A revisional study on Szépligeti’s cardiochiline type specimens deposited in the Hungarian Natural History Museum, Budapest (Hymenoptera, Braconidae: Cardiochilinae)*

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Abstract – Types of eleven cardiochiline braconid species described by Győző Szépligeti between 1902 and 1914 are revised and redescribed. The species are assigned to five genera of the subfamily Cardiochilinae. Schoenlandella Cameron, 1904 is treated as the subgenus Cardiochiles Nees, 1818 (stat. n.). Taxonomic positions of the genera Austerocardiochiles, Heteropteron, Psilommiscus and Wesmaelella are discussed. Psilommiscus albopilosus (Szépligeti, 1902) is a senior name over P. sumatratus (Enderlein, 1912). Two new combinations are introduced: Austerocardiochiles punctatus (Szépligeti, 1913) and Psilommiscus albopilosus (Szépligeti, 1902). A checklist of Szépligeti’s eleven species is given supplemented with the examined type specimens. With 171 figures.

Key words – Austerocardiochiles, Cardiochiles, checklist, distribution, Heteropteron, Neocardiochiles, Psilommiscus, Psilophthalimus, redescription, Schoenlandella, taxonomic position, Toxoneuron, Wesmaelella

INTRODUCTION

Győző (= Victor) Szépligeti (1833–1915), a high school biology teacher in Budapest (he changed his family name from Schönbauer in 1870), started to work on ichneumon and braconid wasps (Ichneumonidae, Braconidae) and on other smaller wasp families following the advice of Sándor Mocsáry, curator of the Hymenoptera Collection of the Hungarian National Museum at that time (Csiki 1915). Szépligeti published 61 entomological papers, describing 886 new species of Hymenoptera. He donated his insect collection to the National Museum, and it is still preserved today in the Hungarian Natural History Museum.

Between 1902 and 1914 Szépligeti described eleven new cardiochiline braconid species from several tropical countries in the Old and New Worlds. Originally Szépligeti arranged his species in four genera: Cardiochiles Nees, 1818, Psilommiscus, Psilophthalimus, Schoenlandella.

* The paper is dedicated to Dr László Móczár, doyen of Hungarian hymenopterists, celebrating his 100th birthday.
Neocardiocichiles Szépligeti, 1908, Toxoneuron Say, 1836 and Psilophthalmus Szépligeti, 1902 – later Neocardiocichiles and Psilophthalmus were placed in junior synonymy with Heteropteron Brullé, 1846 and Wesmaelella Spinola, 1853, respectively. The type specimens of the eleven species are deposited in the Hymenoptera Collection of the Hungarian Natural History Museum, Budapest.

The original descriptions by Szépligeti are quite short, focused on the colour pattern, a few alar venation forms and rather less specific sculptural features. In the redescriptions of Szépligeti’s cardiochiline species those specific differences were mainly considered that comply the requirements of the up-to-date taxonomic description of the braconids. The length of the descriptions given by Szépligeti counts usually 6 to 10, rarely 20 to 30, printed lines. In the recent taxonomic practice the (re-)descriptions of braconid species are usually extending the length to at least 30–50, frequently 60–70, printed lines.

Taxonomic status of the genus Schoenlandella – The genus Cardiocichiles was described by Nees in 1818 and the genus Schoenlandella by Cameron in 1904. Schoenlandella differs from Cardiocichiles by a single and very subtle feature of the forewing venation: in Cardiocichiles SR1 missing 3r (Fig. 80, see arrow), in Schoenlandella SR1 with a short vein 3r (Figs 52, 60, 66, see arrow) “present as a spectral trace” (Dangerfield et al. 1999: 955), the vein SR1 itself is more or less angled from where 3r is ramifying. As complementary marks to the absence or presence of 3r are (1) hypopygium medio-longitudinally evenly sclerotized (i.e. here not membranous) or more or less desclerotized (i.e. here membranous) and (2) mouthparts (glossa, galea) not elongated or slightly elongated. Presence or absence of these three features is unstable, i.e. their presence varies from well to nebulous visibility even in the specimens of the same species. The uncertainty of the discrimination of the genera Cardiocichiles and Schoenlandella led to the statement by Mercado & Wharton (2003: 878) that: “None of the New World species we have seen resembles the typical Schoenlandella in all respects, and assignment of New World species to this genus thus remains problematic.” The authors present a detailed analysis of the three features (in nearly two printed pages) before they declare their statement. As a consequence, in full agreement with the statement and seeing the high variability of the generic features of Schoenlandella, I assign the taxon Schoenlandella as a subgenus of Cardiocichiles (stat. n.). The respective five Szépligeti’s species are re-arranged following their subgeneric assignment: Cardiocichiles (Cardiocichiles) fuscipennis, C. (Schoenlandella) niger, C. (Sch.) szepligetii, C. (C.) variegatus and C. (C.) xanthocarpus. Dangerfield et al. (1999: 936, 954–959, 966) are of the opinion that Schoenlandella is a valid (“good”) genus and arranged the five Szépligeti’s species as follows: niger, szepligetii and variegatus belong to the genus Schoenlandella, fuscipennis to Cardiocichiles and xanthocarpus is “incertae sedis”.

The females of three Szépligeti’s species are described: *Austerocardiochiles enderleini* (Szépligeti), *Cardiochiles (Schoenlandella) szepligetii* Enderlein and *Psilommiscus albopilosus* (Szépligeti).

Two species are placed in new combination (comb. n.): *Austerocardiochiles punctatus* (Szépligeti) and *Psilommiscus albopilosus* (Szépligeti).

The subsequent checklist summarizes the present taxonomic status of the eleven cardiochiline species by Szépligeti. Besides the usual data (taxonomic name, author, original generic name, distribution) the examined types as well as the number of further specimens (female, male) are also added.

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REDESCRIPTIONS OF THE CARDIOCHILINE SPECIES BY SZÉPLIGETI

The following abbreviations are applied in the redescriptions (after van Achterberg 1993: 5, Figs H–K):

Eye: OOL = shortest distance between hind ocellus and compound eye. POL = shortest distance between hind two ocelli.

Forewing venation: \( cu-a \) = nervulus or transverse cubito-anal vein, \( m-cu \) = nervus recurrens or transverse medio-cubital vein, \( r \) = transverse or first section of the radial vein, \( r-m \) = second transverse radio-medial vein, \( SR1 \) = third section of the radial vein, \( I-CU1 \) and \( 2-CU1 \) = first and second sections of the discoidal vein, \( I-M \) = basal vein, \( I-RI \) = first section of the metacarpal vein, \( I- \)
SR–M = first section of the median vein, 2A = first transverse anal vein, 2–SR = first transverse section of the radial vein, 3r = spectral trace (or “nebulous”) vein of the third section of the radial vein, 3–SR = second section of the radial vein.

Hind wing venation: cu–a = nervellus, r = transverse radial-anal vein, 1–SR and 2–SR = first and second sections of the radial-anal vein.

Surface sculpture terminology is used after Eady (1968) and Harris (1979).


Where not indicated the distributional data were applied after Yu et al. (2012).

Type depositories: HNHM = Hungarian Natural History Museum (Magyar Természettudományi Múzeum), Budapest; ZMB = Museum für Naturkunde – Leibniz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin.

Austerocardiochiles Dangerfield, Austin et Whitfield


Remarks – From the 15 cardiochiline genera the species of Austerocardiochiles are easy to recognize and discriminate by their strong corporal sculpture. For further characterisation of the genus see Dangerfield et al. (1999).

Austerocardiochiles enderleini (Szépligeti) (Figs 1–13)


Austerocardiochiles enderleini (Szépligeti, 1908): Dangerfield et al. 1999: 931 and 975 (comb. n.).

Lectotype labels – (First label, printed) “Africa or. / Katona” [= K. Kittenberger]; (second label, printed) “Mto-ja Kifaru”, (reverse of second label, handwritten) “1905 I.”; (third label, printed) “Tanzania”; fourth label is the lectotype tag; fifth label is with the inventory number 763.

Redescription of the male lectotype – Body length 8 mm. Antenna shorter than body: as long as head, mesosoma and half metasoma combined. First flagellomere 1.4 times as long as broad, further flagellomeres shortening so that last 10–12 flagellomeres cubic. – Head in dorsal view transverse (Fig. 1), twice as broad as long, eye as long as temple, temple swollen (i.e. head between temples broader than between eyes). Eye hairy, in lateral view 1.8 times as high as wide, gena and eye equally wide (Fig. 2, see arrows). Face 1.75 times as wide as high, in-
ner margin of eyes parallel. Clypeus twice as wide as high, its lower edge medially somewhat produced and here with a pair of denticules (Fig. 3). Rostrum short. Face and clypeus densely rugulose, gena rugose, frons transversely strio-rugulose, vertex with rugulae-rugae and interspaces shiny.

Mesosoma in lateral view 1.4 times as long as high. Pronotum missing. Notaulix evenly deep, smooth, meeting posteriorly. Mesoscutum roughly, scutellum

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Figs 1–13. *Austerocardiochiles enderleini* (Szépligeti, 1908) (1–11: male lectotype, 12–13: female): 1 = head in dorsal view, 2 = head in lateral view, 3 = clypeus, 4 = mesoscutum and scutellum in dorsal view, 5 = dorsal contour of scutellum in lateral view, 6 = V-form carinulation of propodeum, 7 = hind femur, 8 = claw, 9 = distal part of right forewing, 10 = first discal cell, 11 = tergites 1–3, 12 = head in dorsal view, 13 = hind femur
less roughly punctate (Fig. 4), scutellum not bordered by carina, apically weakly pointed (Fig. 5). Mesopleuron finely and less confluentely punctate, precoxal suture crenulated, anteriorly of it fairly densely punctulate, posteriorly smooth and shiny (cf. Fig. 32). Propodeum with a horizontal and vertical part, rather rugulose and pubescent horizontally, vertically above lunule with a V-form carinulation (Fig. 6). – Hind femur thick, 2.4 times as long as broad medially (Fig. 7). Inner spur of hind tibia half as long as basitarsus. Claw downcurved, basal lobe pectinulate as in Figure 8.

Forewing somewhat shorter than body, 6.5 mm long. Pterostigma (Fig. 9) 3.6 times as long as wide and issuing \( r \) distally from its middle, \( r \) 0.6 times as long as width of pterostigma. Second submarginal cell: \( 3–SR \) almost 1.5 times as long as \( 2–SR \), both veins (weakly) bent, \( SRI \) not broken. First discal cell (Fig. 10) fairly high, \( I–M \) 3.3 times longer than very short \( m–cu \), \( I–SR–M \) bent and 1.6 times as long as \( I–M \).

First tergite (Fig. 11) slightly longer than broad at rear (40:35), distinctely broadening posteriorly, scutum nearly round, margin of tergite 1 narrow, scutum rugo-rugulose with fairly much striolate elements. Second tergite narrow, 4.5 times as broad as long medially, third tergite 2.3 times longer than second tergite, suture between tergites 2–3 distinct, smooth; tergites (beyond second tergite) pubescent.

Ground colour of body black. Testaceous: pronotum, mesoscutum, scutellum, meso- and metapleuron, hind half of propodeum and first tergite basally and laterally. Legs also black. Wings proximally hyaline, distally brownish fumous. Pterostigma and metacarp brown, veins light brownish.

**Description of the female** – (1 \( q \)) Similar to male lectotype. Body 6.5 mm long. Antenna shorter than body and with 35 antennomeres. Head in dorsal view 1.85 times as broad as long, eye somewhat longer than temple (17:15), temple indistinctly swollen (Fig. 12). Sculpture of head and mesosoma somewhat stronger. Hind femur less thick, 2.5 times as long as broad medially (Fig. 13). First tergite 1.25 times as long as broad at rear, less broadening posteriorly. Hypopygium pointed, ovipositor sheath posteriorly widening and apically truncate, as long as hind tibia. Body black, testaceous: pronotum laterally, mesoscutum, scutellum, mesopleuron partly and metanotum. – Locality of the single female: "N. Tanganyika, Same, Mai 1962" (HNHM).

Host unknown.

**Distribution** – Kenya, Tanzania.

**Taxonomic position** – *Austerocardiochiles enderleini* is nearest to *A. rufithorax* (Enderlein) considering their rugose head and mesosoma and testaceous colour of mesosoma; the males of the two species are clearly separable by the features keyed:
Austerocardiochiles punctatus (Szépligeti) is also close to A. enderleini, their distinction see at the first species.

Austerocardiochiles punctatus (Szépligeti), comb. n.
(Figs 14–28)


Schoenlandella punctata (Szépligeti, 1913): Dangerfield et al. 1999: 959, 976 (comb. n.)

Taxonomic remarks – Although the forewing SR1 is with a spectral trace (“nebulous”) 3r the species, however, is assigned to the genus Austerocardiochiles considering its general corporal build and strongly sculptured mesosoma (Fig. 17).

Lectotype labels – (First label, printed) “Arusha / 1905 X.”; (second label, printed) “Africa or. / Katona” [= K. Kittenberger]; (third label, printed) “Tanzania”; fourth label is the lectotype card; fifth label is with inventory number 774.

Male lectotype – (Additional features to the redescription by Huddleston & Walker 1988.) Body length 6 mm. Antenna apically deficient: right antenna with 35 and left antenna with 34 antennomeres. First flagellomere 1.6 times as long as broad, further flagellomeres shortening so that distal flagellomeres cubic. – Head in dorsal view transverse (Fig. 14), 1.8 times as broad as long, eye almost twice longer than temple (21:11), temple contracted, occiput excavated. Ocelli middle-sized, almost round, OOL three times as long as POL. Eye in lateral view 2.3 times as high as wide, temple just narrower than eye (14:15) and ventrally slightly narrowing (Fig. 15, see arrows). Lower edge of clypeus medially with weak (hardly distinct) excision, i.e. without small denticules, clypeus itself twice as wide below as high medially (Fig. 16). Rostrum long, as long as fore tarsomeres 1–2 combined. Face with more or less confluent punctuation, clypeus with weaker punctuation and shiny. Gena dorso-ventrally with weakening punctation to almost polished. Head above with fine transverse striolation.

Mesosoma in lateral view 1.2 times as long as high. Pronotaulix evenly deep and subcrenulated. Middle lobe of mesoscutum with a pair of weak longitudinal grooves; mesoscutum and scutellum densely punctate (Fig. 17). Propodeum medially with a quadrangular area (Fig. 18). Hind femur 2.8 times as long as broad medially (Fig. 19). Inner spur of hind tibia 0.75 times as long as basitarsus. Claw downcurved and pectinulates somewhat thick (Fig. 20).

Forewing as long as body. Pterostigma (Fig. 21) 2.8 times as long as wide, issuing \( r \) clearly distally from its middle, \( r 0.7 \) times as long as width of pterostigma. Second submarginal cell: \( 3–SR \) 1.7 times as long as \( 2–SR \), \( 2–SR \) bent and \( 3–SR \) straight, \( SRI \) curved (i.e. not broken) and with vein 3r very weakly distinct ("nebulous", Fig. 21, see arrow). First discal cell: \( 1–M \) straight and almost 3 times as long as short \( m–cu \), \( 1–SR–M \) straight and 1.8 times as long as \( 1–M \) (Fig. 22).

First tergite (Fig. 23) as long as broad at rear, clearly broadening posteriorly, scutum behind rugulose. Second tergite 2.5 times as broad behind as long medially, 3rd tergite 1.5 times longer than 2nd tergite, suture between them distinct, smooth, straight; both tergites medially just uneven. Further tergites polished.

Ground colour of body yellow. Antenna, ocellar field and three maculate of mesoscutum black. Legs yellow, tarsi 1–2 brownish fumous, tarsus 3 blackish. Wings evenly brownish fumous. Pterostigma: basal half yellow, distal half brown; metacarp yellow, veins proximo-distally yellowish to brownish.

**Differing features of three males** — Body length 5.5–6 mm. Antenna with 36 (1 \( \sigma \)) and 44 (1 \( \sigma \)) antennomeres. Head in dorsal view twice as broad as long (1 \( \sigma \)). Hind femur 2.6 times (1 \( \sigma \), cf. Fig. 13) and 3.1 times (1 \( \sigma \)) as long as broad. First tergite 1.6 times as long as broad and its lateral margin very narrow (Fig. 25); first tergite 1.5 times as long as broad posteriorly and its lateral margin wide (Fig. 26). Body entirely yellow (1 \( \sigma \)).

**Differing features of four females** — Body length 5.5 mm. Antenna with 40–44 antennomeres. Sculpture of body weak (1 \( q \)). Hind femur 2.6 times (cf. Fig. 13) and 3.1 times (Fig. 24) as long as broad medially. Forewing: pterostigma narrow, four times as long as wide; second submarginal cell short, \( 3–SR \) 1.25 times as long as \( 2–SR \) (Fig. 27). First tergite 1.6 times as long as broad at rear (Fig. 25), 3rd tergite 1.4 times longer than 2nd tergite (3 \( q \)). Hypopygium truncate, ovipositor sheath short, as long as fore basitarsus, wide and apically pointed as in Fig. 28. Body entirely yellow, hind tarsus blackish.

**Localities of the three males and four females** — 1 \( \sigma \) + 1 \( q \): Senegal, Nioro-du-Rip, taken with Malaise trap in pearl millet, 39th week 1988, leg. S. Bhatnagar. 1 \( \sigma \) + 3 \( q \): Somalia, Mogadiscio, Afgoi, Shabelli valley, 17–24 May (3 \( q \)) and September (1 \( q \)) 1978, leg. F. Bin. 1 \( \sigma \): Uganda, Mumenje, September 1913, leg. Katona (= K. Kittenberger). (All specimens in HNHM.)

Host unknown.
Szépligeti’s cardiochiline types in the HNHM


Distribution – Throughout Ethiopian region.

Taxonomic position – Austerocardiochiles punctatus (Szépligeti) is close to A. enderleini (Szépligeti) viewing their distinctly sculptured (rugose, rugulose, confused rugo-rugulose) head and mesosoma and latero-tergite clearly separated. The two species are differentiated as follows:

1 (2) Temple in dorsal view contracted (Fig. 14). Clypeus 1.6 times as wide as high, its lower edge medially very weakly excised (Fig. 16). Hind femur 2.6–3.1 times as long as broad (Fig. 19). Forewing: pterostigma 2.8 times as long as wide, second submarginal cell long, 3–SR 1.7 times as long as 2–SR, SR1 with nebulous 3r (Fig. 21, see arrow). First discale cell fairly less high: 1–M straight and almost 3 times as long as m–cu (Fig. 22). Body with strong sculpture. Body yellow, antenna, ocular field, three maculae of mesoscutum black. ²³: 5.5–6 mm. – Throughout Ethiopian region ...................................... A. punctatus (Szépligeti, 1913), comb. n.

2 (1) Temple in dorsal view swollen (Fig. 1). Clypeus twice as wide as high, its lower edge medially somewhat produced and here with a pair of denticules (Fig. 3). Hind femur 2.4–2.5 times as long as broad (Figs 7, 13). Forewing: pterostigma 3.6 times as long as wide, second submarginal cell less long, 3–SR 1.5 times as long as 2–SR, SR1 without 3r (Fig. 9). First discale cell fairly high: 1–M curved and 3.3 times as long as m–cu (Fig. 10). Body with rather weak sculpture. Body black, mesosoma testaceous. ²³: 6.5–8 mm. – Kenya, Tanzania ......................

Cardiochiles Nees


Taxonomic position – Differs from all other cardiochiline genera by the combination of the following characters: Eye (at least dispersely) setose. Galea broad. Tergites usually polished; lateral suture of first tergite less defined. Ovipositor sheath long, usually about as long as hind tibia; hypopygium medio-longitudinally membranous (i.e. weakly sclerotised). Colour either black(ish) with few yellow, reddish yellow pattern, or fully yellow, reddish yellow (possibly with little dark coloured pattern). – Species of this genus are distributed in the Old and New Worlds (Dangerfield et al. 1999: 936–938).

Cardiochiles (Cardiochiles) fuscipennis Szépligeti

(Figs 29–39)

791) designated the male lectotype. Dangerfield & Austin’s (1995: 411) type designation is incomplete: 2 male paralectotypes were not designated which was done by Papp (2004: 185).


For further four synonymous names see Dangerfield & Austin (1995: 411).

Lectotype labels of Cardiochiles fuscipennis – (First label, printed) “N. Guinea / Biró 96”; (second label, printed) “Friedrich-Wilhel.-hafen”; third label is the lectotype card; fourth label is with the inventory number “766”.

Male lectotype of Cardiochiles fuscipennis – (Additional features to the re-description by Dangerfield & Austin 1995.) Body length 6.5 mm. Antenna as long as body and with 38 antennomeres. First flagellomere 1.6 times as long as broad, last 14–15 flagellomeres cubic. Head in dorsal view transverse (Fig. 29), twice as broad as long, eye somewhat protruding and slightly longer than temple (16:14), temple moderately rounded. Ocelli middle-sized, nearly round, OOL clearly twice longer than POL. Eye with dense and long pilosity, in lateral view 2.4 times as high as wide, temple just wider than eye (16:14) and ventrally narrowing (Fig. 30, see arrows). Clypeus twice as wide as high, its lower edge medially slightly produced and here with a pair of denticules (Fig. 31). Rostrum short, half as long as height of eye. Head polished and pilose.

Mesosoma in lateral view 1.5 times as long as high. Notaulix evenly deep. Precoxal suture narrow and subcrenulated, mesopleuron dorsally from suture polished, ventrally from suture finely hairpunctate (Fig. 32). Propodeum carinate and rugo-rugulose, above lunule with a diamond-shaped areola (Fig. 33). Hind femur 2.6 times as long as broad, longitudinally subparallel (Fig. 34). Claw with thick pectinulates (Fig. 35).

Forewing as long as body. Pterostigma (Fig. 36) 3.6 times as long as wide and issuing r distally from its middle, r just shorter than width of pterostigma (10:11). Second submarginal cell rather narrow: 3–SR 1.75 times as long as 2–SR, both veins almost straight, SR1 faintly S-like. First discal cell: 1–SR–M 1.5 times as long as 1–M (cf. Fig. 10).

First tergite 1.6 times longer than broad posteriorly, third tergite twice longer than second tergite (Fig. 37).

Body and antenna black. Palpi brownish to yellowish. First tergite basally rusty. Legs black with light coloured pattern. Fore femur apically and tibia + tarsus entirely yellow; middle tibia and basitarsus dark rusty, tarsus brownish yellowish. Wings evenly brown fumous, pterostigma blackish brown, veins dark brown to brownish.
Two male paralectotypes of *Cardiochiles fuscipennis* – Body length 6.5–7 mm. Pair of antennae missing (1♂) and only left antenna missing, right antenna deficient (1♂): with 13 antennomeres. Legs more dark coloured; fore femur apically and tibia + tarsus yellow (1♂) or the same leg parts yellowish brown; middle and hind legs blackish to black (“var.” by Szépligeti). – Localities: 1♂ paralectotype (No. 768): Papua New Guinea, Stephansort, Astrolabe Bay, 1897, leg. L. Bíró. 1♂ paralectotype (No. 769): Papua New Guinea, Astrolabe Bay, Erima, 1896, leg. L. Bíró.


Female paralectotype of *Cardiochiles fuscipennis* – Head missing. Hypopygium pointed, medio-longitudinally desclerotized and creased, ovipositor sheath long, as long as hind tarsomeres 1–3 combined (Fig. 41). – Locality: female paralectotype (No. 767): Papua New Guinea, Friedrich-Wilhelmshaven (= Madang), 1896, leg. L. Bíró (in HNHM).

Female lectotype and one female paralectotype of *Cardiochiles fasciatus* – Similar to the male lectotype of *C. fuscipennis*. Body 6 mm (lectotype) and 5 mm (paralectotype) long. Antenna with 38 antennomeres (lectotype). Notaulix on mesoscutum evenly deep (cf. Fig. 40). Forewing: pterostigma 4 times as long as wide, r shorter than width of pterostigma (8:10), 3–SR 1.3–1.4 times as long as 2–SR (Figs 38–39). Ovipositor sheath fairly long, as long as hind basitarsus + half of second tarsomere (lectotype, Fig. 42). Wings subhyaline, apically fumous (paralectotype). – Localities: female lectotype (No. 771): Papua New Guinea, Friedrich-Wilhelmshaven (= Madang), 1896, leg. L. Bíró. Female paralectotype (No. 772): Papua New Guinea, Lemien, IX. 1896, leg. L. Bíró. (Both types in HNHM.)

Male paralectotype of *Cardiochiles fasciatus* – Quite similar to the male types of *C. fuscipennis*.

Host – *Crocidolomia binotalis* Zeller, 1852 (Lepidoptera: Pyralidae).

Distribution – Australia (Northern Territory), Bismarck Archipelago, Indonesia, New Britain, Papua New Guinea, Solomon Islands (Dangerfield & Austin 1995: 411).

Taxonomic position – *Cardiochiles fuscipennis* is nearest to *C. philippensis* (Ashmead 1905: 118) considering their black corporal colour, long ovipositor sheath and absent epicnemial carina; the distinctive features between the two species are as follows:
1 (2) Temple in dorsal view rounded, eye somewhat protruding (Fig. 29). Notaulix (finely) crenulated (cf. Fig. 120). Pectinulate of claw short and “perpendicular” (Fig. 35). Scutum of first tergite elongate-form, third tergite almost twice as long as second tergite (Fig. 37). \( q^2 f^2: 5–6.5 \) mm. – Indo-Australian region .............................................................................. C. (C.) fuscipennis Szépligeti, 1900

2 (1) Temple in dorsal view less rounded, eye not protruding (Fig. 43). Notaulix smooth (Fig. 40). Pectinulate of claw long and “oblique” (Fig. 44). Scutum of first tergite less elongate form, third tergite 1.5 times as long as second tergite (Fig. 45). \( q^2 f^2: 5–5.5 \) mm. – Oriental region ...

.......................................................................................................................... C. (C.) philippensis Ashmead, 1905

Cardiochiles (Schoenlandella) niger Szépligeti
(Figs 46–54, 67)

Cardiochiles niger Szépligeti, 1914: 221 \( q^2 f^2 \) (female lectotype and one female + one male paralecotypes in ZMB, one female paralecotype in HNHM). – De Sæger 1948: 15 (in key) and 31 (redescription and setting up two “races”, calcaratus and nigerrimus). Shenefelt 1973: 794 (literature up to 1948). Huddleston & Walker 1988: 443 (in key) and 448 (redescription).

Schoenlandella niger (Szépligeti, 1914): Dangerfield et al. 1999: 957 and 975 (comb. n.).

Paralectotype labels – (First label, printed) “Span. Guinea / Alcú Benitogbt. (= Gebiet) 1–5 IX [19]06 / G. Teßman S. G.”; (second label, printed) “Equatorial Guinea”; third label is the paralectotype card; fourth label, close below paralectotype card, is with Szépligeti’s original name and handwriting “Cardioh. niger Sz.”; fifth label is with the inventory number 12136.

Female paralectotype – (Additional features to the redescription by Huddleston & Walker 1988.) – Body length 5.5 mm. Antenna somewhat shorter than body (5 mm), with 35 antennomeres. First flagellomere 2.5 times as long as broad, further 13–14 flagellomeres diminishing so that rest of flagellomeres cubic. – Head in dorsal view less transverse (Fig. 46), 1.8 times as broad as long, eye 2.2 times longer than temple, temple rounded. Ocelli middle-sized, OOL 3 times as long as POL (14:4). Clypeus 1.5 times as wide as high, its lower edge produced and with a pair of denticules (Fig. 48). Eye pilose, in lateral view 1.9 times as high as wide and 1.7 times wider than temple (Fig. 47, see arrows). Rostrum as long as head in dorsal view less transverse. Head polished.

Mesosoma in lateral view 1.5 times as long as high, polished. Precoxal suture S-form, narrow, crenulated (Fig. 49). Hind femur 2.6 times as long as broad medially (Fig. 51).

Forewing as long as body. Pterostigma (Fig. 52) 3.6 times as long as wide, just shorter than width of pterostigma (10:11). Second submarginal cell long: 3–SR 2.5 times as long as 2–SR, both veins weakly bent; SRI angled, its vein 3r short and hardly visible (“nebulous”, Fig. 52, see arrow). First discal cell: 1–SR–M 1.8 times as long as 1–M, 1–M 2.5 times longer than m–cu (cf. Fig. 22).

First tergite 1.3 times as long as broad posteriorly, scutum narrow, margin laterally from scutum wide; third tergite 1.5 times longer than 2nd tergite (Fig. 37).
Szépligeti's cardiochiline types in the HNHM


Body black. Mouthparts brownish yellow. Legs 1–2 black with yellow pattern, leg 3 black, tibia basally white. Wings hyaline, their distal third brownish fumous. Three further female specimens – Body length 4.5–5 mm. Antenna with 32 (1 q) and 34 (1 q) antennomeres. Head in dorsal view 1.8–1.9 times as broad as long, eye 1.4 times longer than temple (Fig. 54). Hind femur 2.6–2.9 times as long as broad. Forewing: pterostigma 3–3.6 times as long as wide, 3–SR 2–2.7 times as long as 2–SR. Fore tibia + tarsus lemon yellow. – Localities: 1 q (race calcaratus det. De Saeger): Congo belge (= Zaire), Kivu, Rutshuru, 1285 m, 11.VII.1935, leg. C. F. de Witte. 1 q: Cameroon, Nkoemvon, near Ebolova, 19.VIII – 25.IX.1979 (det. Walker et Huddleston 1988). 1 q: North Senegal, road Toll, 10.VIII.1989, leg. H. van der Valk (det. van Achterberg 1992). (All specimens in HNHM.)

Host unknown.


Taxonomic position – Cardiochiles (Schoenlandella) niger is nearest to Cardiochiles (Cardiochiles) sahelensis Huddleston et Walker (1988: 443 in key and 454 description) viewing their common features: long second submarginal cell, i.e. 3–SR 1.5–1.6 times (C. sahelensis) or (1.9–)2–2.3 times (C. niger) longer than 2–SR (Fig. 52), scutum of first tergite narrow (Figs 67, 70) and corporal colour partly (C. sahelensis) or entirely (C. niger) black; the two species are discriminated by the following key:

1 (2) Forewing: SR1 weakly angled, its vein 3r short and hardly visible ("nebulous", subgeneric distinction, Fig. 52 see arrow). Temple in dorsal view rounded, eye (almost) twice as long as temple (Fig. 46). Hind femur less thick, 2.7–3.1 times as long as broad (Fig. 50). Scutum of first tergite not narrowing posteriorly, third tergite 1.5 times longer than second tergite (Fig. 67). Clypeus 1.5 times as wide as high, its lower edge somewhat produced and medially with a pair of denticules near to each other (Fig. 48). Pectinulate of claw strong (Fig. 51). Body black, fore and middle tibiae pale yellow to yellow pattern. qf: 4.5–5.5 mm. – Throughout Ethiopian region .......................................................... C. (Sch.) niger Szépligeti, 1914

2 (1) Forewing: SR1 bent, i.e. not angled and 3r missing (subgeneric distinction, cf. Fig. 36). Temple in dorsal view less rounded, eye as long as temple (Fig. 48). Hind femur thick, 2.1–2.2 times as long as broad (Fig. 69). Scutum of first tergite narrowing posteriorly, third tergite 1.7 times longer than second tergite (Fig. 70). Clypeus 2.6–2.7 times as wide as high, its lower edge not produced, pair of denticules less near to each other (Fig. 71). Pectinulate of claw less strong (Fig. 72). Body bicoloured: head and mesosoma black, head possibly with testaceous to yellow pattern, metasoma yellow with variable black streak medially. qf: 5–5.5 mm. – Niger, Senegal ................................................................. C. (C.) sahelensis Huddleston et Walker, 1988

Remarks – According to Huddleston & Walker (1988) C. niger is most closely related to C. testaceus. This is expressed in their key brought in pair the
two species in the key-couplets 9–10. An examination revealed that *C. sabelensis* is also near to *C. niger*.

*C. sabelensis* was transferred from the genus *Cardiochiles* to *Schoenlandella* Cameron, 1904 by Dangerfield et al. (1999: 959, 976). As an exchange material there are two female paratypes of *C. sabelensis* in the HNHM. Their examination revealed unambiguously that forewing vein SRI bent and no trace of 3r is visible *(cf. Fig. 36).* Hence the species in question is representing the nominate subgenus as *C. (C.) sabelensis*.

*Cardiochiles (Schoenlandella) szepligetii* Enderlein  
(Figs 55–64)

*Cardiochiles testaceus* Szépligeti, 1902: 77 \(d^{\prime}\) (in key and description, male lectotype in HNHM). – Papp 2004: 185 (type locality, lectotype designation and condition, valid name: *C. szepligetii*.


*Schoenlandella szepligetii* (Enderlein, 1906): Dangerfield et al. 1999: 959 and 976 (comb. n.).

**Lectotype labels** – (First label, printed) “Malacca” [= Malaysia] / “Biró”; (second label) "Kuala Lumpur" (printed) / [18"]98. I.” (handwritten, reverse of second label) “testaceus” (Szépligeti’s handwriting) / “det. Szépligeti” (printed); fourth label is the lectotype card; fifth label is with the inventory number "764"; sixth label is with the actual name *Cardiochiles (Schoenlandella) szepligetii* Enderlein.

**Redescription of the male lectotype of Cardiochiles (Schoenlandella) testaceus Szépligeti** – Body length 5 mm. Antenna nearly as long as body and with 40 antennomeres. First flagellomere 1.5 times as long as broad, further flagellomeres gradually diminishing so that penultimate flagellomere cubic: as long as broad. (Right antenna deficient: with 30 antennomeres.) – Head in dorsal view less transverse (Fig. 55), 1.8 times as broad as long, eye 1.5 times longer than temple, temple rounded, occiput excavated. Ocelli middle-sized, OOL clearly twice as long as POL. Eye pilose, in lateral view 2.1 times as high as wide, gena slightly wider than eye (16:15) and ventrally just narrowing (Fig. 56, see arrows). Clypeus 1.7 times as wide as high, its lower edge medially convex (Fig. 57); inner margin of eyes parallel, face almost 1.8 times wider than high. Rostrum about half as long as height of eye. Head polished.

Mesosoma in lateral view 1.3 times as long as high, polished. Notaulix distinct. Propodeum rugo-rugulose, medially with a diamond-shaped areola (Fig. 58). Hind femur 2.6 times as long as broad medially *(cf. Fig. 50).* Inner spur of hind tibia nearly as long as basitarsus (30:35). Claw downcurved, its basal lobe distinct and rather shortly pectinate as in Fig. 59.
Forewing as long as body. Pterostigma (Fig. 60) 3.3 times as long as wide and issuing \( r \) distally from its middle. \( 1-R1 \) slightly longer than pterostigma (45:40). Vein \( r \) 0.6 times as long as width of pterostigma. Second submarginal cell: \( 3-SR \) almost twice (27:14) as long as \( 2-SR \), \( r-m \) unusually “oblique”, \( SRI \) broken, i.e. \( 3r \) present as a “spectral trace” vein (Fig. 60, see arrow). First discal cell: \( 1-M \) 2.8 times as long \( m-cu \), \( 1-SR-M \) 1.7 times as long as \( 1-M \) (cf. Fig. 22).

First tergite (Fig. 61) 1.3 times as long broad posteriorly, scutum elongate-form. Third tergite almost twice longer than second tergite, suture between them straight. Tergites polished.

Antenna brown. Body and legs yellow, tarsi faintly brownish fumous. Wings subhyaline, i.e. weakly brownish fumous. Pterostigma brown, basally yellow, veins yellowish to brownish.

**Description of the female** (2 qty)

– Body 4.5–5 mm long. Antenna as long as head, mesosoma and tergite 1–2 combined. Head in dorsal view almost (60:31) to fully (60:30) twice as broad as long, temple slightly more rounded (Fig. 62).

Clypeus: its lower edge medially weakly excised (1 qty, Fig. 63). Notaulix evenly deep, subcrenulate. First tergite subquadrate, somewhat longer than broad posteriorly (40:35), its scutum less elongate-form (Fig. 64). Hypopygium not pointed, ovipositor sheath wide and somewhat longer than hind basitarsus to as long as tarsomeres 1–2 combined, or shorter that basitarsus. Body testaceous to yellow, hind tarsus black. – Locality (new to Australia): 1 qty: Northern Territory, Mt. Bundy, 144 m, 13˚ 08’ S / 131˚ 08’ E, 4–7 November 2000, leg. G. Hangay, I. Rozner et A. Podlussány (Hungarian Entomological Expedition to Australia). 1 qty: Indonesia, Java, Semarang, 1905, leg. E. Jacobson (*C. variegatus* det. Szépligeti).

**Taxonomic position** – *Cardiochiles (Schoenlandella) szepligetii* is nearest to *C. (C.) variegatus* Szépligeti, the distinction of the two species is presented as follows:

1 (2) Forewing: \( SRI \) without \( 3r \) (subgeneric difference, Fig. 80, see arrow), exceptionally present (1 qty, Fig. 65, see arrow). Eye in dorsal view slightly longer than temple (Fig. 73). Propodeum: middle areola relatively less large, its less strong sculpture and carination as in Fig. 77. Scutum of first tergite as in Figs 82, 87. Clypeus with a pair of distinct denticules (Fig. 75). Female: hind femur thick, 1–2.1(–2.3) times as long as broad (Figs 78, 88), exceptionally less thick as in Fig. 89. Ovipositor sheath usually short, as long as hind basitarsus (Fig. 83). qty: 5–7 mm.

– Frequent in tropical Africa .................................................... *C. (C.) variegatus* Szépligeti, 1913

1 (2) Forewing: \( SRI \) with \( 3r \) (subgeneric distinction, Fig. 60, see arrow). Eye in dorsal view 1.5 times longer than temple (Fig. 55). Propodeum: middle areola relatively large, its strong sculpture and carination as in Fig. 58. Scutum of first tergite as in Figs 61, 64. Clypeus with a pair of less distinct denticules (Figs 57, 63). Female: hind femur less thick, 2.6 times as long as broad (cf. Fig. 50). Ovipositor sheath long, as long as hind tarsomeres 1–2 combined. qty: 4.5–5 mm. – Indo-Australian region .................................................... *C. (Sch.) szepligetii* Enderlein, 1906
Cardiochiles szepligetii is also near to Hymenicis bubbur (Dangerfield et Austin), the two species are differentiated by the following features:

1 (2) Female: hypopygium evenly sclerotized, i.e. apically not membranous (generic difference). Median field of second tergite wide, scutum of first tergite broadening posteriorly (Fig. 61, 64). Carinae of propodeal areola evenly strong (Fig. 58). Ovipositor sheath long, as long as hind tarsomeres 1–2 combined. Claw basally pectinulate as in Fig. 59. Clypeus 1.6–1.7 times and face 1.7–1.8 times as wide as high (Figs 57, 63). Body testaceous to yellow. qf: 4.5–5 mm. – Indo-Australian region ................................................ C. (Sch.) szepligeti Enderlein, 1906

2 (1) Female: hypopygium apically membranous, i.e. here declerotized (generic difference). Median field of second tergite narrow, scutum of first tergite less broadening posteriorly; carinae of propodeum anteriorly weak (Fig. 16 in Dangerfield & Austin 1995: 400). Ovipositor sheath short, about one-third as long as basitarsus (Fig. 18 l.c.). Claw "simple". Clypeus 2.6–3.1 times and face 2.2–2.3 times as wide as high (Fig. 17 l.c.). Body orange to yellow with much black pattern. qf: 7.8–9.4 mm. – Australia (Queensland) ................................................

................................................................................

Cardiochiles (Cardiochiles) variegatus Szépligeti (Figs 73–87)


Schoenlandella variegata (Szépligeti, 1913): Dangerfield et al. 1999: 959 and 976 (comb. n.).

Lectotype labels – (First label, printed) "Africa or. " [=Tanzania] / "Katona" (= leg. K. Kittenberger); (second label) "Shirati / 1909" (printed) "III." (handwritten); third label, with Szépligeti’s handscript) "Cardiochiles variegatus m."); fourth label is the lectotype card; fifth label is with the inventory number "776"; sixth label is with the actual name Cardiochiles (Cardiochiles) variegatus Szépligeti (det. Papp 2014).

Paralectotype labels – First and second labels are identical with those of the lectotype; third label is the paralectotype card; fourth label is with the inventory number "777"; sixth label is with the actual name Cardiochiles (Cardiochiles) variegatus Szépligeti (det. Papp 2014).

Female lectotype – (Additional features to the redescription by Huddleston & Walker 1988.) Body length 6 mm. Antenna about 0.2 shorter than body and with 33 antennomeres. First flagellomere 1.6 times as long as broad, further 7–8 flagellomeres diminishing so that rest of flagellomeres cubic. – Head in dorsal view less transverse (Fig. 73). 1.8 times as broad as long, temple moderately rounded and somewhat shorter than eye (16:17). Ocelli rather small, almost round, OOL just less than three times as long as POL (14:5). Eye pilose, in lateral view 2.1 times as high as wide and 0.8 times as wide as gena, i.e. gena 1.2 times wider than eye, gena ventrally faintly narrowing (Fig. 74, see arrows). Clypeus 2.5 times as wide below as high medially, its lower edge truncate and medially with a pair of distinct denticules (Fig. 75). Inner margin of eyes parallel. Rostrum long,
as long as height of eye (Fig. 22 in HUDDLESTON & WALKER 1988: 449). Head polished, face and clypeus hairpunctate.

Mesosoma in lateral view 1.5 times as long as high. Notaulix deep, finely crenulated. Precoxal suture shallow, crenulated (Fig. 76). Areola and carination of propodeum distinct (Fig. 77). Hind femur thick, twice as long as broad (50:24, Fig. 78). Inner spur of hind tibia 0.8 times as long as basitarsus (24:30). Claw downcurved, its pectination as in Fig. 79.

Forewing as long as body. Pterostigma (Fig. 80) 2.8 times as long as wide, almost parallel-sided, issuing \( r \) distally from its middle, \( r \) short, 0.6 times as long as width of pterostigma (9:14); \( 1-R1 \) as long as pterostigma. Second submarginal cell: \( 3-SR \) 1.7 times longer than \( 2-SR \), \( r-m \) less “oblique”, \( SR1 \) curved and without “spectral trace” \( 3r \) (Fig. 80, see arrow). First discal cell \( long1-M \) 2.8 times as long as \( m-cu \), \( 1-SR-M \) twice as long as \( 1-M \) (Fig. 81).

First tergite (Fig. 82) 1.25 times as long as broad posteriorly, its scutum wide but narrowing at rear; third tergite 1.7 times longer than second tergite, suture between them straight. Tergites polished. Hypopygium large, not pointed; ovipositor sheath as long as hind tarsomeres 1–2 combined, widening and feebly bent (Fig. 83).

Ground colour of body yellow. Scape black, flagellum blackish. Black: vertex, three lobes of mesoscutum almost entirely, mesopleuron, mesosternum and ovipositor sheath. Legs yellow, hind coxa basally black, hind tarsus blackish. Wings infumate, pterostigma basally yellow, distally brown, veins yellowish.

Two further females – Body length 6 mm. Antenna with 30 (1 q) and 33 (1 q) antennomeres. Head in dorsal view twice as broad as long (1 q), eye slightly longer than temple (17:15). Hind femur 2.1–2.3 times as long as broad (Fig. 84). Mesopleuron yellow, black pattern of head and mesoscutum smaller. – Localities: 1 q: “Africa or.” (= Tanzania), “Shirati, III 1919, leg. Katona” [K. Kittenberger], new to Tanzania. 1 q: Egypt, Ismelia, 10.V.1984, leg. J. H. Parker, new to Egypt. (Both females in HNHM.)

Male paralectotype – Body length 6 mm. Antennae deficient: right antenna with 3 and left antenna with 16 antennomeres. Hind femur less thick, 2.7 times as long as broad (Fig. 85). Pterostigma 2.3 times as long as wide, \( 3-\overline{SR} \) 1.5 times as long as \( 2-\overline{SR} \) (Fig. 86). First tergite 1.3 times as long as broad posteriorly. – Locality: “Africa or.” (= Tanzania), “Shirati III 1919, leg. Katona” (= K. Kittenberger).

One further male – Similar to male paralectotype. Body length 6 mm. Antenna deficient: right antenna with 32 and left antenna with 29 antennomeres. Head in dorsal view 1.8 times as broad as long, temple somewhat longer than eye (18:15). Hind femur 2.3 times as long as broad. Pterostigma wide, 2.5 times as long as wide, \( r \) half as long as width of pterostigma, \( 3-SR \) 1.7 times as long as \( 2-SR \); \( 1-R1 \) one-fifth longer than pterostigma (50:40), \( 3r \) exceptionally present as “spectral trace” vein (Fig. 65 see arrow). Scutum of first tergite broad, first tergite


Host – Helicoverpa armigera (Hübner, [1809]) (Lepidoptera: Noctuidae).

Distribution – Egypt, Gambia, Mali, Nigeria, Senegal, Sierra Leone, Tanzania.

Taxonomic position – Cardiochiles (Cardiochiles) variegatus is similar to Cardiochiles (Schoenlandella) testaceus Kriechbaumer (nec C. testaceus Szépligeti).

considering their testaceous corporal ground colour, antenna with 30–37(–40) antennomeres, relatively short second submarginal cell (i.e. $3–SR$ 1.5–1.7 times as long as $2–SR$); the two species are distinguished by the following features:

1 (2) Forewing: $SRI$ without “nebulous” $3r$ (subgeneric difference, Fig. 80 see arrow), at most exceptionally with $3r$ (Fig. 65, see arrow). Hind femur of female thick, 2–2.3 times as long as broad (Figs 78, 84), hind femur of male less thick: 2.7 times as long as broad (Fig. 85). Claw basally not broad, pectination not short (Fig. 79). Pair of median denticules of clypeus distinct (Fig. 75). Ovipositor sheath 1.4–1.6(–2) times longer than hind basitarsus (Fig. 83). Body testaceous to yellow, vertex and mesosoma rather exceptionally with little black pattern. $\varphi$: 5–7 mm. – Frequent in tropical Africa ......................... C. (C.) variegatus Szépligeti, 1913

2 (1) Forewing: $SRI$ with a "nebulous" $3r$ (subgeneric difference, cf. Fig. 66 see arrow). Hind femur of female less thick, 2.5–2.7 times as long as broad (Fig. 88–89). Temple in dorsal view rounded (Fig. 90). Claw basally broad, pectination short (Fig. 91). Clypeus medially rather faintly excised (Fig. 92). Ovipositor sheath at most as long as hind basitarsus (Fig. 93). Body yellow to testaceous, vertex and mesosoma possibly with (much) black pattern. $\varphi$: 4–5 mm. – Frequent in tropical Africa ............................................. C. (Sch.) testaceus Kriechbaumer, 1894

_Cardiochiles variegatus_ is also near to _C. coelofrons_ Huddleston et Walker (1988: 443 in key, 444 description) considering their common features: clypeus medially with a pair of distinct denticules (Fig. 75), head in dorsal view less transverse: 1.8–1.9 times as broad as long (Fig. 73), body yellow to testaceous; distinction between the two species is keyed:

1 (2) Forewing: $SRI$ without “nebulous” $3r$ (subgeneric difference, Fig. 80 see arrow), at most exceptionally with $3r$ (Fig. 65 see arrow). Rostrum long, as long as height of eye (Fig. 22 in Huddleston & Walker 1988: 449). Hind femur thick, 2–2.3 times as long as broad (Figs 78, 84–85). Scutum of first tergite broad, side laterally from scutum narrow, third tergite 1.7 times longer than second tergite (Fig. 82). Temple in dorsal view less rounded, eye not protruding (Fig. 73). Claw somewhat less downcurved (Fig. 79). Antenna with 30–33(–40) antennomeres. Pterostigma blackish brown, basally yellow. $\varphi$: 5–7 mm. – Frequent in tropical Africa .................................................................................................. C. (C.) variegatus Szépligeti, 1913

2 (1) Forewing: $SRI$ with a “nebulous” $3r$ (subgeneric difference, Fig. 66 see arrow). Rostrum short, shorter than half height of eye (Fig. 8 in Huddleston & Walker 1988: 445). Hind femur less thick, 2.6 times as long as broad (Fig. 94). Scutum of first tergite narrow, subparallel-sided, side laterally from scutum wide, third tergite 1.5 times longer than second tergite (Fig. 95). Temple in dorsal view rounded, eye somewhat protruding (Fig. 96). Claw somewhat more downcurved (Fig. 97). Antenna with 44–48 antennomeres. Pterostigma fully yellow to pale brown. $\varphi$: 5–6 mm. – Gambia, Mali, Nigeria, Senegal, Sierra Leone .................. ................................................................. C. (Sch.) coelofrons Huddleston et Walker, 1988

_Remarks_ – One female paratype of _C. coelofrons_ is housed by exchange in the HNHM, this specimen served for the compilation of the above key. _C. variegatus_ is also near _C. szepligetii_, their distinction see at the latter species.
**Cardiochiles (Cardiochiles) xanthocarpus Szépligeti**


**Lectotype labels** – (First label, printed) “Africa or. / Katona” [= K. Kittenberger], “Shirati / 1900” (printed) “III.” (handwriting); (third label reverse second label, printed) ”Tanzania”; fourth label is the lectotype card; fifth label is with inventory number “775”; (sixth label: reverse fifth label with Szépligeti’s handwriting) ”Cardioch. xanthocarp. n. sp.”

**Redescription of the female lectotype** – Body length 5 mm. Antenna almost as long as body and with 31 (right antenna) and 22 (left antenna) antennomeres. Both antennae apically deficient. First flagellomere 1.25 times as long as broad, flagellomeres 2–5 diminishing, rest of flagellomeres cubic. – Head in dorsal view transverse (Fig. 99), twice as broad as long, eye 1.3 times longer than temple, temple rounded, occiput excavated. Frons not depressed. Eye pilose, in lateral view 2.2 times as high as wide and as wide as temple, i.e. temple evenly wide beyond eye (Fig. 100, see arrows). Ocelli almost round and on a high triangle, OOL 1.6 times as long as POL, fore ocellus somewhat greater than hind two ocelli. Face twice as wide as high. Lower edge of clypeus with a pair of denticules fairly far from each other, clypeus itself 1.9 times as wide below as high medially (Fig. 101). Rostrum one-fourth shorter than height of eye. Frons transversely finely striate, face hairpunctate, clypeus, gena and vertex (almost) smooth, shiny.

Mesosoma stout, in lateral view 1.2 times as long as high. Notaulix evenly deep, smooth. Mesoscutum and scutellum smooth, shiny. Pronotum (sub)rugulose, propodeum rugose with distinct carination (Fig. 102). Precoxal suture fairly wide, mesopleuron above suture smooth and shiny, below suture densely hairpunctate, subshiny (cf. Figs 122, 127). Hind femur 2.9 times as long as broad proximally (Fig. 103). Claw moderately curved, basal lobe small, pectination short (Fig. 104).

Forewing as long as body. Pterostigma (Fig. 105) 3.6 times as long as wide, issuing r distally from its middle and 0.6 times as long as width of pterostigma, 1–R1 one-fourth shorter than length of pterostigma (40:30). Second submarginal cell short: 3–SR 1.35 times as long as 2–SR, r–m fairly “oblique”, SRI moderately bent and without 3r. 1–R1 one-fourth shorter than length of pterostigma. First discal cell: 1–M 2.2 times as long as m–cu, 1–SR–M 1.8 times as long as 1–M (cf. Fig. 81).
First tergite (Fig. 106) just longer than broad posteriorly, beyond pair of spiracles parallel-sided, scutum medio-longitudinally uneven, otherwise smooth and shiny. Third tergite almost twice as long as second tergite, second tergite laterally subrugulose, medially smooth, third tergite uneven, shiny; rest of tergites polished. Hypopygium large, apically blunt, ovipositor sheath wide, as long as fore tibia (Fig. 107).


Male and host unknown.

Distribution – Tanzania.

Taxonomic position – In Huddleston & Walker’s key (1988: 443–444) this species would run to C. calvus Huddleston et Walker. It is nearest to C. coelofrons Huddleston et Walker considering their common features: transverse head in dorsal view, thick hind femur, eye longer than temple in dorsal view; the two species are distinguished by the following features:

1 (2) Forewing: SR1 without 3r (subgeneric difference), second submarginal cell short, 3–SR 1.35 times as long as 2–SR (Fig. 105). Frons not depressed, transversely striolate. Rostrum long, nearly as long as height of eye. First tergite parallel-sided, scutum broad (Fig. 106). Ovipositor sheath wide and long, as long as fore tibia (Fig. 107). Ground colour of body dark brown to black with a few yellow to reddish yellow pattern. q: 5 mm. – Tanzania ................................. C. (C.) xanthocarpus Szépligeti, 1913

2 (1) Forewing: SR1 with “nebulous” 3r (subgeneric difference), second submarginal cell long, 3–SR 1.7 times as long as 2–SR (Fig. 66, see arrow). Frons depressed, smooth. Rostrum short, shorter than halfheight of eye. First tergite broadening posteriorly, scutum less broad (Fig. 95). Ovipositor sheath short and narrow, half as long as fore tibia (Fig. 98). Ground colour of body yellow to testaceous with little black pattern on vertex and mesoscutum. q: 5–6 mm. – Gambia, Mali, Nigeria, Senegal, Sierra Leone .......................... C. (Sch.) coelofrons Huddleston et Walker, 1988


Taxonomic remarks – Up to now three species are assigned to the genus *Heteropteron*: *H. fasciipennis* (Szépligeti, 1908), *H. macula* Brullé, 1846 and *H. whitfieldi* Mercado, 2003. All three species are distributed in the Neotropical region (Brazil, Mexico).

A fairly detailed redescription (“diagnosis”) of the genus *Heteropteron* is presented by Dangerfield et al. (1999).

There are three opinions in the judgement of the taxonomic position of the three cardiochiline genera *Heteropteron* Brullé, 1846, *Neocardiochiles* Szépligeti, 1908 and *Wesmaelella* Spinola, 1853:

(a) Whitfield & Dangerfield (1997: 178) considered the three genera as valid and separated them with two alar venational, one propodeal and one claw features in their key to the Cardiochilinae genera of the New World.

(b) Two years later Dangerfield et al. (1999: 945) placed the genera *Neocardiochiles* and *Wesmaelella* in junior synonymy of *Heteropteron*.

(c) Mercado & Wharton (2003: 868–869) treated *Heteropteron* and *Wesmaelella* as two valid genera and placed *Neocardiochiles* in junior subjective synonymy of *Heteropteron*. This third standpoint is herewith accepted.

The distinction between *Heteropteron* and *Wesmaelella* is based on the species *H. fasciipennis* (Szépligeti) and *W. nigripennis* (Szépligeti) presented as follows:

1 (2) Propodeum with medio-longitudinal and fairly deep sulcus (Fig. 111). Second segment of maxillary palp flattened as in Fig. 110 (see arrow below). Claw with pectinate spinules (Fig. 114). Forewing: submedian vein ($1A + 2A + 1–1A$) with a vestigial transverse anal vein ($2A$, Fig. 116, see arrow), $2–SR$ without atavistic vein (Fig. 115, cf. Fig. 171 see arrow). Latero-tergite distinct (Fig. 163). Pronope present. Wings subhyaline with transverse streak-form brown fumous pattern. – Neotropical region ................................. *Heteropteron* Brullé, 1846

2 (1) Propodeum without medio-longitudinal sulcus. Second segment of maxillary palp not flattened (Fig. 167, see arrow below). Claw without pectinate spinules (Fig. 170). Forewing: submedian vein ($1A + 2A + 1–1A$) without vestigial transverse anal vein ($2A$), $2–SR$ with an atavistic vein $1r$ (Fig. 171, see arrow). Latero-tergite less distinct (Fig. 160). Pronope missing. Wings fully dark brown fumous. – Neotropical region ....................... *Wesmaelella* Spinola, 1853

Taxonomic remark – Exact distinction between *Heteropteron* and *Wesmaelella* would be definitely and reliably disclosed by the examination and comparison of the types of *H. macula* Brullé, 1846 and *Wesmaelella rubricollis* Spinola, 1853. Their types are deposited in the museums of Paris and Torino, respectively.

*Heteropteron fasciipennis* (Szépligeti) (Figs 108–117, 150, 162–163)

*Neocardiochiles fasciipennis* Szépligeti, 1908: 424 q (gen. et sp. n., female lectotype in HNHM).


*Heteropteron fasciipennis* (Szépligeti, 1908): Dangerfield et al. 1999: 946 (comb. n.).

Lectotype labels – (First label, printed) “Surinam / Michaelis”, second label is the lectotype card; third label is with the inventory number “780” (labels 2–3 attached by Papp 1967); fourth det. label by van Achterberg 1986 named “Neocardiochiles fasciatipennis Szépl.” (a slip of pen).

Redescription of the female lectotype – Body length 11 mm. Left antenna missing, right antenna deficient: with 23 flagellomeres (according to Szépligeti 1908: antenna “beiläufig 50-gliedrig”). Scape pyriform, 1.5 times as long as broad apically, its inner side apically deeply excised, pedicel short, first flagellomere twice longer than broad (Fig. 108). – Head in dorsal view less transverse (Fig. 109), 1.8 times as broad as long, eye somewhat protruding and slightly longer than temple, temple rather receded, occiput excavated. Ocelli round, near to each other (Fig. 109). Eye in lateral view 1.6 times as high as wide, temple just less wide than eye (18:19) and ventrally narrowing (Fig. 110, see arrows). Second segment of maxillary palp flattened as in Fig. 110 (see arrow below). Head polished, less hairy.

Mesosoma in lateral view 1.6 times as long as high, polished. Pronope present. Notaulix evenly deep, smooth, not meeting posteriorly. Propodeum smooth and shiny, with a medio-longitudinal sulcus (Fig. 111). Precoxal suture missing. Hind femur 3.8 times as long as broad distally (Fig. 112). Hind basitarsus long: one-fifth longer than tarsomeres 2–5 combined, inner spur of hind tibia just shorter than half length of basitarsus (Fig. 113). Middle tarsomeres 2–4 longer than broad, second tarsomere 1.7 times, third tarsomere 1.2 times and fourth tarsomere 1.1 times as long as broad apically (Fig. 162). Claw downcurved with pectinate spines as in Fig. 114.

Forewing somewhat longer than body (13 mm). Pterostigma elongate (Fig. 115), five times as long as wide, issuing r from its middle. Second submarginal cell long: 3–SR twice as long as 2–SR, both veins weakly bent, SR 1 less curved and 1.5 times as long as 3–SR. First discal cell elongate: I–M 2.5 times as long as m–cu and I–SR–M 1.2 times as long as I–M (cf. Fig. 125). Submedian vein with short and vestigial 2A (Fig. 116, see arrow). – Hind wing: radial vein divided in two sections (I–SR, 2–SR) by a transverse radial vein (r, Fig. 117, see arrow). Subbasal cell as in cf. Fig. 159.

First tergite (Fig. 163) 1.35 times as long as broad posteriorly, scutum wide and basally proceeding in a narrow furrow, letero-tergite as in Fig. 163; every tergite polished. Third tergite somewhat longer than second tergite (22:20), second latero-tergite also well visible (Fig. 163). Hypopygium rounded and less pointed, ovipositer sheath fairly wide and as long as hind tarsomeres 1–3 combined (Fig. 150).

Body bicoloured. Black: antenna, head, mesosoma, last three tergites and ovipositer sheath. Tergites 1–5 testaceous. Tegula pale yellow. Legs also bicoloured, black: coxae 1–3, fore trochanters and fore femur, hind femur (basally...
yellowish), rest of legs yellow, tibiae apically and tarsi 2–3 with blackish pattern. Wings subhyaline, median transverse streak and distal fourth of forewing brown. Male and host unknown.

**Distribution** – Suriname.

Fig. 108–117. *Heteropteron fasciipennis* (Szépligeti, 1908) (female lectotype): 108 = scape, pedicel and first flagellomere, 109 = head in dorsal view, 110 = head in lateral view and second segment of maxillary palp, 111 = propodeum, 112 = hind femur, 113 = basitarsus of hind leg with pair of tibial spurs, 114 = claw, 115 = distal part of right forewing, 116 = forewing: submedian vein with 2A, 117 = hind wing: radial vein with r.
Taxonomic position – Heteropteron fasciipennis (Szépligeti) is close to Wesmaelella nigripennis (Szépligeti), their distinction is presented at the latter species. It is nearest to H. macula Brullé (type species of the genus Heteropteron). The distinction of H. fasciipennis from H. macula is based on the original description of the latter species (Brullé 1846: 272–273), because an authentic specimen of H. macula was not available:

1 (2) Face finely punctate, shiny. First tergite posteriorly with a pair of foveolae (“fossettes”). Ovipositor sheath gradually widening posteriorly. Second tergite antero-medially with a tubercule. Tergites 1–3 chestnut brown to brown. Forewing: pterostigma fully testaceous. q: ? (probably 14) mm. – Brazil ................................................................. H. macula Brullé, 1846

2 (1) Face polished. First tergite posteriorly with foveolae. Ovipositor sheath evenly wide (Fig. 150). Second tergite without tubercule (Fig. 163). Tergites 1–3 reddish yellow. Forewing: pterostigma yellow, basally brownish. q: 11 mm. – Brazil .... H. fasciipennis (Szépligeti, 1908)

An examination of the type specimen of H. macula may reveal its identity (or senior synonymy) with H. fasciipennis. The present redescription of H. fasciipennis promotes the proper recognition of the species, ascertained the synonymy, under the valid name H. macula.

It seems expedient to distinct H. fasciipennis from H. whitfieldi, the third species within the genus Heteropteron. Their separation is based on the original description of H. whitfieldi (Mercado & Wharton 2003: 869), i.e. no reliable specimen of this species was available:

1 (2) Posterior margin of mesopleuron smooth. Forewing: pterostigma five times longer than wide (Fig. 115). Medio-longitudinal furrow of propodeum evenly broad (Fig. 111). Inner spur of hind tibia just shorter than half length of basitarsus (Fig. 113). Pronotum black, first tergite testaceous. q: 11 mm. – Brazil ................................................................. H. fasciipennis (Szépligeti, 1908)

2 (1) Posterior margin of mesopleuron crenulated. Forewing: pterostigma four times longer than wide (Fig. 31 in Mercado & Wharton 2003: 883). Medio-longitudinal furrow of propodeum narrowing anteriorly (Fig. 28 l.c. 882). Inner spur of hind tibia as long as half length of basitarsus (cf. Figs 14–15 l.c. 854). Pronotum reddish brown, first tergite black. q: 10 mm. – Mexico ................................................................. H. whitfieldi Mercado, 2003

Psilommiscus Enderlein


Cardiochiles Nees, 1818: Shenefelt 1973: 786 (Psilommiscus as junior synonym of Cardiochiles).

Taxonomic status – The monotypic genus Psilommiscus was described on the basis of P. sumatranus Enderlein, 1912 (from Indonesia: Sumatra). Muesebeck (in Mao 1949) placed the genus in synonymy with Cardiochiles Nees, 1818 (cf.
Shenefelt 1973: 786). Dangerfield et al. (1999) revalidated the genus and considered it as the sister-group of Hansonia Dangerfield, 1996. Supposedly further species will be discovered above all in the Indo-Australian region. The generic characters are the highly reduced and short setation of eye and the apical cup-like pit of scutellum (Fig. 121).

Psilommicus albopilosus (Szépligeti), comb. n.
(Figs 118–131)


Cardiochiles sumatranus (Enderlein, 1912): Shenefelt 1973: 800 (as valid species, literature up to 1949).

Lectotype labels of Cardiochiles albopilosus – (First label, printed) “Singapore / Biró 1898”; (second label) “albopilosus” (Szépligeti’s handscript) / “det. Szépligeti” (printed); third label is the lectotype card; fourth label is with the inventory number “765”, fifth label is with the actual name Psilommicus albopilosus (Szépligeti) (det. Papp 2014).

Redescription of the male lectotype of Cardiochiles albopilosus – Body length 7 mm. Antenna: scape, pedicel and first flagellomere present, i.e. flagellum missing. First flagellomere 1.6 times as long as broad apically. – Head in dorsal view less transverse (Fig. 118), 1.8 times as broad as long, eye somewhat longer than temple (17:15), temple less deeply rounded, occiput excavated. Ocelli middle-sized, almost round, OOL almost three times longer than POL (14:5). Eye with strongly reduced, sparse setae; in lateral view 1.75 times as high as wide, gena just less wide than eye (16:17), and ventrally narrowing (cf. Fig. 2, see arrows). Inner margin of eyes parallel, face 1.4 times as wide as high. Clypeus twice as wide as high, its lower edge medially with a pair of denticules (Fig. 119). Rostrum short. Face rugose, head above uneven to subrugulose, gena hairpunctured, head above and gena shiny.

Mesosoma in lateral view 1.4 times as long as high. Pronotum laterally with confluent striolation, procone missing. Mesoscutum punctate, laterally with rugulae, shiny; notaulix evenly deep, crenulated (Fig. 120). Scutellum finely punctate, shiny, apically with a cup-like pit (Fig. 121). Precoxal suture crenulated, mesopleuron densely punctate, shiny (Fig. 122). Propodeum scrobiculate, above lunule with a quadrate areola. Hind femur 2.6 times as long as broad (cf. Fig. 50).
Inner spur of hind tibia somewhat shorter than half basitarsus. Pectination of claw as in Fig. 123.

Forewing as long as body, 7 mm long. Pterostigma (Fig. 124) three times as long as wide, issuing \( r \) distally from its middle and 0.6 times as long as width of pterostigma, \( I–R1 \) one-fifth longer than pterostigma (50:40). Second submarginal cell: \( 3–SR \) 1.7 times as long as \( 2–SR \), \( 2–SR \) bent, \( 3–SR \) straight. First discal cell: \( I–SR–M \) 1.4 times as long as \( I–M \), \( I–M \) 2.5 times longer than \( m–cu \) (Fig. 125).

First tergite (Fig. 126) somewhat longer than broad (40:38) and evenly broadening posteriorly, scutum as in Fig. 126, its margin smooth, i.e. not crenulated. Second tergite four times broader behind then long medially, third tergite 1.3 times longer than second tergite, suture between them distinct, straight, smooth. Every tergite smooth and shiny.


**Differing features of the female paralectotype of Psilommiscus sumatranus** – Similar to male lectotype. Body length 7 mm. Antennae deficient: right antenna with 19 and left antenna with 12 antennomeres. Head in dorsal view: eye as long as temple. Precoxal suture crenulated, below it mesopleuron strongy punctate and shiny (Fig. 122). Margin of first tergite yellow. – Locality: Indonesia, Sumatra, Seekaranda, leg. Dohrn (in HNHM).

**Differing features of the single female of P. albopilosus** – Body length 8 mm. Antenna about as long as body and with 46 antennomeres. First flagellomere 1.8 times and penultimate flagellomere 1.25 times as long as broad, middle 30–34 flagellomeres cubic, flagellum proximo-distally somewhat attenuating. Eye in dorsal view somewhat longer than temple (17:15). Face hairpunctate. Precoxal suture crenulated, below it mesopleuron punctate (Fig. 127). Hind femur 2.5 times as long as broad medially (cf. Fig. 50). Forewing somewhat longer than body, 8.5 mm long. Pterostigma (Fig. 131) three times as long as wide, r almost as long as width of pterostigma (11:13). Second submarginal cell: 3–SRı 1.45 times as long as 2–SR, 2–SR broken, 3–SR straight. First discal cell slightly less high: I–SR–M 1.3 times as long as I–M, I–M twice longer than m–cu (Fig. 128). First tergite as long as broad posteriorly, its scutum broad (Fig. 129). Hypopygium less pointed, ovipositor sheath long: as long as hind tarsomers 1–3 combined, widening posteriorly and apically rather pointed (Fig. 130). Corporal colour like male lectotype. – Locality: Indonesia, Nord-Celebes, Toli-Toli, XI–XII 1895 (in HNHM).

Host unknown.  
**Distribution** – Indonesia (Sumatra), Singapore, Taiwan.

**Taxonomic position** – *Psilommiscus albopilosus* (Szépligeti) is nearest to *Austeroocardiochiles morulus* (Dangerfield et Austin, 1995: 390 in key, 420 description, assigned to *Cardiochiles*; Dangerfield et al. 1999: 931, 975 comb. n.) considering their common features: black corporal colour, crenulated notaulix, gradually widening scutum of first tergite and long ovipositor sheath; the two species are distinct by the following traits:
1 (2) “T 1 [first tergite] with lateral suture reduced, poorly defined particularly in apical half” (Dangerfield et al. 1999: 926). Gena and mesoscutum anteriorly smooth and shiny (generic differences). Head in dorsal view 1.8 times as broad as long, temple deeply rounded, eye with strongly reduced setae. Forewing: pterostigma widest distally, 3–SR 1.4 times as long as 2–SR. (Fig. 124). First discal cell high: J–SR–M 1.4 times as long as J–M (Figs 125, 128). Hind femur less thick, 2.5–2.6 times as long as broad (cf. Fig. 50). First tergite distinctly broadening posteriorly, third tergite 1.3 times as long as second tergite (Fig. 126). Hind two pair of legs blackish to black with more yellowish pattern. qfd: 7–8 mm. – Oriental region .................................................................

Psilommiscus albopilosus (Szépligeti, 1902), comb. n.

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2 (1) “T 1 [first tergite] and latero-tergites with suture clearly defined throughout” (Dangerfield et al. 1999). Gena and mesoscutum anteriorly roughened (generic differences). Head in dorsal view 2.1 times as broad as long, temple swollen, eye as long as temple (Fig. 132), eye hairy. Forewing: pterostigma somewhat wider proximally than distally (Fig. 133, see arrows), 3–SR 1.2 times as long as 2–SR (Fig. 133). First discal cell less high: 1–SR–M 1.9 times as long as 1–M (Fig. 134). Hind femur thick, 2.3 times as long as broad medially (Fig. 135). First tergite subparallel-sided: weakly broadening posteriorly, third tergite twice as long as second tergite (Fig. 136). Hind two pair of legs blackish to black, only tibiae proximally yellow.

– Australian region ......................... Austerocardiochiles morulus (Dangerfield et Austin, 1995)

Toxoneuron Say

Toxoneuron Say, 1836: 258 (description) – Type species: Bracon (Toxoneuron) viator Say, 1836 (designated by Viereck 1914: 146). Shenefelt 1973: 786 (as synonym of Cardiochiles). Dangerfield et al. 1999: 926 (in key) and 960 (as valid genus, indicating invalid synonymization, diagnosis).

Taxonomic position – Toxoneuron was suppressed in synonymy since Ashmead (1900: 130). Recently removed from the synonymy by Dangerfield et al. (1999: 960). Generic features of Toxoneuron: hind tibia apically with a cup-like formation (see Fig. 83 in Dangerfield et al. 1999); submarginal cell of the forewing long (3–SR four to five times longer than r); ovipositor sheath short to as long as hind tibia.

Toxoneuron bicolor Szépligeti

(Figs 137–149)


Lectotype labels – (First label, handwritten) “Mexico / Reitter”; (second label) ”bicolor” (Szépligeti’s handwriting) / ”det. Szépligeti” (printed); third label is the lectotype card; fourth label is with the inventory number “778”.

Redescription of the female lectotype – Body length 9 mm. Pterostigma and I–R1 of right forewing and left lateral part of first tergite damaged. Antenna about as long as head and mesosoma combined and with 41 antennomeres. Scape less globose: 1.35 times as long as broad apically, pedicel short, first flagellomere 1.6 times as long as broad (Fig. 137), flagellomeres 2–5 gradually shortening so that further flagellomeres transverse, ultimate 7–8 flagellomeres attenuating so that penultimate flagellomere 1.3 times as long as broad. – Head in dorsal view transverse (Fig. 138), 1.9 times as broad as long, eye as long as temple, temple rounded, occiput
excavated. Eye bare. Ocelli middle-sized, round and near to each other: OOL twice as long as POL. Eye in lateral view 1.8 times as high as wide, temple wider than eye (17:15) and beyond eye evenly wide (Fig. 139). Clypeus 2.5 times as wide as high, its lower edge convex (Fig. 140). Head polished, face finely hairpunctate.

Figs 137–149. Toxoneuron bicolor Szépligeti, 1902 (female lectotype): 137 = scape, pedicel and first flagellomere, 138 = head in dorsal view, 139 = head in lateral view, 140 = clypeus, 141 = propodeum 142 = hind femur, 143 = distal cup-like end of hind tibia, 144 = claw, 145 = distal part of right forewing, 146 = first discal and first subdiscal cells of right forewing, 147 = subbasal cell of hind wing, 148 = tergites 1–3, 149 = posterior end of metasoma

Mesosoma in lateral view 1.3 times as long as high. Notaulix evenly deep, finely crenulated, meeting behind. Precoxal sulcus and hind margin of mesopleuron crenulated. Mesoscutum and scutellum polished. Propodeum rugose, medial areola lengthened, carination areolae-like (Fig. 141). Hind femur 2.5 times as long as broad, thickest somewhat proximally (Fig. 142, see arrows). Inner spur of hind tibia somewhat longer than half basitarsus. Hind tibia with a short though distinct cup-like projection apically (Fig. 143). Hind basitarsus almost as long as tarsomeres 2–5 combined. Claw distinctly pectinate, denticules fairly long (Fig. 144).

Forewing as long as body, 9 mm long. Pterostigma (Fig. 145) 3.3 times as long as wide, issuing r distally from its middle, r one-fourth shorter (9:12) than width of pterostigma. Second submarginal cell fairly long: 3–SR twice as long as 2–SR, 2–SR with a vestigial vein 1r (Fig. 145, see arrow) and almost 1.2 times as long as r–m (Fig. 145): First discal cell elongate: 1–SR–M 1.7 times as long as 1–M, 1–M twice as long as m–cu (Fig. 146, see arrows in upper cell); first subdivisal cell wide and short, 2CU1 curved and 1.6 times as long as cu–a (Fig. 146, see arrows in lower cell). – Hind wing: cu–a straight as in Fig. 147.

First tergite narrow (Fig. 148), 1.5 times as long as broad posteriorly, subparallel-sided, scutum anteriorly less narrowing. Third tergite 1.45 times longer than second tergite, second tergite 3.8 times as broad as long, its median field less distinct (Fig. 148). All tergites polished. Hypopygium less pointed, ovipositor sheath short: as long as hind tarsomeres 2–3 combined (Fig. 149).


Male and host unknown.

Distribution – Mexico.

Taxonomic position – Mercado & Wharton (2003: 889) wrote that “Toxoneuron bicolor is identical or nearly so to the well-known T. nigriceps...” The female lectotype of T. bicolor was compared to two female specimens of T. nigriceps (Viereck) (their locality: USA: Texas, College Station, 1976, leg. et det. Edson, both females in HNHM). The subsequent rather subtle distinction between the two species may prove their validity as two distinct species. Supposedly more specimens of the two forms will decidedly confirm their taxonomic separation:

1 (2) Temple in dorsal view rounded, head less transverse, 1.9 times (60:31) as broad as long (Fig. 138). Lower edge of clypeus convex (Fig. 140). Hind femur 2.3 times (20:8) as long as broad proximally (Fig. 142, see arrows). Pectination of claw with equally long denticules (Fig. 144). Scutum of first tergite anteriorly slightly less narrowing, third tergite 1.35 times longer than second tergite (Fig. 148). q: 9 mm. – Mexico ........................................ T. bicolor Szépligeti, 1902
2 (1) Temple in dorsal view swollen-rounded, head somewhat more transverse, twice (60:29) as broad as long (Fig. 151). Lower edge of clypeus weakly concave (Fig. 152). Hind femur twice as long as broad medially (Fig. 153, see arrows). Pectination of claw with different length denticules (Fig. 154). Scutum of first tergite anteriorly slightly more narrowing, third tergite 1.45 times longer than second tergite (Fig. 155).

³: 7.4–9 mm. – USA, Philippines (introduced) .......................................................................................... T. nigriceps (Viereck, 1912)

Additional comment – Mercado & Wharton (2000: 214–218) allude to the “... wide range of variation in ... body colour, size of mouthparts, and setal pattern on face, clypeus, scutum and scutellum ... and we have been unable to link this variation to any pattern of distribution.” This variability is shown in the Figs 17, 19–20(A–J), 21(A–D) and 22–23 for the species T. bicolor. Concerning the validity of T. bicolor and T. nigriceps, they admit that “we are reluctant to synonymize the 2, however, because of potential differences in host specificity. [...] The widespread distribution of both T. bicolor and H. [elixcoverpa] zea in Mexico, with some of these records at least 100 yr old, together with the inability of T. nigriceps to develop successfully on H. zea, lead us to the suggestion that T. bicolor may be a host specific parasitoid of H. zea. H. zea is the main pest in corn, and the latter is widely cultivated in Mexico. This would explain the widespread distribution of T. bicolor in Mexico.” The other species, T. nigriceps, “... is host specific on Heliothis virescens (E.) and H. subflexa (Guèneé).” This difference in host preferences seems to confirm the morphological, albeit very subtle, differences between the two species expounded in the above key. We are, supposedly, confronted with two braconid species being in statu nascendi.

Wesmaelella Spinola


Taxonomic remarks – Mercado & Wharton (2003) considered Wesmaelella as a valid genus and Psilophthalmus as its junior synonym. The distinction between Heteropteron and Wesmaelella is described at the former genus (H. fascipennis). The two genera are fairly similar. Since Spinola’s (1853) description no paper dealt with either the genus Wesmaelella or its type species W. rubricollis.
Wesmaelella nigripennis (Szépligeti)
(Figs 156–161, 164–171)


Lectotype labels – (First label, handwriting) “Brasilia / Fonteboa”; (second label) “nigripennis” (handwriting) / “det. Szépligeti” (printed); third label is the lectotype card; fourth label is with the inventory number “779” (labels 3–4 attached by J. Papp 1967); fifth label is the identification label by van Achterberg 1989 with the original name Psilophthalmus nigripennis Szépl.; sixth label is the identification label by J. Papp 1996 with the actual name Wesmaelella nigripennis (Szépligeti).

Redescription of the female lectotype – Body length 14 mm. Both antennae deficient: right antenna with 10 and left antenna with 19 antennomeres (according to Szépligeti 1902 “Fühler ziemlich kräftig”). Scape in frontal view globose: as long as broad apically; pedicel short, first flagellomere 2.2 times as long as broad, further flagellomeres gradually diminishing (Fig. 164). Scape in inner view excised (Fig. 165). – Head in dorsal view less transverse (Fig. 166), 1.8 times as broad as long, eye protruding and slightly shorter (18:21) than temple, temple rather receded, occiput excavated. Ocelli middle-sized, elliptic and OOL 1.5 times as long as POL. Eye in lateral view 1.5 times as high as wide, temple slightly wider than eye (20:18), temple ventrally clearly narrowing (Fig. 167, see arrows). Second segment of maxillary palp indistinctly flattened (Fig. 167, see arrow). Head polished, hairy.

Mesosoma in lateral view 1.4 times as long as high, polished. Pronope missing. Notaulix distinct, smooth. Median lobe of mesoscutum domed. Prescutal furrow smooth, i.e. without crenulae. Propodeum entirely polished. Precoxal suture missing. – Hind femur 4.2 times as long as broad distally (Fig. 168). Inner spur of hind tibia shorter than half length of basitarsus (Fig. 156). Middle tarsomeres 3–4 shorter than broad (Fig. 169). Claw moderately downcurved, simple (i.e. without pectination), its basal lobe middle-sized (Fig. 170).

Forewing a bit longer than body (15 mm). Pterostigma (Fig. 171) four times as long as wide, issuing r clearly distally from its middle, r short. Second submarginal cell wide, 3–SR 1.5 times as long as 2–SR, 2–SR with an atavistic vein or 1r (Fig. 171, see arrow). SRI curved and almost twice as long as 3-SR; 1–R1 somewhat longer than pterostigma (6065). First discal cell quadrate: 1–M just shorter than 1–SR–M and almost 1.4 times as long as m–cu (Fig. 157), 2–CUI
one-fifth longer than $I-CU1$, i.e. $cu-a$ near middle of $I-2-CU1$ (Fig. 157, see upper four arrows), subdiscal cell closed distally (Fig. 157, see lower single arrow). Submedian vein without vestigial $2A$. – Hind wing: radial vein divided in two section ($I-SR$, $2-SR$) by a curved transverse vein $r$ (Fig. 158). Subbasal cell as in Figure 159.

First tergite (Fig. 160) almost 1.5 times as long as broad and broadening posteriorly, scutum behind wide and anteriorly distinctly narrowing, latero-tergite less distinct dorsally. Second tergite 2.5 times as wide behind as long medially, third tergite 1.3 times longer than second tergite. Every tergite polished. Hypopygium rounded, ovipositor sheath wide, curved and about half as long as hind tibia (Fig. 161).


Male and host unknown.

**Distribution** – Brazil.

**Taxonomic position** – The original description of *Wesmaelella rubricollis* Brullé, 1846 is confined mainly to colour, true specific features (corporal measurements, head and tergites 1–3 formations, alar venations, sculpture) are neglected. Consequently, the reliable distinction between *W. rubricollis* and *W. nigripennis* is possible only by the examination of the type specimens of the two species in question. The type specimen of *W. rubricollis* is housed in the Museo Civico di Storia Naturale, Torino (Casorali & Casorali Moreno 1980: 50), and curatorial policy allows study only on the spot at the museum. Owing to this taxonomic restraint the distinction of *W. nigripennis* from *Heteropteron fasciipennis* seems preliminary. Authentically identified specimen of *W. rubricollis* was not available. Finally, in the original description Szépligeti (1902) did not distinguish *W. nigripennis* from its nearest ally. Synonymisation of *W. nigripennis* with *W. rubricollis* cannot be ruled out. If this synonymy proves to be valid, my rede-scription refers to *W. rubricollis*.

The distinction between *H. fasciipennis* (Szépligeti) and *W. nigripennis* (Szépligeti) is based on rather subtle features, the subsequent key promotes their separation:

1 (2) Claws roughly pectinate (Fig. 114). First tergite: scutum more narrowing anteriorly (Fig. 163). Eye in lateral view somewhat wider (20:16) than gena (Fig. 110, see arrows). Hind femur 3.7 times as long as broad (Fig. 112). Middle tarsomeres 2–4 longer than broad: second tarsomere 1.7 times, third tarsomere 1.2 times and fourth tarsomere 1.1 times as long as broad apically (Fig. 162). Third tergite somewhat longer than second tergite (Fig. 163). Wings sub-hyaline, forewing distally with two transverse brown streaks. $q$: 11 mm. – Suriname .......................................................... *Heteropteron fasciipennis* (Szépligeti, 1908)

2 (1) Claws not pectinate (Fig. 170). First tergite: scutum less narrowing anteriorly (Fig. 160). Eye in lateral view as wide as gena (21:20, Fig. 167). Hind femur four times as long as broad (Fig. 168). Middle tarsomeres 2–4 shorter than long: second tarsomere as long as broad, third tarsomere slightly broader than long and fourth tarsomere broader than long (Fig. 169). Third tergite 1.4 longer than second tergite (Fig. 160). Wings evenly dark brown fumous. $q$: 14 mm. – Brazil ............................................................................................................. *Wesmaelella nigripennis* (Szépligeti, 1902)
Szépligeti Győző (1833–1915) (nevét 1870-ben magyarosította Schönbauer-ról) budapesti középiskolai természetrájz-tanár Mocsáry Sándor, a Nemzeti Múzeum akkori hátyásszárnyú-gyűjtőjének kurátora javaslatára kezdett el a valódi fürkészekkel (Ichneumonidae), a gyilkosfürkészekkel (Braconidae) és más kisebb fürkésdarázscsaládokkal foglalkozni (Csiki 1915). Összesen 61 tudományos közleménye jelent meg, amelyekben a hátyásszárnyúak (Hymenoptera) 886 új faját írta le. Rovargyűjtőményét a Nemzeti Múzeumnak ajándékozta, ezt ma a Magyar Természettudományi Múzeum őrzi.

Szépligeti Győző 11 gyilkosfürkészfajt írt le 1902 és 1914 között a Cardiochilinae alcsaládból. Ezek típusait a Magyar Természettudományi Múzeum Hymenoptera Gyűjteményében helyezte el. A fajok típusépénnyei az Óvilág és Üjvilág trópusi országaitól származtak. Új fajait négy genuszba sorolta, melyek a jelenlegi rendszer szerint a következők (zárójelben a szinoním nevek):

- **Cardiociles** Nees, 1818, **Heteropteron** Brullé, 1846 (**Neocardiochiles** Szépligeti, 1908),
- **Toxoneuron** Say, 1836 és **Wesmaelella** Spinola, 1853 (**Psilophthalmus Szépligeti, 1902**).

Szépligeti az új fajok leírásában az egyes testrészek színezeti különbségeit emelte ki, és jóval kevesebb méretbeli, alaki, szárnyerezeti és vésettbeli különbséget figyelembe vett. Emiatt leírásai alapján szinte lehetetlen egyértelműen azonosítani fajait. A jelen tanulmányban az újraelőírás messzemenően kiterjed azokra a bélyegekre, melyek a korszerű leírás követelményei.

A **Schöenlandella** Cameron, 1904 a szakirodalomban hol önálló genuszként, hol a **Cardiochiles** Nees almeként szerepel, taxonómiai és az alnemi beosztás a réals. Egy új szinoním nélkül nincs kétséges, előírás megfelelő megújulását ismertetjük. Az angol nyelvű Bevezetőben az alábbi 11 Szépligeti-féle Cardiochilinae faj rendszertani beosztását tesszük közzé, jelezve elterjedésüket és a típus minőségét (lektotípus, paraletkotípus):

- **Austerocardiochiles** Dangerfield, Austin et Whitfield, 1999
- **endereiini** (Szépligeti, 1908) (**Cardiochiles**)
- **punctatus** (Szépligeti, 1913) (**Cardiochiles, comb. n.** (**Cardiochiles**)
- **Cardiochiles** Nees, 1818
- **(Cardiochiles) fuscipennis** Szépligeti, 1900
- **(Schöenlandella) niger** Szépligeti, 1914
- **(Schöenlandella) szépligetii** Enderlein, 1906 = **C. testaceus** Szépligeti, 1902, nec **C. testaceus** Kriechbaumer, 1894

A Szépligeti-féle Cardiochilinae fajok típusrevíziója

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(Cardiochiles) variegatus Szépligeti, 1913
(Cardiochiles) xanthocarpus Szépligeti, 1913
Heteropteron Brullé, 1846 = Neocardiochiles Szépligeti, 1908
fascipennis (Szépligeti, 1908) (Neocardiochiles)
Psilommicus Enderlein, 1912
albopilosus (Szépligeti, 1902), comb. n. (Cardiochiles) = sumatranus Enderlein, 1912, syn. n. (Psilommicus)
Toxoneuron Say, 1836
bicolor Szépligeti, 1902
Wesmaelella Spinola, 1853 = Psilophthalmus Szépligeti, 1902
nigripennis (Szépligeti, 1902) (Psilophthalmus)

IRODALOM – REFERENCES


