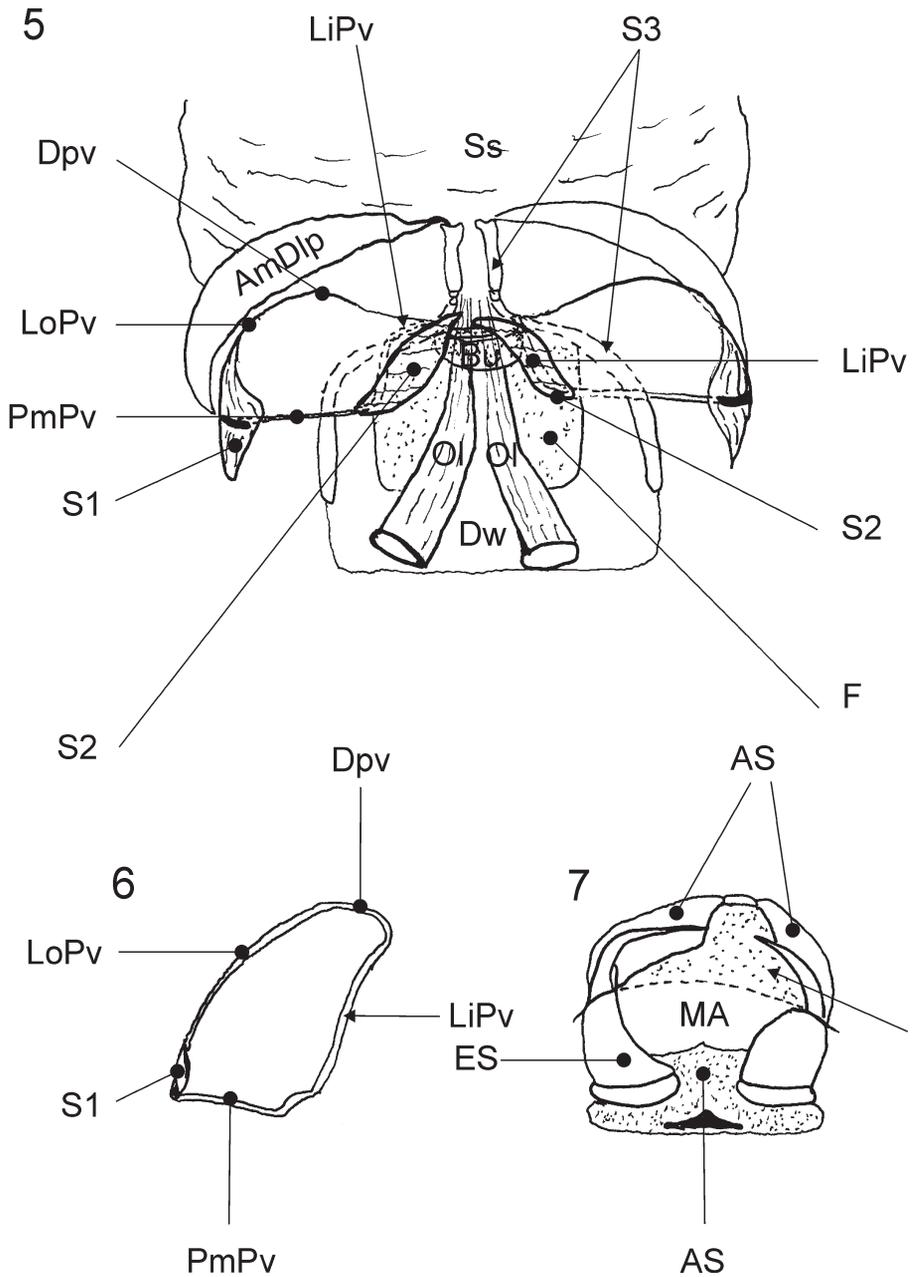
Figs. 2-4. *Stysiofulvius hulinkai* gen. nov. and sp. nov. Male genitalia (paratype). 2 – left paramere; 3 – right paramere; 4 – phallus.

Pronotum. Anterior lobe of pronotum dark brown, only the anterior margin with a thin, yellow stripe, posterior lobe dark brown, sometimes slightly tinged with red, with six short, pale, longitudinal stripes. Length of pronotum 0.52 mm, length of anterior margin 0.55 mm, lateral margins 0.50 mm, posterior margin 1.05-1.07 mm.

Mesoscutum dark brown, paler on sides. **Scutellum** dark brown, shining, with pale yellow apex.

Hemelytra dark brown, with numerous small, pale yellow spots and patches. Medial fracture, R + M, margin of corium and claval suture pale yellow apically. Clavus dark brown with numerous small spots; margins along scutellum pale. Clavus brown, pale at apex, with a pale transverse line along costal fracture. Membrane dark grey; venation dark; major cell rounded; minor cell indistinct in all available specimens.

Ventral surfaces. Body dark brown ventrally, coxae and trochanters dark brown; femora brown with a paler patch near the apical part, apex sometimes tinged with red. Tibiae brown, darker than femora, with a contrasting pale, broad ring near the apical part (Fig. 1); tarsi pale brown.



Figs. 5-7. *Stysiofulvius hulinkai* gen. nov. and sp. nov. Female genitalia (paratype). 5 – vagina in dorsal view (abbreviations in the text); 6 – parieto-vaginal ring in latero-dorsal view; 7 – posterior wall in so-called dorsal view.

Male genitalia. Left paramere with a small sharp process; right paramere slender (Figs. 2-3). Phallus membranous, with sclerotized spiculi (Fig. 4).

Female. Similar to male. Length of the body 3.12 mm, width 1.52 mm. Length of head 0.50 mm, width 0.75 mm, diameter of eyes 0.17 mm. Lengths of antennal segments in mm: 0.30 : 0.55 : 0.57 (fourth segment broken in the specimens examined). Length of pronotum 0.62 mm, length of anterior margin 0.57 mm, lateral margins 0.52 mm, posterior margin 1.12 mm.

Female genitalia. Vagina particularly complex (Fig. 5), including numerous sclerites. Parieto-vaginal rings difficult to see in dorsal view, classical in latero-dorsal view (Fig. 6). Posterior margin (PmPv) of each ring narrow, its outer extremity in dorsal view partially hidden by a wide sclerites (S1). Latero-outer margin (LoPv) narrow, probably forming wide sclerites S1 posteriorly. Dorsal margin (Dpv) narrow, narrower on its inner part. Latero-inner margin (LiPv) relatively wide, sigmoid, partially hidden in dorsal view by a sclerite (S2) also partially obscuring the bulb. Dorsal wall (Dw) large, with two fields (F) of small teeth. Lateral oviducts (Ol) elongated. Dorsal wall lined by a complex of sclerites S3, partially hidden in dorsal view by parieto-vaginal ring and sclerites S2. A short and narrow sclerite S4 in dorsal view seems to join together the sclerites S2. Anterior or seminal sac (Ss) large, lacking sclerites. Anterior margin of dorsal labiate plate (AmDLP) very wide. Posterior wall (Fig. 7) very unique in shape. Inter-ramal sclerites (= A structures, AS) transversally subdivided by a membranous area (MA). Inter-ramal sclerites not subdivided longitudinally by a median process (= B structure), in the so-called dorsal part of the wall (below on our Fig. 7) but subdivided in the so-called ventral part (arrow). Inter-ramal lobes (= E structures, ES) large. Lateral lobe (= H structure) absent.

Etymology. This species is dedicated to Jacek Hulinka, a friend of the senior author.

Distribution. West Malaysia.

Discussion

The relationships of the new genus in the tribe Fulviini are still unclear. The new genus is superficially similar to *Peritropis* Uhler, 1891 and *Teratofulvidius* Gorczyca & Chérot, 2001 in its habitus. *Stysiofulvius* gen. nov., however, can be easily distinguished from the former by the club-like second antennal segment (Fig. 1) and from the latter by the hemelytra lacking the wide and deep punctation but provided with small orange yellow callosites or patches.

Asymmetrical parameres and membranous phallus with spicula are not uncommon in Cylapinae, particularly in the genus *Fulvius*, the largest genus of the tribe Fulviini. In the absence of robust phylogenetic hypotheses, these male genital character states do not help to assess relationships of *Stysiofulvius*.

By its female genital structures *Stysiofulvius* could be hypothesized as close to the *Cylapofulvius*-group of genera (CHÉROT & GORCZYCA 1999). Unfortunately, it is particularly difficult to homologize the different sclerites of female genital structures. GORCZYCA & CHÉROT (1998) described two paired sclerites of the medio-posterior lobe of the vagina of several

Rhinomiridius Poppius, 1909 species: the so-called inner- and outer dorso-lateral plates (cf. also SADOWSKA-WODA et al. 2006: 618, Fig. 1). CHÉROT & GORCZYCA (1999) homologized both *Cylapofulvius*' and *Cylapofulvidius*' paired sclerites with *Rhinomiridius*' outer dorso-lateral plates. However, because only one paired sclerite is present in *Cylapofulvius* and *Cylapofulvidius*, the sclerites could be outer- or inner dorso-lateral plates. The absence of a second paired sclerite made a topological comparison impossible.

Sclerite S2 of *Stysiofulvius* could be homologous to the so-called outer dorso-lateral plate of several *Cylapofulvidius* species (for example *C. thailandicus* Chérot & Gorczyca, 1999 and *C. lineolatus* Chérot & Gorczyca, 1999, cf. CHÉROT & GORCZYCA 1999: 220, Figs. 20-21 and corresponding text) or homologous to the inner dorso-lateral plate of *Rhinomiridius* species (cf. GORCZYCA & CHÉROT 1998: 52, Figs. 89-91) by its relative position and shape.

Sclerite S3 of *Stysiofulvius* could be homologous to the outer dorso-lateral plate of *Rhinomiridius* species and S4 homologous to the dorso-medial plate of the same genus.

The posterior wall of the bursa copulatrix is still more problematical because it is normally a membranous structure in the Cylapinae and lacks noticeable sclerites, or provided with several teeth or reinforced margins. In some species of *Vannius*-complex *sensu* CASSIS et al. 2003 (particularly in the genera *Austrovannius* Cassis, Schwartz & Moulds, 2003 and *Vannusoides* Carvalho & Lorenzato, 1978, cf. CASSIS et al. 2003), it is possible to recognize two parts in the posterior wall: the inter-ramal sclerites and inter-ramal lobes *sensu* DAVIS (1955) [A and E structures *sensu* SLATER (1950)]. In *Rhinomirini*, by contrast, it is possible to recognize the inter-ramal sclerites, the median process and the posterior plate of the dorsal structure, however, the inter-ramal lobes are lacking. In some *Fulviini* (the genera *Punctifulvius* Schmitz, 1978 and *Yamatofulvius* Yasunaga, 2000, cf. YASUNAGA 2000) it is possible to recognize the inter-ramal sclerite and the median structure (for a thorough discussion of female genital structures in Cylapinae see SADOWSKA-WODA et al. (2006)). In the new genus, it is also possible to recognize at least two different sclerites: the inter-ramal sclerites and the inter-ramal lobes as in some species of *Vannius*-complex, but the former structures are atypically divided and a part of the median structure is probably present.

In the absence of a good phylogenetic hypothesis for the genera of the tribe *Fulviini*, we cannot test our suggestions of primary homologies. Additional studies are needed to clarify relationships in the tribe.

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