



Giant assassin in the cave: a new species of the genus *Myiophanes* from Sri Lanka (Hemiptera: Heteroptera: Reduviidae: Emesinae)

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Abstract

A new thread-legged assassin bug species, *Myiophanes (Myiophanes) wygodzinskyi* sp. nov. (Hemiptera: Heteroptera: Reduviidae: Emesinae: Emesini), collected from Ravana Cave in Uva Province of Sri Lanka, is described. It is the largest species of the genus described so far.

Key words: Heteroptera, Reduviidae, Emesinae, new species, Indomalayan region

Introduction

During a brief survey for spiders in Uva Province of southern Sri Lanka, one of us (SB) collected a female individual of a thread-legged assassin bug (Hemiptera: Heteroptera: Reduviidae: Emesinae) species at about 3 feet above the ground in the dark zone of the Ravana Cave. The cave has a large opening, and its last one-third is in total darkness. It is visited by tourists throughout the year.

On the basis of keys given by Wygodzinsky (1966), the collected specimen was identified as a member of the genus *Myiophanes* Reuter, 1881. The genus is distributed in the Palaearctic, Afrotropical (including Madagascar), Indomalayan and Australian Regions, and includes macropterous as well as micropterous species of medium to large size (13 to 23 mm) (Wygodzinsky 1966). Maldonado Capriles (1990) catalogued 18 species. Only one species, *M. greeni* Distant, 1903, has previously been known from Sri Lanka (Wygodzinsky 1966, Villiers 1970) and recently it was also discovered in India (Kulkarni & Ghate 2015). Subsequently two more species were described by Rédei (2005), one from Bangalore (India) and one from Pakistan, both under 20 mm total length.

The genus was subdivided into three subgenera by Wygodzinsky (1966). The nominotypical subgenus *Myiophanes* s. str. contains nine described species to date; the species described in the present paper is the tenth. The described species are: 1, *M. annulifera* McAtee & Malloch, 1926 (type locality: Balang Padang, Malay Peninsula); 2, *M. blotei* Wygodzinsky, 1966 (type locality: Sumatra); 3, *M. fluitaria* McAtee & Malloch, 1926 (type locality: Kuala Lumpur, Gombak Valley, Malaysia); 4, *M. greeni* Distant, 1903 (type locality: Ceylon = Sri Lanka); 5, *M. karenia* Distant, 1903 (type locality: Burma = Myanmar); 6, *M. kempfi* China, 1924 (type locality: Assam, India); 7, *M. tipulina* Reuter, 1881 (distributed in East Asia and Australia, type locality unknown); 8, *M. incompta* Rédei, 2005 (type locality: Pakistan); and 9, *M. zebrina* Rédei, 2005 (type locality: Bangalore, India).

With a total length of 28 mm (to the tip of forewing) the specimen of *Myiophanes* examined during the present study is considerably larger than any other known members of the genus. Although it is similar in coloration with some species discussed later, it is recognized as a new species and described herein accordingly. The new species apparently represents the largest species of the tribe Emesini as well (cf. Wygodzinsky 1966).

Methods

Digital images were taken with a Leica MC170 HD camera mounted on a Leica M205C stereomicroscope using the software package Leica Application Suite, LAS version 4.6.2 (Leica Microsystems Limited, Switzerland). The specimen was further studied under a Leica stereozoom (MZ6) microscope and also photographed with attached Canon Powershot S50 camera. Habitus photos were prepared using a Canon DSLR D400 digital camera. Several images were stacked using Combine ZM software and the images were processed with Adobe Photoshop CS5. Measurements were done with an Erma stage and ocular micrometer and an accurate scale. Morphological terminology mainly follows Wygodzinsky (1966). All measurements given below are in millimeters (mm).

Taxonomy

Myiophanes Reuter, 1881

Myiophanes Reuter, 1881: 337. Type species by monotypy: *Myiophanes tipulina* Reuter, 1881.

Myiophanes: Distant (1903: 204) (diagnosis), Wygodzinsky (1966: 270, 271, 274) (diagnosis, keys for the subgenera and included species, distribution), Maldonado Capriles (1990: 88–90) (catalogue), Rédei (2005: 24) (list and distribution of subgenus *Myiophanes* and description of two new Indomalayan species).

Myiophanes (Myiophanes) wygodzinskyi sp. nov.

(Figs. 1–20)

Type material. Holotype: female, Ravana Cave, Ravana Ella, Sri Lanka, 16.iv.2016, leg. Suresh P. Benjamin; will be deposited at Smithsonian Museum of Natural History, Washington, D.C., United States.

Diagnosis. *Myiophanes wygodzinskyi* sp. nov. is the largest species of *Myiophanes* (body length 28 mm, all other known congeners are under 23 mm). Besides of the large size it is characterized by the distinctly marked abdominal tergites, the forewings lacking emargination on inner margin near apex, and the presence of a prominent tubercle at the base of the median carina on the **hind** lobe of the pronotum.

Description. *Habitus.* Elongate and narrow insect, body sub-shining; mid and hind legs extremely long, thread-like; entire body pilose.

Coloration. Overall stramineous or pale ochraceous at places, with contrasting dark markings (Figs. 1–2); head dark brown except base, tip of antennal tubercles and clypeus; interocular sulcus slightly paler; labium dark brown, first and second visible segments apically pale; antennomere I brown except pale base, antennomere II darker, antennomere III light brown, antennomere IV almost colorless. Fore lobe of pronotum pale with a broad transverse annulus around its middle, hind lobe mostly dark brown except its extreme anterior portion which is invaded by a pair of obliquely triangular pale areas together forming a W-shaped mark (Fig. 3); scutellum dark brown; ventral side of prothorax pale except middle portion of fore lobe contiguous with above mentioned dark band of pronotum; mesosternum and metasternum dark brown to black; mid and hind coxae dark brown to black except apex (Fig. 10); with a small, pale, transverse patch between mesocoxae. Forelegs: coxa with two dark brown annuli (basal and subapical, each 1.5–2 mm wide); femur with three dark annuli (one near base, one around middle, one subapically, each 1.5–2.5 mm wide, basal widest); tibia with basal one-fifth very pale, middle part pale brown, followed by an ochraceous annulus subapically, apex dark brown; tarsus pale, claws dark brown (Figs. 8, 11). Mid and hind femora pale brown along most of their length except creamy white apex about 2 mm wide, and a subapical dark brown annulus about 2.5 mm wide. Mid and hind tibiae pale brown except of a pale basal annulus of about 3 mm width followed by a dark subbasal annulus of about 2 mm width; tarsi pale brown; claws blackish (Figs. 1, 2). Abdomen dorsally with five dark brown transverse bands of irregular shape, at some places with anterior and posterior finger-like brown emanating projections on tergites; fourth and fifth transverse dark bands on tergites interrupted, fourth appearing as three broad vertical bands, fifth as fourth but widths of bands even narrower, medians of these bands form an uninterrupted line from fourth segment up to tip; connexivum with matching dark and pale areas (Fig. 17). Female genital segments as shown in Figs. 18–20, entirely dark brown ventro-medially but ochraceous laterally. First dorsal abdominal band about 1.25 mm long, second about 1.75 mm, third about 1.5 mm, fourth 2.0 mm

including finger-like processes, fifth about 1.75 mm including finger-like processes; abdominal bands complete ventrally, situated in posterior halves of sternites in some places (Fig. 2). Forewings translucent pale brown, veins slightly darker, with identical patches of brown blotches in middle part of both wings (Fig. 9); hind wings short, translucent and colorless, veins pale brown.

Vestiture. Entire body covered with sparse, long and curled hairs of different colors – cream, pale or dark brown. Entire head covered with long, colorless and dark brown setae; first antennal segment with long, black, sparse setae, second, third and fourth with short and dense setae. Pronotum with colorless and dark brown sparse hairs in respective areas; meso and metathorax laterally and ventrally with sparse hairs; scutellum with very few hairs; abdomen with long and short hairs; hairs relatively dense on mid and hind legs than on other parts; microchaetae present on mid and hind legs also long. Meso- and metasterna finely granulate and setose; two oblique, shining longitudinal broad bands on mesosternum without setae; inner side of these with two similar rounded marks at base.

Structure. *Head* elongate oval; eyes large, globose; anteocular region slightly longer than postocular; clypeus prominent, projecting in front of antenniferous tubercles; interocular sulcus transverse, not passing posterior margin of eye. Base of anteocular part with a distinct pit medially near sulcus. Both anteocular and postocular areas slightly convex above; head more or less flat ventrally, slightly medially sulcate. Labium reaching base of fore coxae, first visible segment stout, first and second subequal in length, third longest (Figs. 4–6).

Thorax. Prosternum with a strongly ridged stridulatory area between fore coxae. Width of prothorax at anterior angles slightly broader than maximum width of head in dorsal view, gradually narrowed posteriorly, almost parallel-sided in its middle region, then slightly expanding in hind lobe; hind lobe with distinct median carina ending in prominent mid-dorsal tubercle at posterior margin (Fig. 7); humeral angles laterally blunt and slightly produced backward, posterior margin concave (Figs. 3, 7). Fore coxa moderately long, only slightly dilated at base, otherwise of uniform breadth. Fore femur long, as broad as coxa, provided with at least three types of spiniform processes arranged in two series: posteroventral series starting very close to base (first process being 0.5 mm from tip of trochanter); anteroventral series starting slightly distally, first spine being 1.8 mm from tip of trochanter; all spiniform processes with broad base and sharp black pointed process distally; with at least ten long processes in posteroventral series and seven to eight similar processes in anteroventral series; apical 2 mm part of fore femur with very minute spiniform processes (Fig. 13). Fore tibia more slender than both coxa and femur, also slightly curved; tibia and tarsus together slightly shorter than femur. Tibia with single row of small, stiff spiniform processes on ventral surface (Figs. 12, 14). Fore tarsus three-segmented, segments subequal in length; outer claw with six comb-like, small spines close to base (Fig. 15). Mid and hind legs very long and slender, without any spiniform processes; both mid and hind femora extending beyond tip of abdomen (Figs. 1–2) and pilose (Fig. 16). Forewings broad, extending beyond abdominal tip by about 2 mm, with venation as shown in Fig. 9.

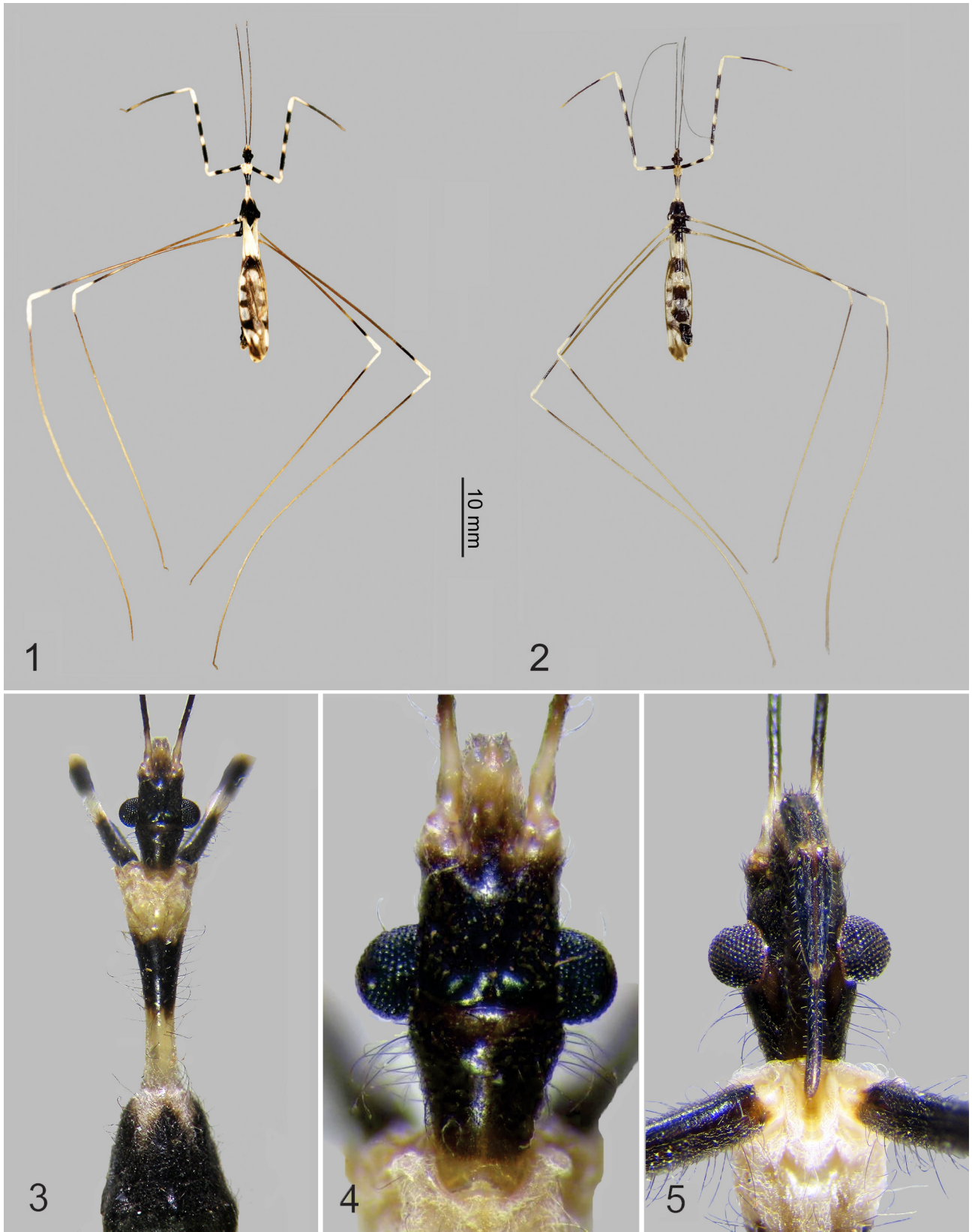
Abdomen slender, parallel-sided. Intersegmental boundaries indistinct dorsally, visible at places and marked by dark band ventrally. Eighth tergite transverse, small, ninth not sclerotized (Fig. 18). Seventh sternite moderately large, slightly emarginate posteriorly, not entirely covering gonocoxites; syngonapophysis visible (Fig. 19). Lateral view of female terminalia as in Fig. 20.

Measurements (in mm). Total length (from apex of head tip of forewing) 28.0. Head length 2.5, eye diameter from lateral side 0.5; anteocular region 1.7, postocular 1.0; width of head at eye 1.5, interocular distance 0.8, width at level of antenniferous tubercles 0.8, width immediately posteriad of eye 1; width of narrowest region of neck 0.5; length of antennal segments I 17.0, II 18.0, III 1.1, IV 2.1; length of visible labial segments I 1.0, II 1.0, III 1.2; length of pronotum 6.4, width at anterior angles in dorsal view 1.6, width at constriction 0.5, width at humeral angles 2.5, length of fore lobe 3.9, of hind lobe 2.5. Lengths of fore leg: coxa 6.0, femur 11.0, tibia 9.0, tarsus 1.1; lengths of mid leg: femur 22.0, tibia 36.5, tarsus 1.0; lengths of hind leg: femur 28.0, tibia 44.0, tarsus 1.0; length of abdomen along meson ventrally 16.0.

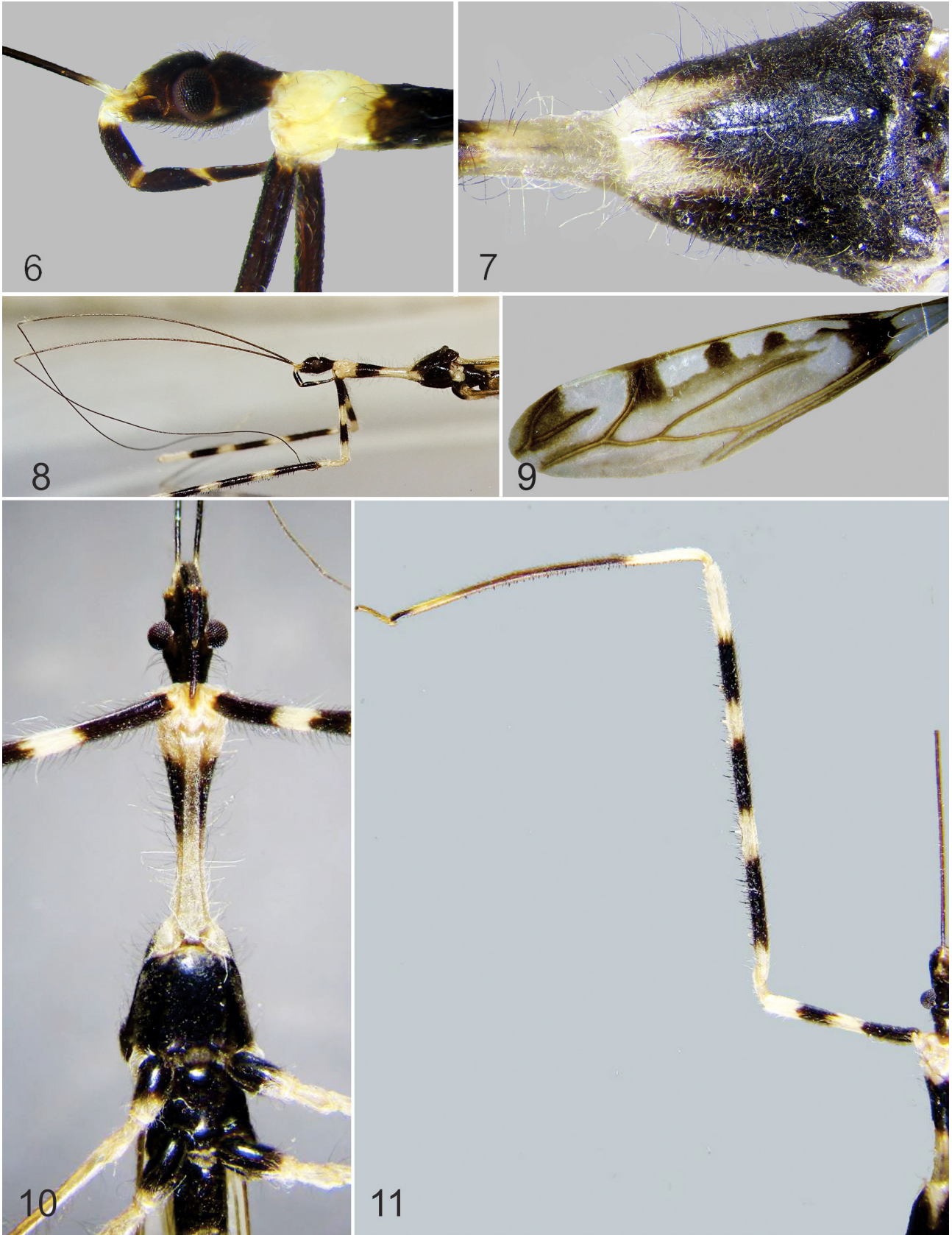
Etymology. The species is named in the honor of the late Pedro Wygodzinsky, a taxonomist renowned, among others, for his voluminous contribution to Emesinae.

Differential diagnosis and discussion

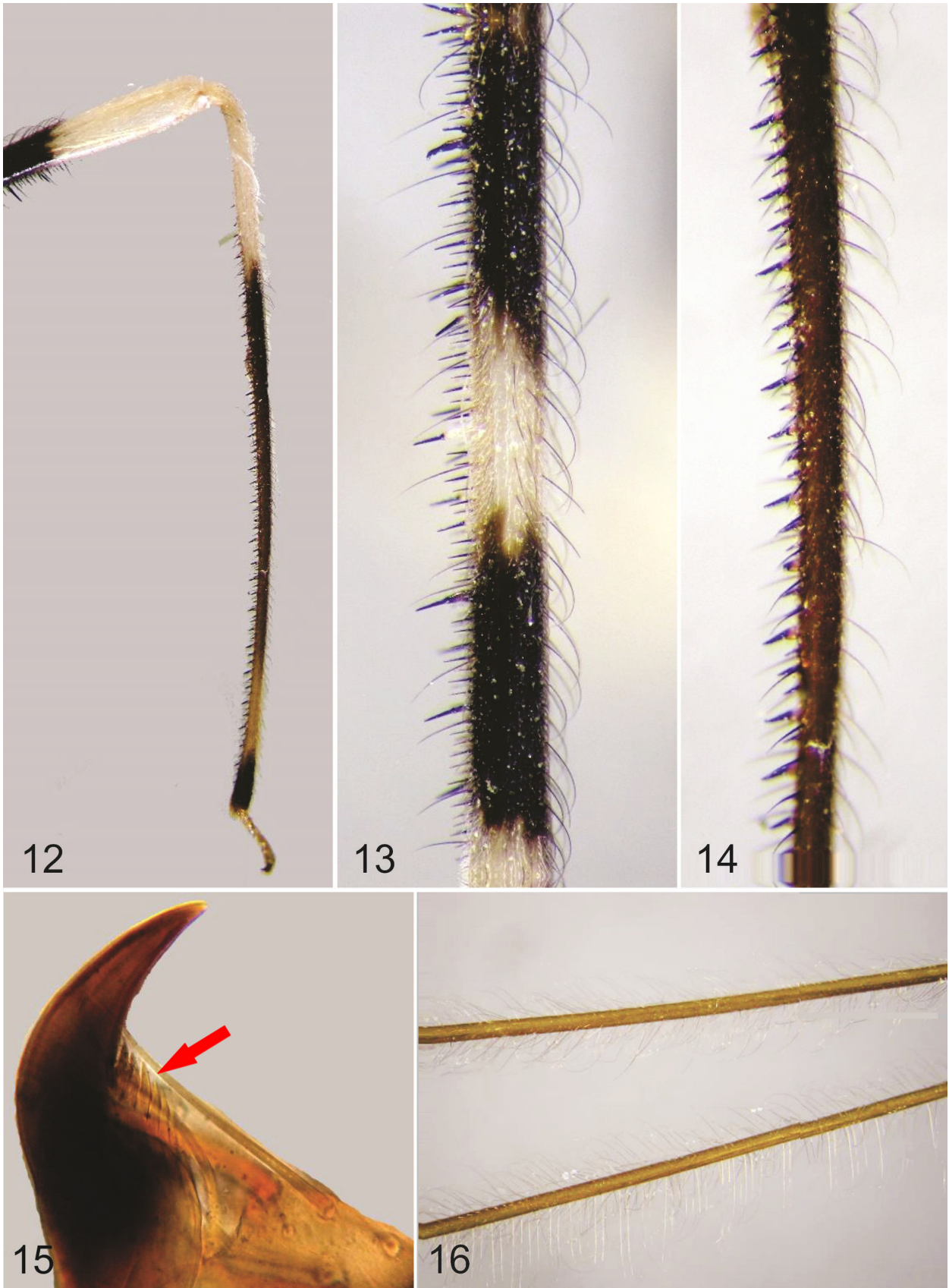
Based on the shape of pronotum, forewing venation and size of seventh sternite in female, Wygodzinsky (1966) defined three subgenera within *Myiophanes*. The present new species belongs to the nominotypical subgenus *Myiophanes* s. str. because the pronotum has a very large, dark colored triangular area on the hind lobe (in the subgenera *Paramyiophanes* and *Perimyiophanes* the pronotum is uniformly testaceous or provided with a whitish stripe on the median portion of the hind lobe). *Myiophanes* (*M.*) *greeni*, the only other species of this genus



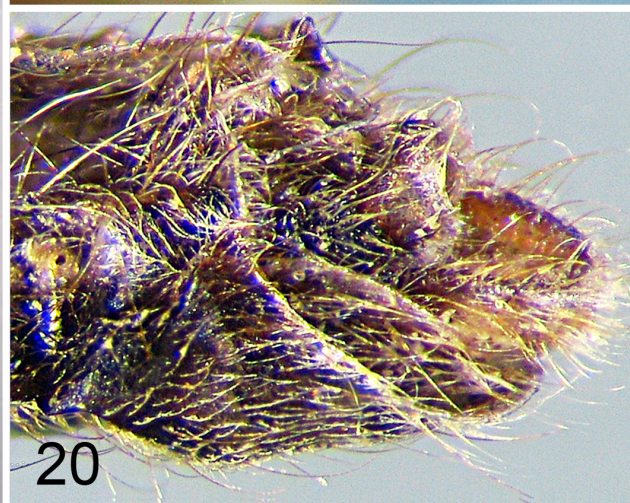
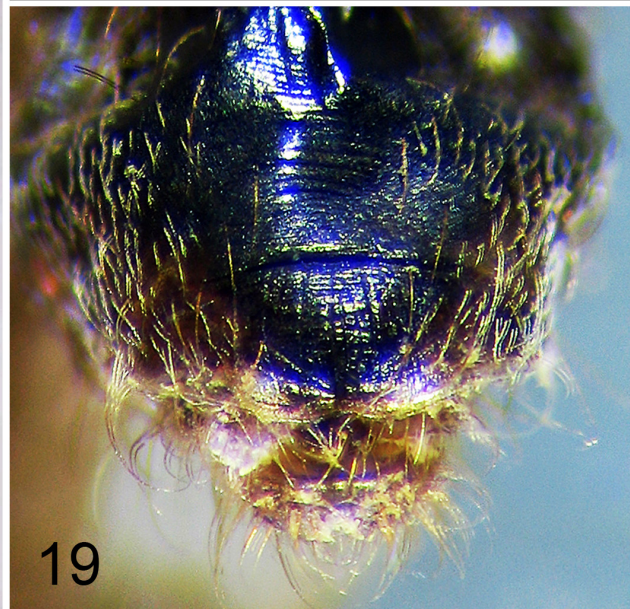
FIGURES 1–5. *Myiophanes wygodzinskyi* sp. nov., holotype. 1, habitus, dorsal view; 2, ventral view; Fig. 3, head and pronotum dorsal view; 4, head in dorsal view; 5, head in ventral view.



FIGURES 6–11. *Myiophanes wygodzinskyi* sp. nov., holotype. 6, head in lateral view; 7, hind lobe of pronotum; 8, lateral view of anterior half of body; 9, forewing; 10, pro-, meso- and metasternal coloration; 11, fore leg coloration.



FIGURES 12–16. *Myiophanes wygodzinskyi* sp. nov., holotype. 12, fore tibia; 13, details of spiniform processes on fore femur; 14, details of fore tibia; 15, spines at base of outer claw of fore leg (pointed by arrow); 16, pilosity of mid- and hind femora.



FIGURES 17–20. *Myiophanes wygodzinskyi* sp. nov., holotype. 17, abdomen in dorsal view, except extreme base; 18, female terminalia in dorsal view; 19, same in ventral view; 20, same in lateral view.

and subgenus occurring in Sri Lanka, differs from *M. wygodzinskyi* **sp. nov.** in its markedly smaller size (body length about 19 mm, as opposed to 28 mm in the new species) and the coloration of its pronotum, forewing and abdomen; *M. (M.) greeni* has been illustrated in detail by Kulkarni & Ghate (2016, figs. 1, 3, 4). In some respects *M. wygodzinskyi* **sp. nov.** is similar in coloration to two species described by Rédei (2005), especially *M. (M.) zebrina* Rédei, 2005, from Bangalore, which also has a broad triangular dark mark on the hind lobe of pronotum, but *M. zebrina* is a significantly smaller species (body length only 19.8 mm), similarly to *M. (M.) incompta* Rédei, 2005 (body length 17.5 mm), described from a single female collected in Pakistan. All three species, namely *M. greeni*, *M. zebrina* and *M. incompta*, appear to have different forewing coloration than that of *M. wygodzinskyi* **sp. nov.**; and in *M. wygodzinskyi* **sp. nov.** the pale triangular markings on the hind lobe of the pronotum are narrower and shorter than in all of the other species mentioned above. *Myiophanes (M.) tipulina* Reuter, 1881 (illustrated by Wygodzinsky 1966: fig. 80A) is entirely different in its coloration, the size and shape of its pronotum, as well as being smaller. In *M. wygodzinskyi* **sp. nov.** the pronotum is nearly 2.6 times longer than its maximum width at the humeral angles and its fore lobe is 1.5 times as long as median length of its hind lobe, therefore the fore lobe of the pronotum of the new species is much longer than most other species of this genus (see Rédei 2005). Another relatively large-bodied species (total length 21 mm) is *M. (M.) kempii* China, 1924, described from Siju Caves in Assam (China in Kemp 1924), but apart from its size and coloration (especially that of the abdomen), the head of this species is as long as fore lobe of pronotum, whereas it is much shorter in *M. wygodzinskyi* **sp. nov.** *Myiophanes (M.) fluitaria* McAtee & Malloch, 1926 (body length: 23 mm) and *M. (M.) annulifera* McAtee & Malloch, 1926 (body length: 15 mm), both described from the Malay Peninsula, have a markedly differently coloured forewing that is deeply emarginate apically (McAtee & Malloch 1926: figs. 34–35). Finally, *M. (M.) blotei* Wygodzinsky, 1966, from Sumatra (body length: 17.5 mm length) differs in size and coloration from *M. wygodzinskyi* **sp. nov.** The presence of a median carina terminating in a distinct tubercle at base of hind lobe of pronotum is apparently a unique character of *M. wygodzinskyi* **sp. nov.** not documented in any other species of *Myiophanes* before.

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