

## New and little known taxa of the tribe Mirolliini (Orthoptera: Tettigoniidae: Phaneropterinae) from Indo-Malayan region

A.V. Gorochov

## Новые и малоизвестные таксоны трибы Mirolliini (Orthoptera: Tettigoniidae: Phaneropterinae) из Индо-Малайской области

А.В. Горохов

Zoological Institute, Russian Academy of Sciences, 1, University Embankment, Saint Petersburg 199034, Russia. E-mail: orthopt@zin.ru

Зоологический институт РАН, Университетская набережная, 1, Санкт-Петербург 199034, Россия.

**Abstract.** The genus *Deflorita* Bolívar is divided into five subgenera: *Exorita* **subgen. nov.**, *Hueikaeana* Ingrisch, **stat. nov.**, *Pulcherita* **subgen. nov.**, *Separita* **subgen. nov.** and *Deflorita* s. str. The genus *Mirollia* Stål is divided into three subgenera: *Amirollia* Ingrisch, **stat. nov.**, *Hemimirollia* Ingrisch, **stat. nov.** and *Mirollia* s. str. One new genus, 11 new species and seven new subspecies from Indonesia, Malaysia, Vietnam, India and Laos are described: *D. (E.) angkasan* **sp. nov.**; *D. (E.) integra pensiangan* **subsp. nov.**; *D. (E.) marginata sabah* **subsp. nov.**; *D. (H.) alas* **sp. nov.**; *D. (H.) albopunctata latilobata* **subsp. nov.**; *D. (P.) demonstrativa* **sp. nov.**; *D. (S.) separata* **sp. nov.**; *D. (D.) meridionalis* **sp. nov.**; *D. (D.) forceps vietnamensis* **subsp. nov.**; *M. (H.) aceh* **sp. nov.**; *M. (A.) biapicalis* **sp. nov.**; *M. (M.) indica* **sp. nov.**; *M. (M.) tarbinskiyi* **sp. nov.**; *M. (M.) parabnormis* **sp. nov.**; *M. (M.) terminalis complanata* **subsp. nov.**; *M. (M.) elegantia australis* **subsp. nov.**; *M. (M.) fallax stenolobos* **subsp. nov.**; *Sergeitarbinskia excellens* **gen. et sp. nov.** New taxonomic and geographic data for some old taxa are also given.

**Key words.** Mirolliini, Indo-Malayan region, new taxa, new taxonomic and geographic data.

**Резюме.** Род *Deflorita* Bolívar подразделен на 5 подродов: *Exorita* **subgen. nov.**, *Hueikaeana* Ingrisch, **stat. nov.**, *Pulcherita* **subgen. nov.**, *Separita* **subgen. nov.** и *Deflorita* s. str. Род *Mirollia* Stål подразделен на 3 подрода: *Amirollia* Ingrisch, **stat. nov.**, *Hemimirollia* Ingrisch, **stat. nov.** и *Mirollia* s. str. Из Индонезии, Малайзии, Вьетнама, Индии и Лаоса описаны один новый род, 11 новых видов и 7 новых подвидов: *D. (E.) angkasan* **sp. nov.**; *D. (E.) integra pensiangan* **subsp. nov.**; *D. (E.) marginata sabah* **subsp. nov.**; *D. (H.) alas* **sp. nov.**; *D. (H.) albopunctata latilobata* **subsp. nov.**; *D. (P.) demonstrativa* **sp. nov.**; *D. (S.) separata* **sp. nov.**; *D. (D.) meridionalis* **sp. nov.**; *D. (D.) forceps vietnamensis* **subsp. nov.**; *M. (H.) aceh* **sp. nov.**; *M. (A.) biapicalis* **sp. nov.**; *M. (M.) indica* **sp. nov.**; *M. (M.) tarbinskiyi* **sp. nov.**; *M. (M.) parabnormis* **sp. nov.**; *M. (M.) terminalis complanata* **subsp. nov.**; *M. (M.) elegantia australis* **subsp. nov.**; *M. (M.) fallax stenolobos* **subsp. nov.**; *Sergeitarbinskia excellens* **gen. et sp. nov.** Приведены также новые таксономические и географические данные для некоторых старых таксонов.

**Ключевые слова.** Mirolliini, Индо-Малайская область, новые таксоны, новые таксономические и географические данные.

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## Introduction

The tribe Mirolliini includes numerous species of small katydids, which are distributed in the Indo-Malayan region, live on trees and bushes in tropical forests, and partly imitate their leaves. Between the description of its first species in 1843 and 1997, this tribe contained only 16 species and was considered not very rich among the Phaneropterinae. But later the Mirolliini attracted the special interest of investigators; to date, 62 new species have been described. The largest number of these species was described by two authors: 21 species by S. Ingrisch with his Indian co-author (Ingrisch, 1998, 2011; Ingrisch, Shishodia, 1998, 2000), and 26 species by me with L. Kang (Gorochov, 1998, 2003, 2004, 2005a, 2005b, 2008; Gorochov, Kang, 2004). All other species (15) were described in this period by some other Chinese researchers. Here, a new genus, 11 new species and seven new subspecies are additionally described.

Most of the studied material was collected by Russian colleagues and is deposited (including all types) in the collection of the Zoological Institute of the Russian Academy of Sciences (ZIN). The material studied is dry and pinned; the illustrations were made using a Leica M216 stereomicroscope and a DFC290 digital camera. The internet-catalogue “Orthoptera Species File” (Cigliano et al., 2023) is cited here as OSF.

## Systematics

### Tribe Mirolliini Brunner-Wattenwyl, 1878

**Note.** At present, this tribe may contain only three genera, because some of the “genera” described by S. Ingrisch (2011) are insufficiently distinguished from each other (see the notes to the genera *Deflorita* Bolivar, 1906 and *Mirollia* Stål, 1873 below). And one additional genus (*Sergeitarbinskia* **gen. nov.**) is tentatively included in this tribe here. Thus, this tribe is characterized by the following features: the body is small or medium-sized; the head is rather high and narrow, with very convex (spherical) eyes clearly projecting upwards, and with moderately small but distinct upper rostral tubercle having the apical part denticle-like or convexity-like and separated by a diverse dorsal notch from its posterior part which is larger and rounded as well as having usually a median groove on the dorsum; the legs are thin, without large spines and lobes, with thickened proximal half of the hind femur, and with a large tympanal widening on the fore tibia having a slit-like but inflated inner tympanum and an open outer tympanum; the tegmina are long and more or less oval, with the dorsal fields strongly narrowed after the stridulatory apparatus; the hind wings are long, distinctly protruding beyond the tegminal apices; the abdominal apex is more or less simple in its structure (including the male genital plate without styles, and the ovipositor rather short, strongly curved and finely serrated).

### Genus *Deflorita* Bolivar, 1906

**Note.** This genus contains about 30 rather diverse species which differ from the genus *Mirollia* in the characteristic variegated body coloration and completely membranous male genitalia; from the genus *Sergeitarbinskia* **gen. nov.**, in a different shape of the male dorsal tegminal fields (compare Figs 1, 2, 4, 5, 7–9, 11, 12, 14, 16, 93–95, 100, 109, 113 and 201, 202, 208, 209). Previous attempts to classify these species into two “genera” (*Deflorita* and *Hueikaeana* Ingrisch, 1998; OSF) had led us to the intractable problem of delimiting these groups. For example, one species was originally described as “*Hueikaeana decora*” (Gorochov, 2008) but later transferred to *Deflorita* sensu Ingrisch (Ingrisch, 2011). However, the latter decision is not supported by some morphological characters, and the establishment of a new genus for this species also cannot give good characters for its separation from these “genera”. A most suitable variant is to combine these “genera” with the subdivision of *Deflorita* s. l. into five more distinct subgenera which are characterized in a subgeneric key below (but it is necessary to mention that *D. unicolor* Karny, 1926 is insufficiently described and cannot be placed in any subgenus).

## Key to subgenera

1. Anterior half of pronotum light but with a pair of small darkened spots in anterolateral corners of disc and often with darkened stripe between these spots located along anterior edge of disc (Figs 1–8), or this portion of pronotal disc with large and very light (usually whitish) roundly triangular area bordered by dark stripe (Figs 95, 101); dorsal fields of female tegmina more or less whitish and with darkened only lateral borders (Figs 3, 6, 101); male abdomen without distinct posteromedian lobe on last tergite (Figs 36, 38, 45, 47, 61, 97, 98, 103, 106, 112) but sometimes with diverse posteromedian lobe on 8<sup>th</sup> and/or 9<sup>th</sup> abdominal tergites (Figs 36, 38, 45, 47, 55, 97, 98, 103, 106, 112); male genital plate almost without apical lobules (Figs 51, 53, 56, 58, 59) or with these lobules directed backwards/upwards (Figs 37, 38, 40, 43, 46, 47, 49, 62, 98, 99, 103, 105, 106, 108, 111, 112); female genital plate rather short, triangular and with more or less rounded apex (Figs 41, 60, 104, 114) ..... 2
- Anterior half of pronotum also light but with darkened median triangular area usually divided into two halves by thin light median line and often having lighter anteromedian part (Figs 9, 10, 12–15), but sometimes this area partly reduced, i.e. preserved as a pair of small darkened spots or stripes similar to those of *Exorita* **subgen. nov.** (Figs 11, 16, 17); dorsal fields of female tegmina diverse in coloration but different from those in opposite thesis (Figs 10, 13, 15, 17); male abdomen with distinct posteromedian lobe on last tergite (Figs 89, 91), or male genital plate with apical lobules directed backwards/laterally (Figs 68, 76) but sometimes only upwards (Figs 81, 82); female genital plate less short (Figs 74, 80) or with distinctly notched apex (Figs 87, 92) ..... 3
2. Anterior half of pronotum with a pair of small darkened spots in anterolateral corners of disc and often with darkened stripe between these spots located along anterior edge of disc (Figs 1–8); 8<sup>th</sup> abdominal tergite of male diverse, but 9<sup>th</sup> one without or almost without posteromedian lobe (Figs 36, 38, 45, 47, 55, 61); male genital plate almost without apical lobules (Figs 51, 53, 56, 58, 59) or with these lobules short (Figs 37, 40, 43, 46, 49, 62) ..... Subgenus *Exorita* **subgen. nov.**  
<http://zoobank.org/7EBE0AAC-E0B7-4BB8-B873-1F60951E6666>  
[Composition: type species – *Deflorita pulchra* Gorochov, 2008; *D. (E.) angkasan* **sp. nov.**; *D. (E.) bella* Gorochov, 2008; *D. (E.) integra* Ingrisch, 1998; *D. (E.) marginata* Ingrisch, 2011; *D. (E.) protecta* Ingrisch, 2011. Etymology: after combination of generic names “*Exora*” and “*Deflorita*”].
- Anterior half of pronotum with large and very light (usually whitish) roundly triangular area bordered by dark stripe (Figs 95, 101); 8<sup>th</sup> abdominal tergite of male without posteromedian lobe, but 9<sup>th</sup> one with short posteromedian lobe (Figs 97, 98, 103, 106, 112); male genital plate with very long apical lobules (Figs 99, 105, 108, 111) ..... Subgenus *Deflorita* **s. str.** (= *Exora* Brunner-Wattenwyl, 1878, homonym)  
[Composition: type species – *Exora deflorita* Brunner-Wattenwyl, 1878; *D. (D.) apicalis* Shiraki, 1930; *D. (D.) argentata* Ingrisch, 1998; *D. (D.) centa* Shi et Chang, 2004; *D. (D.) curva* Shi et Chang, 2004; *D. (D.) forceps* Gorochov, 2004; *D. (D.) hemilyra* Gorochov, 2004; *D. (D.) lyra* Gorochov, 2004; *D. (D.) meridionalis* **sp. nov.**; *D. (D.) paralyra* Gorochov, 2008].
3. Upper rostral tubercle of head behind apical denticle in shape of rather high and short keel-like convexity with lateral surfaces not wide and obliquely vertical (Fig. 79); dorsal fields of female tegmina yellowish green with darkened posterior half (Fig. 10) or middle and posterior areas (Fig. 13); last tergite of male without distinct posteromedian lobe (Figs 67, 69, 75, 77); male genital plate with apical lobules directed backwards/laterally and without posterior (ventral) lamellar keel around posteromedian notch (Figs 68, 69, 76, 77); female genital plate longer and with rounded or narrowly truncated apex (Figs 74, 80) ..... Subgenus *Hueikaeana* **Ingrisch, 1998, stat. nov.**  
[Composition: type species – *Hueikaeana directa* Ingrisch, 1998; *D. (H.) alas* **sp. nov.**; *D. (H.) albopunctata* (Wang et Shi, 2010); *D. (H.) alia* (Gorochov, 2004); *D. (H.) andreji* (Ingrisch, 2011); *D. (H.) ornata* (Gorochov, 2008); *D. (H.) quadrimaculata* (Ingrisch, 2011)].
- Upper rostral tubercle of head behind apical denticle in shape of low and often longer keel-like convexity with lateral surfaces rather wide and obliquely horizontal (Figs 84, 85, 88); dorsal fields of female tegmina with large whitish area partly bordered by dark stripe (this stripe running along anterior, lateral and posterior edges of this area), and with small yellowish green basal part and longer

- dark distal portion (Figs 15, 17); last tergite of male with distinct (Figs 89, 91) or without posteromedian lobe; male genital plate with apical lobules directed upwards or backwards/upwards, and with posterior (ventral) lamellar keel around posteromedian notch (Figs 81, 82, 90, 91); female genital plate shorter and with distinctly notched apex (Figs 87, 92) ..... 4
4. Anterior half of pronotum with dark triangular median area divided by lighter median line (Figs 14, 15); last tergite of male without distinct posteromedian lobe; male genital plate with apical/subapical lobules directed upwards, and with long or high posterior ventral lamellar keel located around proximal half of posteromedian notch (Figs 81, 82); female genital plate with rather deep apical notch (Fig. 87) ..... Subgenus ***Pulcherita* subgen. nov.**  
<https://zoobank.org/C5F881D1-1B76-4E66-94D4-BA1C3745E008>  
 [Composition: type species – *Hueikaeana pulchella* Gorochov, 2004; *D. (P.) demonstrativa* **sp. nov.**; *D. (P.) dohrni* (Brunner-Wattenwyl, 1891). *Etymology*: after combination of type species name “*pulchella*” and generic name “*Deflorita*”].
- Anterior half of pronotum with a pair of short dark longitudinal stripes along lateral edges of disc (Figs 16, 17); last tergite of male with distinct posteromedian lobe (Figs 89, 91); male genital plate with apical lobules directed backwards/upwards, and with short or low posterior ventral lamellar keel located around all parts of posteromedian notch (Figs 90, 91); female genital plate with clearly smaller apical notch (Fig. 92) ..... Subgenus ***Separita* subgen. nov.**  
<http://zoobank.org/7206690C-41FD-42E6-A477-99F8454EBF47>  
 [Composition: type species – *Deflorita (Separita) separata* **sp. nov.**; *H. (S.) decora* Gorochov, 2011. *Etymology*: after combination of type species name “*separata*” and generic name “*Deflorita*”].

***Deflorita (Exorita) angkasan* sp. nov.**

<https://zoobank.org/8C4C3437-656C-4800-86F5-8DEE310A6FA7>

(Figs 2, 3, 18, 34–42)

**Type material.** *Holotype*: male, INDONESIA, Sumatra I., Aceh Province not far from North Sumatra Province, environs of Kedah Lodge on Angkasan River near Gunung Leuser National Park (Mr. Jali’s Bungalows), 3.97 N, 97.25 E, 1000–1500 m, primary forest, at light, 9–15.II.2023 (A. Gorochov, M. Omelko, A. Fomitshev) (ZIN). *Paratype*: 1 female, same data as for holotype (ZIN).

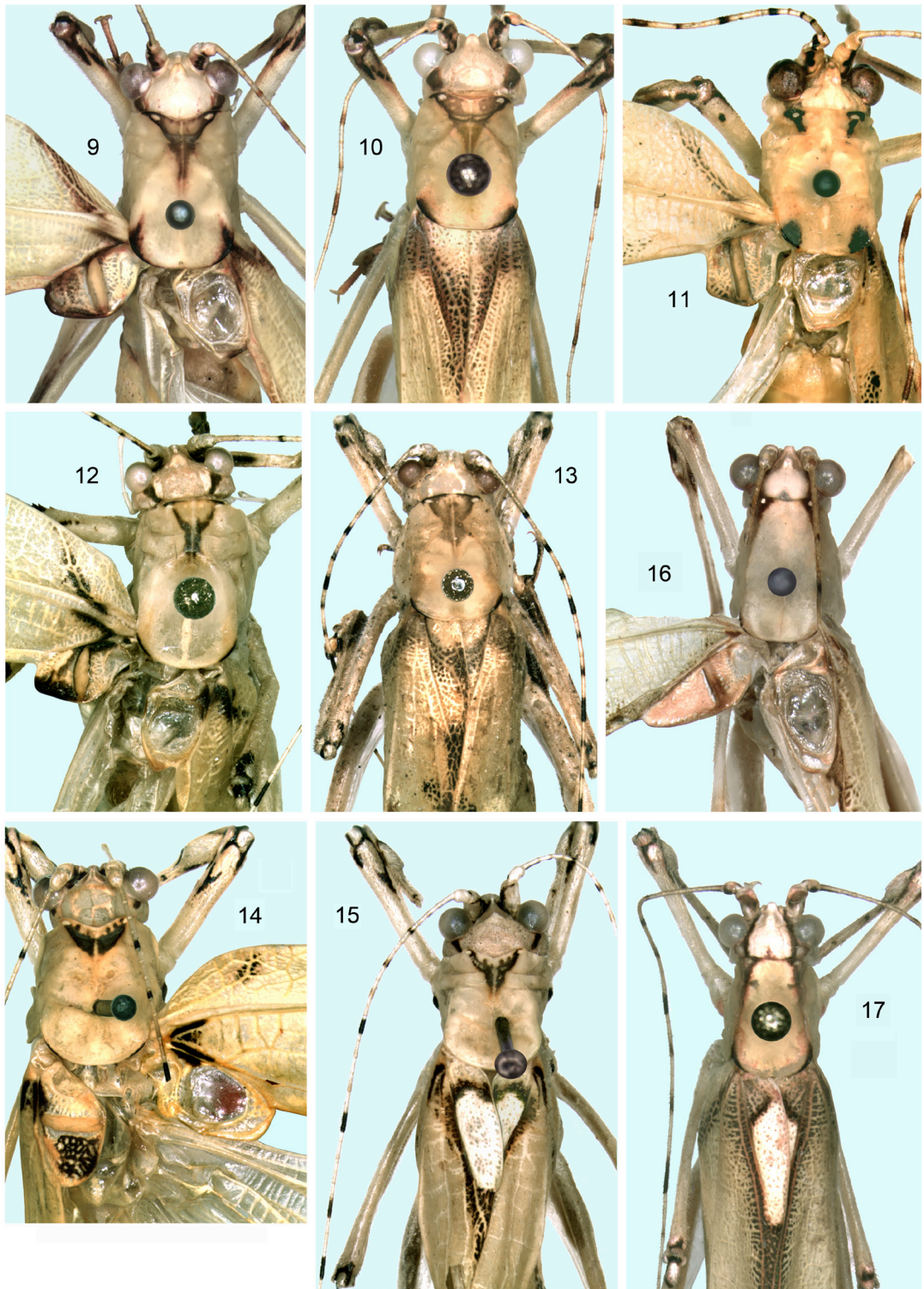
**Description.** *Male* (holotype). General appearance most similar to that of *D. (E.) integra* from Borneo I. Body coloration yellowish green with following marks (Figs 2, 18): dorsum of epicranium (including upper rostral tubercle and lateral ocelli) whitish with thin faint rose pattern; upper part of each gena near this dorsum and behind eye with two short brown to dark brown longitudinal stripes; small spots on medial parts of antennal cavity borders and between them brown; scape and pedicel with blackish marks; antennal flagellum with small and sparse blackish to dark brown spots; pronotum with a pair of rather small blackish spots in anterolateral corners of disc (medially these spots contacting with a pair of small whitish grey oval spots but not completely surrounding them), and with blackish stripes along anterior edge of disc between these spots as well as along posterior and lateral edges of hind pronotal lobe; lateral tegminal field with greyish tinge in distal portion, dark brown stripe along border of dorsal tegminal field (this stripe running also behind dorsal field along short portion of anal edge of lateral field), greyish brown oblique stripe in distal half and spots near its distal part (one of these spots distinctly larger than others), almost light brown but poorly distinct band along anal edge between these stripes and spots, and darkened distoanal edge behind all these stripes and largest spot; dorsal field almost completely transparent in right (lower) tegmen and mainly rose in left (upper) tegmen, but latter field also with two thin brown stripes along proximal and distal edges of stridulatory vein as well as whitish most part of area behind this vein and dark stridulatory teeth on ventral surface (Figs 2, 34); hind wing mainly transparent but with distal portion of costal part more or less similar to distal portion of tegmen in coloration; legs with small blackish to dark brown marks in apical parts of fore and middle femora, numerous brown to dark brown spots on hind femur, diverse dark spots on proximal and distal parts of all tibiae, and darkened marks on middle part of fore and middle tarsi as well as on all segments of hind tarsus; abdominal tergites mainly yellowish but with light brown area on dorsum of 2<sup>nd</sup> tergite and rose marks around this area, and with whitish spot on each lateral side of 2<sup>nd</sup>–7<sup>th</sup> tergites (spots of 2<sup>nd</sup>, 3<sup>rd</sup> and 7<sup>th</sup> tergites distinctly larger than others, and all spots partly outlined by light brown to dark brown borders); two last abdominal sternites brown to dark brown; genital plate and apices of cerci almost light brown. Upper rostral tubercle in shape of distinct median ridge having small denticulate apical part separated from higher, wider and longer posterior part by small transverse dorsal concavity; latter (posterior) part rounded in profile, laterally almost vertical and with rather thin but distinct dorsomedian groove (Fig. 35). Tegmina long and rather narrow, reaching distal thirds of hind tibiae, slightly narrowed before distal part which insignificantly widened in subapical part and approximately angular in apical part, with almost obliquely truncated distoanal edge (Fig. 18), and with stridulatory apparatus as in Figs 2, 34; hind wings significantly protruding beyond tegminal apices, with exposed part (in rest condition) having narrow and acutely angular apical portion. Abdomen (Figs 36–38): 8<sup>th</sup> tergite



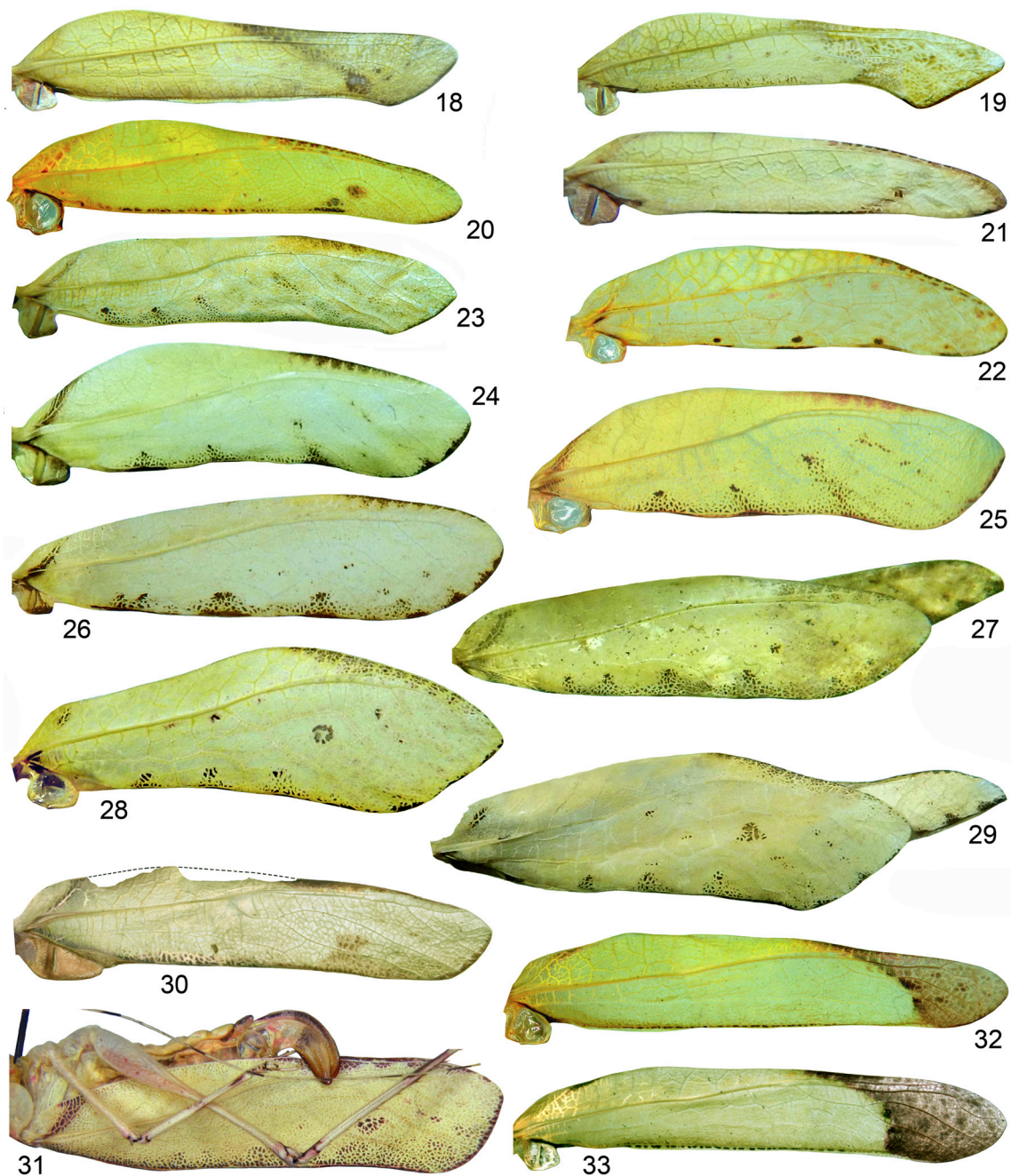


**Figs 1–8.** *Deflorita (Exorita)* spp., head with pronotum and proximal portions of tegmina as well as some parts of legs from above: 1 – *D. (E.) interga pensiangan subsp. nov.*; 2, 3 – *D. (E.) angkasan sp. nov.*; 4 – *D. (E.) protecta* Ingr.; 5, 6 – *D. (E.) pulchra* Gor.; 7 – *D. (E.) marginata sabah subsp. nov.*; 8 – *D. (E.) bella* Gor. Male with spread tegmina (1, 2, 4, 5, 7, 8); female with spread tegmina (3), and it in rest condition (6).



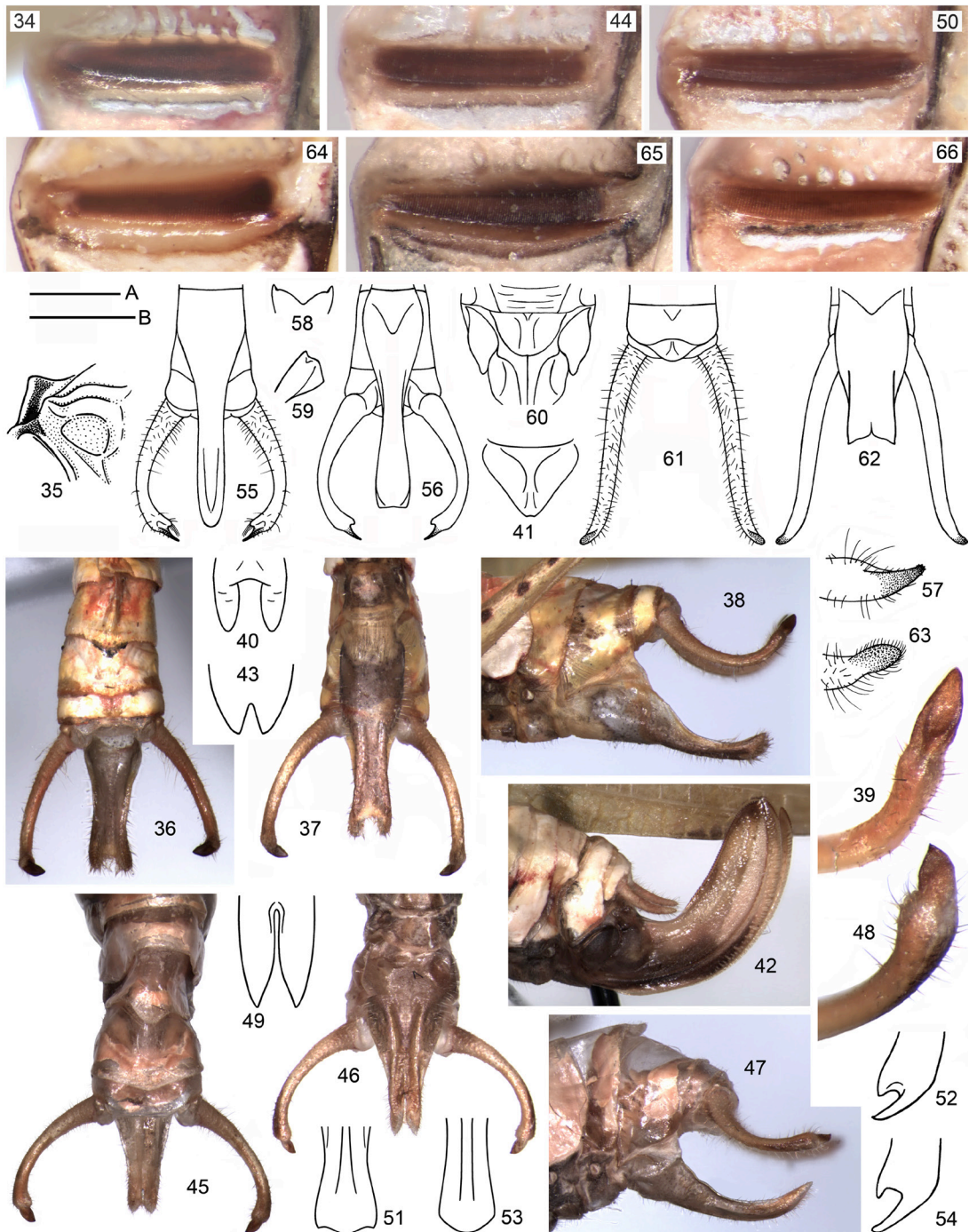


**Figs 9–17.** *Deflorita* spp., head with pronotum and proximal portions of tegmina as well as parts of legs from above: 9 – *D. (Hueikaeana) alas* **sp. nov.**; 10 – *D. (H.) ornata* (Gor.); 11 – *D. (H.) quadrimaculata* (Ingr.); 12 – *D. (H.) albopunctata latilobata* **subsp. nov.**; 13 – *D. (H.) alia* (Gor.); 14 – *D. (Pulcherita) pulchella* (Gor.); 15 – *D. (P.) demonstrativa* **sp. nov.**; 16 – *D. (Separita) separata* **sp. nov.**; 17 – *D. (S.) decora* (Gor.). Male with spread tegmina (9, 11, 12, 14, 16); female in rest condition (10, 13, 15, 17).



**Figs 18–33.** *Deflorita* spp., male (18–26, 28, 30, 32, 33) and female (27, 29, 31): 18 – *D. (Exorita) angkasana* **sp. nov.**; 19 – *D. (E.) integra pensiangana* **subsp. nov.**; 20 – *D. (E.) pulchra* Gor.; 21 – *D. (E.) marginata sabah* **subsp. nov.**; 22 – *D. (E.) bella* Gor.; 23 – *D. (Hueikaeana) quadrimaculata* (Ingr.); 24 – *D. (H.) alas* **sp. nov.**; 25 – *D. (H.) ornata* (Gor.); 26 – *D. (H.) albopunctata latilobata* **subsp. nov.**; 27 – *D. (H.) alia* (Gor.); 28 – *D. (Pulcherita) pulchella* (Gor.); 29 – *D. (P.) demonstrativa* **sp. nov.**; 30 – *D. (Separita) separata* **sp. nov.**; 31 – *D. (S.) decora* (Gor.); 32 – *D. (D.) paralyra* Gor.; 33 – *D. (D.) meridionalis* **sp. nov.** Left (18, 19, 21, 23, 24, 26, 30, 33) and right (20, 22, 25, 28, 32) tegmen of male (left tegmen reversed); wings of female in rest condition: without other body parts (27, 29) or with some of these parts but without hind wings (31).



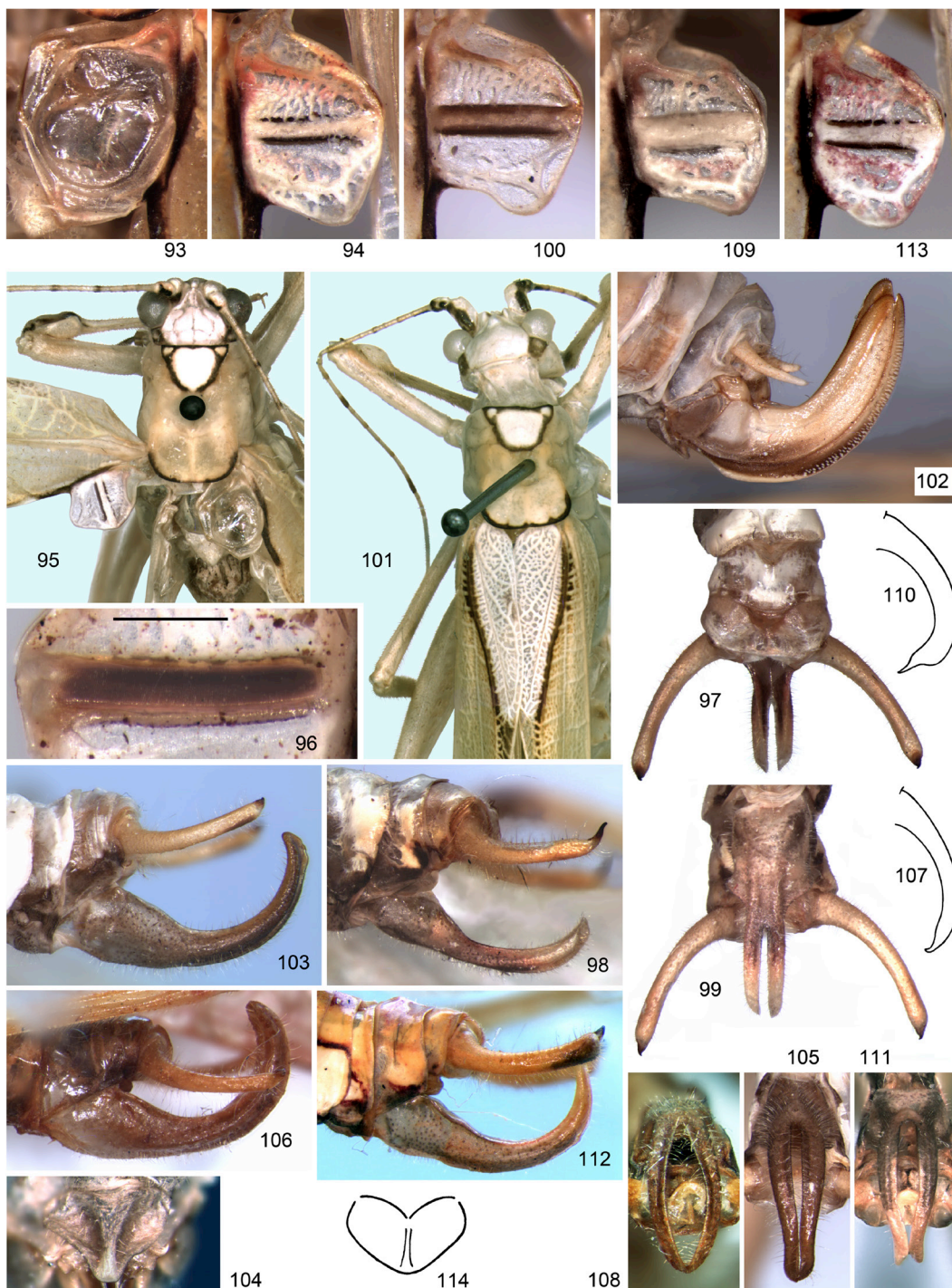


**Figs 34–66.** *Deflorita* spp., male (34–40, 43–59, 61–66) and female (41, 42, 60): 34–42 – *D. (Exorita) angkasan* sp. nov.; 43 – *D. (E.) integra integra* Ingr.; 44–49 – *D. (E.) i. pensiangan* subsp. nov.; 50–52 – *D. (E.) marginata sabah* subsp. nov.; 53, 54 – *D. (E.) m. marginata* Ingr.; 55–60 – *D. (E.) pulchra* Gor.; 61–63 – *D. (E.) bella* Gor.; 64 – *D. (Hueikaeana) alas* sp. nov.; 65 – *D. (H.) albopunctata latilobata* subsp. nov.; 66 – *D. (Separita) separata* sp. nov. Stridulatory vein of left tegmen, ventral view (34, 44, 50, 64–66); upper rostral tubercle, dorsolateral view (35); abdominal apex from above (36, 45, 55, 61), from below (37, 46, 56, 62) and from side (38, 47), but in two cases without genital plate (55, 61); apical part of genital plate from behind (58), from side (59), from below and slightly behind (40, 43, 49, 51, 53); cercal apical part in dorsolateral (39, 48), dorsal (52, 54), lateral (57) and medial (63) views. Scale bars = 0.5 mm: A – only for 65; B – only for 34, 44, 50, 64 and 66. [55–63 – after Gorochov (2004); 43 – after Ingrisch (1998), modified].



**Figs 67–92.** *Deflorita* spp., male (67–73, 75–78, 81–84, 88–91) and female (74, 79, 80, 85–87, 92): 67–71 – *D. (Hueikaeana) alas* sp. nov.; 72–74 – *D. (H.) ornata* (Gor.); 75–78 – *D. (H.) albopunctata latilobata* subsp. nov.; 79, 80 – *D. (H.) alia* (Gor.); 81–84 – *D. (Pulcherita) pulchella* (Gor.); 85–87 – *D. (P.) demonstrativa* sp. nov.; 88–91 – *D. (Separita) separata* sp. nov.; 92 – *D. (S.) decora* (Gor.). Abdominal apex from above (67, 75, 89), from below (68, 76, 90) and from side (69, 77, 91); distal cercal part, dorsolateral view (70, 73, 78); apical cercal part, posterior view (71, 72); abdominal apex from below but without most part of ovipositor (74, 92); upper rostral tubercle, dorsolateral view (79, 84, 85, 88); female genital plate from below (80, 87); male genital plate from side (81), and its apical part from behind (82); cercus from above (83). [74, 79–84, 92 – after Gorochov (2004, 2008)].





**Figs 93–114.** *Deflorita* spp., male (93–100, 103, 105–113) and female (101, 102, 104, 114): 93–99 – *D. (D.) meridionalis* **sp. nov.**; 100–105 – *D. (D.) forceps vietnamensis* **subsp. nov.**; 106–108 – *D. (D.) f. forceps* Gor.; 109–112 – *D. (D.) hemilyra* Gor.; 113 – *D. (D.) argentata* Ingr.; 114 – *D. (D.) parallela* Gor. Dorsal field of right (93) and left (94, 100, 109, 113) tegmen; head with pronotum and proximal portions of tegmina as well as some parts of legs from above (95, 101); stridulatory vein of left tegmen, ventral view (96); male abdominal apex from above (97), from side (98, 103, 106, 112), from below and slightly behind (99); ovipositor from side (102); female genital plate from below (104, 114); male genital plate, posteroventral view (105, 108, 111); male cercus from above (107, 110). Scale bar (only for 96) = 0.5 mm. [107, 110, 114 – after Gorochov (2004)].

with rather short and roundly triangular posteromedian lobe not reaching apex of 9<sup>th</sup> tergite; latter tergite also with similar but distinctly shorter lobe; 10<sup>th</sup> (last) tergite without any lobe, with practically straight posterior edge; epiproct short, transversally triangular; cercus strongly arcuate, with rather large and elongately-oval apical plate which slightly inflated in basal part but flattened in rest part as well as directed upwards/medially and having roundly angular apex (Fig. 39); genital plate rather long and almost straight in profile, with somewhat narrowed distal half and slightly higher apical part having a pair of short apical lobules which located not very closely to each other (notch between them rather wide in its deepest part) and directed upwards/backwards (Figs 37, 38, 40); genitalia with a pair of long and rather thin as well as strongly curved posterior lobes.

**Female.** Coloration and structure of body as in male but having following differences: dorsal tegminal field clearly longer, gradually narrowing in distal portion, with rather irregular venation (stridulatory apparatus absent), and with whitish coloration having also rose spot at base, semi-transparent and more or less brownish grey some membranes, blackish to dark brown stripe between dorsal and lateral fields (this stripe occupying also small portion of dorsal field behind this whitish area; Fig. 3); abdomen without posteromedian projections on tergites, with smaller epiproct and cerci (cerci also not specialized, almost fusiform, completely light), with triangular and brown to dark brown genital plate having low ventromedian keel and narrowly truncated apex (Fig. 41), and with ovipositor as in Fig. 42.

**Length** in mm. Body: male 13.5, female 15.0; body with wings: male 32.0, female 36.0; pronotum: male 3.4, female 3.2; tegmina: male 21.0, female 24.5; parts of hind wings exposed behind tegminal apices: male 7.0, female 7.5; hind femora: male 12.9, female 13.5; ovipositor 5.8.

**Comparison.** The new species is distinguished from the most similar and related species *D. (E.) integra* by the dark spots in the anterolateral corners of the pronotal disc contacting with a pair of small whitish grey spots but not completely surrounding them (compare Fig. 1 and Figs 2, 3), the dark stripe along the posterior edge of the hind pronotal lobe not interrupted in its median part (Figs 1–3), the widened distal part of the tegmina less large (shorter and narrower; Figs 18, 19), more curved male cerci with narrower (less widely oval) apical plates (Figs 38, 39, 47, 48), and the apical notch of the male genital plate clearly wider in its deepest part (Figs 40, 43, 49). From *D. (E.) pulchra* and *D. (E.) protecta* also having a posteromedian lobe on the 8<sup>th</sup> abdominal tergite of male, the new species differs in this lobe being much shorter (Figs 36, 55), and from all the other congeners, in the presence of this lobe as well as in some other characters.

**Etymology.** The new species is named after Angkasan River situated very near its type locality.

***Deflorita (Exorita) integra pensiangan subsp. nov.***

<http://zoobank.org/E3034797-6AB4-480F-94B5-44B0C7822A1F>

(Figs 1, 19, 44–49)

**Type material.** *Holotype*: male, MALAYSIA, Borneo I., Sabah State, environs of Pensiangan Town, 4°34.948' N, 116°19.935' E, 516 m, 27.V–2.VI.2014 (E. Shcherbakov) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *D. (E.) angkasan sp. nov.* but with following differences: rose pattern on head and abdomen absent; darkened marks on scape and pedicel faintly lighter (brown), on distal half of tegminal lateral field less distinct, and on legs also lighter (brown to light brown) and somewhat reduced in size (middle tibia almost completely light); dorsal tegminal field with proximal part before stridulatory vein whitish but having rose spot in anterolateral corner (Figs 1, 19); abdominal tergites dorsally almost whitish (except for 2<sup>nd</sup> tergite which dorsally light brown), and these whitish areas partly separated from lateral whitish spots by short brownish vertical stripes; distal portion of lateral tegminal field slightly wider (higher) and longer (compare Figs 18 and 19); stridulatory teeth on ventral surface of this field as in Fig. 44; epiproct somewhat more elongate and rounded distally; cercus less curved, with apical plate more inflated basally and shorter in rest (flattened) part having small acute denticle at apex (Figs 45–48); genital plate slightly arcuate in profile, with distinctly deeper but very narrow posteromedian notch and a pair of lamellar but almost acute apical lobules around it (Figs 46, 47, 49).

**Female.** Unknown.

**Length** in mm. Body 13.8; body with wings 30.5; pronotum 2.8; tegmina 20.0; parts of hind wings exposed behind tegminal apices 7.8; hind femora 12.7.

**Comparison.** This new taxon is very similar to *D. (E.) i. integra* in the coloration and structure of the body (including the pronotal pattern and the shape of the male cercal apices), but it differs from the latter subspecies in a more arcuate (in profile) genital plate with all parts of its distal half practically equal in height (in profile, this plate in the nominotypical subspecies of this species is more similar to that of *D. angkasan sp. nov.*; compare Figs 38 and 47), and with a distinctly deeper and very narrow posteromedian notch as well as clearly longer apical lobules around it (Figs 43, 49). These subspecies were collected in rather distant localities of Sabah: *D. (E.) i. integra* in the northern part of this state (Kinabalu Mt) and *D. (E.) i. pensiangan subsp. nov.* in its southwestern part.

**Etymology.** The new subspecies is named after Pensiangan Town situated near its type locality.

***Deflorita (Exorita) marginata sabah subsp. nov.***

<http://zoobank.org/E409327C-044C-4AC0-9E51-10FA1F870004>

(Figs 7, 21, 50–52)

**Type material.** *Holotype*: male, MALAYSIA, Borneo I., Sabah State, environs of Pensiangan Town, 4°34.948' N, 116°19.935' E, 516 m, 27.V–2.VI.2014 (E. Shcherbakov) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of *D. (E.) angkasan sp. nov.* and *D. (E.) integra pensiangana subsp. nov.* but differs in the following characteristic features: head dorsum whitish with rose tinge and brown median triangle near its posterior margin; pronotum with pattern on anterior part almost as in first species, but pattern on hind pronotal part almost as in second taxon (Fig. 7); tegminal lateral field similar to that of *D. (E.) pulchra* and *D. (E.) protecta*, i.e. gradually narrowing to narrowly rounded apex, with dark brown stripe along anterior portion of medial edge and narrower stripe along middle portion of this edge, and with brown stripe running along distal half of lateral (costal) edge to darkened apex and from this apex along short distal portion of medial edge (Fig. 21); left and right dorsal tegminal fields rose, but first field with light brown stridulatory vein having dark ventral teeth (Fig. 50), and second one with transparent mirror (structure of these fields as in Fig. 7); hind wings similar to those of all above-mentioned species, but distal portions of their costal parts light brown with greyish tinge; legs with pattern approximately as in *D. (E.) angkasan sp. nov.*, but darkened marks lighter (light brown to reddish brown); abdominal tergites without posteromedian projections, almost whitish with rose tinge and light brown dorsum of 2<sup>nd</sup> tergite as well as lateral areas colored almost as in latter species (but darkened marks on these areas lighter, brownish grey); abdominal sternites as well as structures of abdominal apex very light with light brown marks on apices of cerci and on lateral edges of distal part of genital plate; epiproct rather short, roundly triangular; cercus somewhat arcuate, apically with short but rather wide medial tubercle and distinctly longer and thinner lateral spinule as well as very narrow notch between them (Fig. 52); narrowed posterior part of genital plate rather long, clearly narrowing to subapical part, and distinctly widened in apical part (latter part widely rounded at apex but with a pair of short and almost rectangular projections laterally; Fig. 51).

*Female.* Unknown.

*Length* in mm. Body 12.0; body with wings 25.5; pronotum 3.1; tegmina 16.0; parts of hind wings exposed behind tegminal apices 5.5; hind femora 22.0.

**Comparison.** The new subspecies is almost identical to *D. (E.) marginata marginata* from the eastern part of Sarawak State in their general appearance, but it is distinguished from the latter subspecies by the male cercus with a wider medial apical tubercle, with narrow notch between this tubercle and the lateral apical spinule, and by the male genital plate more widened apically and with a somewhat sinuate posterior edge (compare Figs 51, 52 and 53, 54).

**Etymology.** The new subspecies is named after Sabah State where its type locality was collected.

***Deflorita (Hueikaeana) alas sp. nov.***

<http://zoobank.org/BA3A1A5E-56AD-46E4-A597-E97909044F0B>

(Figs 9, 24, 64, 67–71)

**Type material.** *Holotype*: male, INDONESIA, Sumatra I., Aceh Prov. not far from border with North Sumatra Prov., environs of Ketambe Village on Alas River near Gunung Leuser National Park, 3°41–42' N, 97°38–39' E, 300–500 m, primary forest, at light, 29.I–8.II.2023 (A. Gorochoch, M. Omelko, A. Fomitshev) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *D. (H.) ornata*. Coloration yellowish green with following pattern: head light yellowish with barely darker (yellow) upper rostral tubercle, brown spot on epicranium behind eyes, blackish and light brown spots on dorsal surfaces of scape and pedicel, and sparse small light brown to brown spots on antennal flagellum; anterior half of pronotal disc with rather long light brown triangular spot having narrow posterior portion, somewhat widened middle portion and much wider anterior portion (this portion with a pair of brown to dark brown oblique lateral stripes surrounding a pair of small yellowish spots near anterior edge of disc); posterior half of this disc with a pair of short dark brown longitudinal stripes in posterolateral corners of hind lobe (Fig. 9); tegminal lateral field with brown oblique stripe in proximal part of costal area and stripe along costal edge in proximal portion of distal half of this field, with dark brown stripes along distal edge and along most part of anal edge as well as three spots near latter stripe (these spots consisting of numerous dark dots) and a few very small marks in some interradiar areas (Fig. 24); tegminal dorsal fields with reddish brown spot near lateral edge of basal area but also with large brown to dark brown distal part and yellow stridulatory vein (having dark ventral teeth) in left tegmen, as well as with small brown mark in apical part of dorsal field of right tegmen and more or less transparent rest of this field (Fig. 9); legs with coloration approximately as in *D. (E.) angkasan sp. nov.*, but hind tibia with dark spot in middle part; abdominal tergites with numerous small reddish dots, yellowish to orange tinge on dorsal parts of majority of tergites, greyish spot on each lateral part of 1<sup>st</sup> and 2<sup>nd</sup> tergites as well as whitish spot on each lateral part of 6<sup>th</sup> and 7<sup>th</sup> tergites (these spots partly surrounded by brownish grey borders which fused posteriorly with darkened lateral parts of two last tergites); most part of abdominal sternites and pleurites light, but three last sternites and posterior parts



of pleural membranes dark; epiproct with yellow tinge; cercal apices and most part of genital plate darkened (brownish grey to dark brown), but latter plate also with light lateral stripes running from apices of this plate to its middle part (Figs 67–69). Upper rostral tubercle similar to that of *D. (E.) angkasana* **sp. nov.** but with apical part more strongly separated from rest part by somewhat deeper transverse concavity, and with posterior part slightly higher and shorter; tegminal lateral field rather wide but with distal part slightly narrower than in *D. (H.) ornata* (compare Figs 24 and 25); tegminal dorsal fields as in Figs 9 and 64; abdominal tergites without distinct posteromedian projections (last tergite with practically straight posterior edge); epiproct elongately triangular but not narrow and with almost rounded distal part; cercus long, thin and strongly curved in distal portion having apical part S-shaped in dorsal view, but in posterior view, this part arcuately curved and with almost conical apex having very small denticle directed upwards/forwards; Figs 67–71); genital plate almost identical to that of *D. (H.) ornata*, i.e. more or less straight, with long narrowed distal part somewhat widened in place of its bifurcation, and with a pair of long and rather thin apical lobules directed backwards and laterally as well as having very small but more distinct hook at each apex (Figs 67–69); genitalia with a pair of moderately long and thin posterior lobes.

*Female.* Unknown.

*Length* in mm. Body 13.5; body with wings 29.0; pronotum 4.0; tegmina 25.0; parts of hind wings exposed behind tegminal apices 5.7; hind femora 11.4.

**Comparison.** The new species is most similar to *D. (H.) ornata* and *D. (H.) andreji* but distinguished from them by slightly narrower distal parts of the tegmina, the different shape of the male cercal apical part (in these species, this part is arcuately curved but not S-shaped in dorsal view and somewhat inflated before the apical conus, and additionally in *D. ornata*, this conus slightly longer and having a small denticle directed mainly upwards but not upwards/forwards; compare Figs 70, 71 and 72, 73) and a more distinct small hook at the apex of each lobule of the male genital plate.

**Etymology.** The new species is named after Alas River situated near its type locality.

***Deflorita (Hueikaeana) albopunctata latilobata* sp. nov.**

<http://zoobank.org/5BDBBC79-A41E-49B2-A38E-79C9C0DDE34A>

(Figs 12, 26, 65, 75–78)

**Type material.** *Holotype*: male, VIETNAM, Tuyen Quang Prov., Na Hang Distr., Na Hang Protected Area near Na Hang Town, 600 m, forest, 16–22.VI.2019 (N. Orlov, L. Iogansen) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *D. (H.) a. albopunctata* from China. Body coloration light greenish with following marks: epicranium with short dark brown longitudinal stripe behind each eye; antenna with rather large brown to dark brown spots on dorsal surfaces of scape and pedicel, and with sparse and rather small dark brown to blackish spots on flagellum; pronotum with brown triangular area on anterior part of disc consisting of a pair of very short stripes along anterior edge as well as a pair of slightly curved and more or less obliquely longitudinal bands (latter bands almost contacting with each other in posterior half of this area), and with a pair of blackish narrow stripes along posterolateral edges of hind lobe (Fig. 12); tegminal lateral field with brown to dark brown V-shaped mark at base, oblique stripe in costal area near its base, row of rather small but distinct spots along distal portion of costal edge, row of similar spots along most part of anal edge up to its apex (but latter spots, except for two distal ones, larger than previous spots and partly consisting of darkened dots and very narrow light interspaces between them), and a few small dots along median line of this field (Fig. 26); dorsal field in left tegmen with dark brown to blackish stripe along proximal half of lateral edge, band along distal half of medial (anal) edge and ventral teeth of stridulatory vein (Figs 12, 65), but in right (lower) tegmen, this field with transparent mirror and small dark mark in lateral part of basal area (Fig. 12); hind wings with coloration more or less analogous to that of *D. (E.) angkasana* **sp. nov.**; legs with diverse dark brown to blackish marks on distal half of femora, on proximal and distal parts of fore and middle tibiae, on these parts and on middle part of hind tibia, and on all segments of tarsi (but dark marks on hind tarsus very large, and this tarsus looking almost completely dark); abdominal tergites light yellowish with light brown dorsum of 2<sup>nd</sup> tergite, whitish spot on each lateral side of 2<sup>nd</sup> and 3<sup>rd</sup> tergites (distal spots distinctly larger than proximal ones, and all these spots outlined by somewhat darkened borders), and brownish grey areas on lower parts of two last tergites; abdominal pleurites with brownish grey stripe running from abdominal base to 8<sup>th</sup> segment; cercus with brown ventrolateral surface (except for its basal part) and light brown rest of distal half (Figs 75–77); genital plate with a few small greyish to greyish brown marks (Figs 76, 77). Upper rostral tubercle similar to that of *D. (H.) alas* **sp. nov.** but almost without dorsomedian groove; pronotal disc with very weak median keel in anterior third, and lateral pronotal lobes with weak vertical folds almost reaching this keel in dorsal part (such relief poorly distinct or unknown in other congeners) (Fig. 12); tegmina long, reaching distal thirds of hind tibiae, with lateral fields more or less elongate-oval (Fig. 26), and with dorsal fields as in Figs 12, 65; hind wings significantly protruding beyond tegminal apices and in rest condition with exposed parts almost obtusely angular at apex (these parts similar to those of *D. alia* in shape; Fig. 27). Abdomen (Figs 75–77): tergites without distinct posteromedian projections; last tergite with barely concave (almost straight) posterior edge and weak triangular median concavity which almost reaching this edge; epiproct elongate, narrowly triangular; cercus rather large, insignificantly arcuate, with slightly thickened distal part and rather large rounded apical plate (this plate distinctly flattened, directed upwards/backwards and medially;

Fig. 78); genital plate elongate but not long, with narrowed distal portion rather short and dorsoventrally flattened as well as having a pair of rather short and almost finger-like spines (these spines directed backwards and laterally, and notch between them trapezoidal in shape; Fig. 76); genitalia with short lobes posteriorly.

*Female.* Unknown.

*Length* in mm. Body 19.0; body with wings 38.0; pronotum 5.0; tegmina 29.0; parts of hind wings exposed behind tegminal apices 6.0; hind femora 16.0.

**Comparison.** The new subspecies originates from a northern Vietnamese province situated not very far from the type locality of the nominotypical subspecies (Guangxi Prov. in China), but it is distinguished from the latter subspecies by a distinctly wider apical plate-like lobule of the male cercus and a somewhat larger widened part of the male genital plate as well as the absence of any ventral concavity in the distal portion of this plate. From *D. (H.) alia*, the new subspecies differs in the epicranium with a pair of darkened stripes behind the eyes, the pronotal disc with a clearly longer and darker triangular area as well as with a narrower posterior half of this area (the latter area in the new species consists of four brown marks, but in *D. alia*, it consists of a pair of light brown spots only; compare Figs 12 and 13), and this disc and the pronotal lateral lobes with a more developed relief (Figs 12, 13). However, *D. (H.) alia* was described from the northern part of Central Vietnam (Gorochoy, 2004) and recorded also for Chongqing Prov. of China (Wang et al., 2010), but these localities are very distant, and holotype of this species is slightly distinguished in its coloration from the Chinese specimens which have the male abdominal apex very similar to that of *D. (H.) a. albopunctata*; thus, all the specimens attributed here to this species and to *D. (H.) alia* may be fourth subspecies of the same species. Also, the new subspecies is clearly different from *D. (H.) directa*, described for the Thaiandian female, in a distinctly darker and somewhat shorter triangular area on the pronotal disc, as well as the presence of a pair of dark stripes along the posterolateral parts of the hind pronotal lobe and of whitish spots on the abdomen (*vs.* all the pronotal marks are light brown to reddish, the triangular pronotal area has its posterior part located somewhat behind the middle of the disc, the hind pronotal lobe is with one longer darkened stripe along its posterior edge, and the abdomen without distinct whitish spots: Ingrisch, 1998 and OSF).

**Etymology.** The new subspecies name originates from the Latin prefix “lati-” (wide) and the Latin word “lobata” (lobated, with lobe) due to the shape of the apical plate in the male cercus.

***Deflorita (Pulcherita) demonstrativa sp. nov.***

<http://zoobank.org/69377088-0DEC-45E5-9C61-D0FD5006DC1B>

(Figs 15, 29, 85–87)

**Type material.** *Holotype:* female, VIETNAM, Kon Tum Prov., Kon Plong Distr., Kon Plinh Commune, Xa Hien Village, 14°36.190' N, 108°28.885' E, 950 m, 15–23.VI.2014 (N. Orlov, L. Iogansen) (ZIN).

**Description.** *Female* (holotype). General appearance similar to that of *D. (P.) pulchella*. Coloration yellowish green with following marks: head with a pair of brown stripes along dorsal edges of antennal cavities (each of these stripes reaching lateral part of apical denticle of upper rostral tubercle and fused with dark spot on dorsomedial projection of antennal cavity; Fig. 85), a pair of dark brown longitudinal stripes behind eyes, brown dorsal dot on pedicel, dark brown small dorsal mark on scape, and brown to blackish sparse spots on flagellum (Fig. 15); pronotum with anterior part of disc having dark brown triangular area, but this area consisting of a pair of oblique and curved stripes with a few small darkish spots (almost dots) along anterior halves of their medial edges; Fig. 15); tegminal lateral field with brown stripe along distal portion of costal edge, several dark brown spots (consisting of dark dots and narrow interspaces between them) in basal part of costal area and along distoanal and most part of anal edges as well as one spot almost at middle of distal half of this field, and a few darkened dots before and behind latter spot (Fig. 29); tegminal dorsal field with whitish grey base, larger whitish area behind it, short dark brown oblique stripe between them, and brown to dark brown both stripe along lateral edge of this field and narrow area behind above-mentioned whitish area (Fig. 15); legs with small blackish spot on each coxa, small dark brown marks on distal part of each femur (distal half of hind femur also with a few darkened outer dots and ventral spinules), similar marks on proximal and distal parts of tibiae as well as additional ones on middle part of middle and hind tibiae, and a few dark marks on tarsi (these marks clearly larger on hind tarsus); abdomen with rather large greyish area on lateral sides of 2<sup>nd</sup>–4<sup>th</sup> tergites, whitish spot on each side of 2<sup>nd</sup> and 3<sup>rd</sup> tergites, dark brown to greyish brown borders around these spots and along posterior and ventral edges of above-mentioned greyish area, greyish tinge on distal half of cercus, and light brown small apical area of ovipositor and stripe along its dorsal edge (Fig. 86). Upper rostral tubercle partly similar to that of *D. (P.) pulchella* but consisting of narrow and rounded apical denticle separated from its rest part by dorsal transverse concavity (but this concavity distinctly deeper than in this species), and a pair of rather large and semi-transparent as well as more or less flat and almost triangular areas (ocelli ?) fused with each other dorsally (place of this fusion roundly obtuse-angled in transverse section and forming low median keel lacking any dorsomedian groove; Fig. 85); pronotum with distinct transverse folds on anterior parts of disc and lateral lobes,



and with angular but not deep anteromedian notch (Fig. 15); tegmina reaching distal thirds of hind tibiae, wide, very similar to those of *D. (P.) pulchella* in shape (Fig. 29), and with dorsal fields as in Fig. 15; hind wings distinctly protruding beyond tegminal apices, with exposed parts as in Fig. 29; abdominal apex more or less similar to that of female of *D. (E.) angkasana* **sp. nov.** but with genital plate approximately triangular as well as having rather deep and very narrow posteromedian notch and a pair of deep oblique folds almost along posterolateral edges (Fig. 87), and with ovipositor as in Fig. 86.

*Male.* Unknown.

*Length* in mm. Body 19.0; body with wings 38.0; pronotum 3.8; tegmina 28.0; parts of hind wings exposed behind tegminal apices 7.0; hind femora 13.5; ovipositor 7.3.

**Comparison.** The new species differs from *D. (P.) pulchella* in the dark stripes along dorsal edges of the antennal cavities reaching the apical denticle of the upper rostral tubercle (*vs.* not reaching this denticle), this denticle partly yellowish (*vs.* completely rose) and more distinctly separated from the rest of this tubercle, the rest part of this tubercle almost completely semi-transparent (*vs.* consisting of a pair of large and semi-transparent ocellus-like structures not fused with each other; compare Figs 84 and 85), the dark area on the anterodorsal pronotal part shorter and with its lateral parts wider (Figs 14, 15), the middle and hind coxae with dark marks (*vs.* without darkened marks), and the lateral parts of 2<sup>nd</sup>–4<sup>th</sup> abdominal tergites with characteristic coloration (*vs.* these tergites with dark brown lateral areas lacking whitish spots). From all the other congeners, the new species is distinguished by a unique structure of the female genital plate.

**Etymology.** The new species name is the Latin “demonstrativa” (demonstrative, eye-catching) due to the presence of large contrast white spots on the greenish tegmina.

#### *Deflorita (Separita) separata* **sp. nov.**

<http://zoobank.org/E162FAF6-9BF7-4702-81B4-86063CF8E192>

(Figs 16, 30, 66, 88–91)

**Type material.** *Holotype:* male, MALAYSIA, Borneo I., Sabah State, environs of Pensiangan Town, 4°34.948' N, 116°19.935' E, 516 m, 27.V–2.VI.2014 (E. Shcherbakov) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of *D. (S.) decora*. Coloration yellowish green with greyish tinge and following pattern: head with yellowish dorsal part of epicranium (this part with small greyish median spot near pronotum), two light brown longitudinal stripes behind each eye (but medial one running also along medial edge of eye), and not numerous marks on antennae (scape with brownish tinge on dorsal half, pedicel with brown dorsal spot, and flagellum with very sparse light brown spots); pronotum with yellowish anterior part of disc, a pair of short brown stripes along lateral edges of this part, a pair of much longer but less distinct light brown to yellow lines along dorsal edges of lateral lobes, and a pair of very small whitish grey spots in anterolateral corners of disc (each of latter spots located between brown stripe on disc and above-mentioned line on lateral lobe; Fig. 16); tegminal lateral field with brown stripe along distal half of costal edge, shorter light brown oblique stripe in costal area not far from its base (this area partly missing), and several light brown to brown spots along distal and anal edges (these spots consisting of darkened dots, and one of these spots significantly larger than others and located in distal half of this field; Fig. 30); dorsal tegminal fields with light brown stripe along lateral edge of each field (this stripe running also along anal edge of lateral field), but dorsal field in left tegmen rose with almost transparent base and light brown stridulatory vein having brown ventral teeth (Figs 16, 66), and this field in right tegmen transparent with some veins light brown to yellowish (Fig. 16); hind wing transparent with distal portion of costal area colored as distal part of tegmen; legs with darkened marks almost as in *D. (P.) demonstrativa* **sp. nov.**, but these marks clearly smaller and lighter (light brown to brown), and hind femur without darkened outer dots and spinules in distal half as well as with a few outer rose dots in proximal half; abdomen with a pair of large light brown areas occupying lateral parts of four last tergites and posterior portions of pleural membranes, with cercus having light brown most part of medial and dorsal surfaces as well as middle part of ventral surface and apical hook (Figs 89–91), and with genital plate having light brown to brown posterior (ventral) keel around posteromedian notch (Figs 90, 91). Upper rostral tubercle with apical denticle rather wide and weakly separated from rest part of this tubercle, and with latter part almost intermediate between those of *D. (P.) pulchella* and *D. (P.) demonstrativa* **sp. nov.** (lateral ocelli more distinct than in latter species but smaller and less distinct than in *D. pulchella*, and keel between them with only traces of median groove which more distinct in *D. pulchella* but absent in *D. demonstrativa* **sp. nov.**; Fig. 88); tegmina rather narrow (clearly narrower than in *D. decora*; Fig. 30), reaching basal third of hind tibiae, with dorsal fields longer than in other congeners, and with structure of stridulatory vein in left tegmen and mirror in right tegmen as in Fig. 16; hind wings distinctly protruding beyond tegmina in rest position, and apices of their exposed parts almost acute. Abdomen (Figs 89–91): last tergite with slight dorsal concavity and wide rectangular posteromedian lobe; other tergites without dorsal projections; epiproct also rather wide, more or less rounded, directed downwards; cercus somewhat thickened in basal part, slightly curved medially, with distinctly inflated subapical part as well as with apical hook strongly curved and directed medially (Figs 89, 90); genital plate barely arcuate in profile, with proximal two thirds widened, distal third narrowed, and apical part having moderately deep and narrow posteromedian notch as well as distinct but short (low) posterior (ventral) lamellar keel around this notch (Figs 90, 91).

*Female.* Unknown.

*Length* in mm. Body incomplete (anterior abdominal portion missing); body with wings 22.0; pronotum 3.2; tegmina 15.0; parts of hind wings exposed behind tegminal apices 3.5; hind femora 10.0.

**Comparison.** This species is most similar and related to *D. (S.) decora* described after a female which was also collected in Sabah (Trus Madi Mt.) but rather far from the type locality of *D. (S.) separata* **sp. nov.** The new species is distinguished from this female by less light epicranial dorsum and most part of the pronotal disc as well as distinctly narrower tegmina (especially by their distal parts; compare Figs 30 and 31). From the male determined as *D. (S.) decora* and collected in another locality of Sabah (“Tawai Plat.”; Ingrisch, 2011), the new species differs in narrower tegmina, slightly shorter their dorsal fields (this field in the left tegmen of *D. separata* **sp. nov.** has a less contrast coloration; *vs.* it is with a very light area behind the stridulatory vein as well as contrast dark stripes along the lateral and medial edges of this field and along its stridulatory vein), the posteromedian lobe of the male last tergite not curved downwards, clearly more inflated subapical parts of the male cerci, and a less convex ventral edge of the distal part of the male genital plate in profile.

**Etymology.** This species name is the Latin word “separata” (separated) due to the tegmina significantly different in width and coloration from those of the nearest species.

***Deflorita (Deflorita) meridionalis* sp. nov.**

<http://zoobank.org/F0D7C70B-7025-4763-875A-C73FB2321042>

(Figs 33, 93–99)

**Type material.** *Holotype*: male, VIETNAM, Binh Phuoc Prov., 13 km NE of Bu Gia Map Village, Bu Gia Map National Park, 12°11'37" N, 107°12'21" E, 540 m, 18–31.V.2011 (L. Anisyutkin, A. Anichkin) (ZIN). *Paratypes*: 7 males, same data as for holotype (ZIN); 2 males, same country, Lam Dong Prov., Loc Bao Distr., 25 km NW of Bao Loc Town, 11°50'12" N, 107°38'25" E, 650 m, IV–V.2012 (A. Abramov) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of other representatives of this monotonous (uniform) subgenus. Coloration light greenish with some marks: head with whitish dorsum (having a few rose lines), two dark brown marks behind each eye, dark brown to blackish spots on dorsal surfaces of both scape and pedicel, and sparse and small darkened spots on antennal flagellum; pronotum with whitish median area and a pair of small spots on anterior part of disc (these area and spots outlined by blackish border), and with dark brown line along posterior and lateral edges of hind lobe (this line interrupted in median part) (Fig. 95); tegmina with rather large brownish grey distal part, short brown subproximal stripe along costal edge, dark brown proximal longitudinal stripe along lateral edge of dorsal field and somewhat behind it, row of dark dots along rest part of anal edge (Fig. 33), whitish dorsal field of left tegmen (this field also with rose mark near base, dark grey lines along proximal and distal edges of stridulatory vein, and dark brown to brown ventral stridulatory teeth; Figs 94–96), and transparent dorsal field of right tegmen having some veins rather light (Fig. 93); hind wings transparent but with slightly darkened (brownish to greyish) distal portion of costal part; legs with rose spot on fore coxa (this spot with blackish dot), dark marks on distal part of hind femur and on proximal part of fore tibia as well as on distal part of hind tibia, and small darkened marks on tarsi (hind tarsus with these marks larger); abdomen with large whitish spot on each lateral side of 2<sup>nd</sup>–7<sup>th</sup> tergites, brownish grey stripe running along each pleural membrane from abdominal base to lower parts of three last tergites, brown apical spines of cerci, and light brown area on ventral surface of genital plate (Figs 97–99). Upper rostral tubercle more or less similar to that of *D. (E.) angkasan* **sp. nov.**; tegmina long and narrow, reaching posterior third of hind tibia, with dorsal fields obliquely cutting in distal part (Figs 93, 94); abdominal tergites with almost straight posterior edge, except for 9<sup>th</sup> one having short and rounded posteromedian lobe (Figs 97, 98); cercus slightly arcuate, with apical spine (hook) rather long and distinctly curved upwards (Figs 97–99); genital plate with narrowed part not very long and moderately curved upwards, and with posteromedian notch narrow and slightly shorter than half of this plate (Figs 98, 99); genitalia with long and thin posterior lobes.

*Variations.* Some males with darkened marks lighter (mainly light brown) or with lightest areas and spots barely darker (greyish or almost yellowish) as well as a pair of slightly more darkened marks on head dorsum; specimens from Lam Dong Province with darkened distal part of tegmina slightly shorter.

*Female.* Unknown.

*Length* in mm. Body 14.0–18.0; body with wings 31.0–34.0; pronotum 3.3–3.6; tegmina 22.0–25.0; parts of hind wings exposed behind tegminal apices 6.5–7.0; hind femora 12.5–13.8.

**Comparison.** The new species is distinguished from all the other species of this subgenus by the following characters: from *D. (D.) forceps* (Figs 106–108) and *D. (D.) hemilyra* (Figs 110–112), by the male cercus with its apical spine (hook) strongly curved upwards, and the male genital plate distinctly shorter and moderately curved upwards as well as with the posteromedian notch narrower and slightly shorter than half of this plate (*vs.* this cercal spine is insignificantly curved upwards, and this plate is strongly curved upwards as well as with the posteromedian notch clearly longer); from *D. (D.) centa* Shi et Chang (China), by the same characters (except for the posteromedian notch of this plate which is unclear in *D. centa*; Shi,

Chang, 2004); and additionally from *D. (D.) hemilyra*, by the male cercus less strongly arcuate and with its apical part lacking any distal concavity before the apical spine (compare Figs 97 and 110); from *D. (D.) apicalis* with unknown male, by longer darkened apical portions of the tegmina; and from the other representatives of *Deflorita* s. str., by the dorsal tegminal fields with less elongate and less rounded (obliquely truncated) distal parts (for comparison see Figs 94 and 113).

**Etymology.** The new species name is the Latin word “meridionalis” (southern) due to the southern distribution of this species of *Deflorita* s. str.

***Deflorita (Deflorita) forceps vietnamensis* subsp. nov.**

<http://zoobank.org/150DC720-DB2E-4B99-B8DB-07EE54BF59DD>

(Figs 100–105)

**Type material.** *Holotype*: male, VIETNAM, Tuyen Quang Prov., Na Hang Distr., Na Hang Protected Area near Na Hang Town, 600 m, 16–22.VI.2019 (N. Orlov, L. Iogansen) (ZIN). *Paratypes*: 1 male, same data as for holotype (ZIN); 5 males, 1 female, same country, Ha Giang Prov., Quan Ba Distr., environs of Tung Vui Community, 400 m, forest, 1–16.VI.2019 (N. Orlov, L. Iogansen) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of holotype of *D. (D.) meridionalis* sp. nov. but with following differences in coloration: head dorsum with greyish tinge but without rose lines; two darkened marks on epicranium behind each eye fused with each other posteriorly; brown stripe on tegmina along proximal half of each costal edge somewhat larger; dorsal field of left tegmen with light brown (not rose) marks near base as well as with slightly darkened stridulatory vein having darker transverse lines along its proximal and distal edges (Fig. 100); distal part of hind femur with very small darkened marks; genital plate almost completely greyish. Structure of body also similar to that of this species, but cerci and genital plate most similar to those of nominotypical subspecies: cercus moderately arcuate, with apical spine (hook) rather short (shorter than in *D. meridionalis* sp. nov.) and directed backwards and slightly upwards (Fig. 103), and with apex of this spine curved medially (as in Fig. 107); genital plate less strongly curved in profile than in *D. (D.) f. forceps* (compare Figs 103 and 106), with posteromedian notch somewhat longer (deeper) than half of this plate (as in *D. f. forceps*) but slightly widened in proximal half (in *D. f. forceps*, this notch moderately widened in middle part), and with apical lobules barely sinuate in distal portion (in nominotypical subspecies, these lobules completely arcuate; Figs 105, 108).

*Variations.* Some other males with whitish head dorsum or greyish area (instead whitish one) on anterior part of pronotal disc; sometimes the latter area partly fused with a pair of small whitish or greyish spots around it (such specimens similar to *D. curva* in pronotal coloration but having different shape of dorsal fields of male tegmina), and dark line along posterior pronotal edge not interrupted in median part.

*Female.* Structure and coloration of body as in males with partly fused whitish marks on pronotum and not interrupted dark line along posterior pronotal edge (Fig. 101), but coloration and structure of dorsal tegminal field (Fig. 101) almost as in female of *D. (E.) angkasan* sp. nov., abdomen with almost indistinct whitish spots (decoloration in dry specimen ?) and with genital plate and ovipositor as in Figs 102 and 104.

*Length* in mm. Body: male 15.0–17.0, female 16.0; body with wings: male 31.0–34.0, female 38.0; pronotum: male 3.5–3.7, female 3.6; tegmina: male 21.0–23.0, female 27.0; parts of hind wings exposed behind tegminal apices: male 6.0–7.0, female 6.5; hind femora: male 13.0–14.0, female 15.0; ovipositor 5.5.

**Comparison.** The new subspecies (northern part of Vietnam) differs from the nominotypical subspecies (China: Yunnan) in the characters of the male genital plate listed above. From *D. (D.) hemilyra*, the new taxon is distinguished by a distinctly narrower stridulatory vein of the left tegmen (compare Figs 100 and 102), less strongly curved male cerci lacking small apical concavity near each apical spine, and longer distal (S-shaped) parts of the male genital plate lobules. From all other species of *Deflorita* s. str., it differs in the obliquely cut dorsal fields of the male tegmina and the above-mentioned characters of the cerci and genital plate of the male, as well as in some details of the tegminal coloration (the darkened tegminal distal part is clearly longer than in *D. apicalis* from Taiwan).

***Deflorita (Deflorita) parallela* Gorochoy, 2004**

(Fig. 114)

**New material examined:** 1 male, VIETNAM, Cao Bang Prov., Phia Oac – Phia Den National Park, 22°37'41.8" N, 105°54'41.5" E, 900 m, 3–15.VI.2019 (L. Anisyutkin) (ZIN); 2 males, same park, eastern slope of Phia Oac Mt., 40 km W of Cao Bang Town, 22°36'27" N, 105°52' E, 1600–1800 m, 3–15.VI.2019 (L. Anisyutkin) (ZIN).

**Note.** These males are almost identical to the holotype of this species from Vinh Phu Province of Vietnam, but their coloration is somewhat lighter. Here, this species is recorded from another province of the northern part of Vietnam.

### ***Deflorita (Deflorita) argentata* Ingrisch, 1998**

(Fig. 113)

**New material examined:** 1 male, LAOS, Vientiane Prov., ~70 km NNW of Vientiane City, Nam Lik Eco Village on Nam Lik River, 18.61469° N, 102.40847° E, ~200 m, 10–30.VI.2017 (A. Gorochov, M. Omelko) (ZIN).

**Note.** This specimen is practically identical to the holotype of this species from central part of Thailand (Ingrisch, 1998; OSF). Thus, this species is recorded from Laos for the first time. But the male from Singapore, determined by Ingrisch (2011: fig. 6, D) as belonging to this species, has longer apical lobules of the genital plate and may belong to a new subspecies of this species.

### **Genus *Mirollia* Stål, 1873**

**Note.** During long time, this genus included rather numerous species having more or less uniform coloration and structure of body. But Ingrisch (2011) divided it into three similar and related “genera” which are distinguished from each other mainly by the shape of sclerotized parts in the male genitalia and by some small characters of external morphology. However, many other genera and even subgenera of Phanopterinae (*Elimaea* Stal, 1874; *Rhaebelima* Karny, 1926; *Stictophaula* Hebard, 1922 and some others) have the male genitalia not less diverse and even often more diverse than in this group of related “genera”. Moreover, this group is simpler for determination than each of these “genera”, and it is more reasonable to consider it as one genus (*Mirollia* s.l.) with three subgenera: *Amirollia* Ingrisch, 2011, **stat. nov.**, *Hemimirollia* Ingrisch, 2011, **stat. nov.** and *Mirollia* s. str. Thus, *Mirollia* s.l. differs from *Deflorita* and *Sergeitarbinskia* **gen. nov.** in more uniform greenish or yellowish coloration (especially on pronotum and lateral tegminal fields, because all these body parts have only darkened dots; Figs 115–117, 119–121, 123–125, 144, 145, 147, 148, 150, 151, 153–155, 157) and the presence of more or less developed sclerotized parts in the male genitalia, as well as from the latter genus in different shape of the male dorsal tegminal fields (compare Figs 115, 119, 123, 144, 148, 151, 154, 155 and 201, 202, 208, 209).

These subgenera differ from each other in the following features: *Hemimirollia* includes three species (the type species *Mirollia gracilis* Karny, 1925, *M. aceh* **sp. nov.** and possibly *M. luteipennis* Karny, 1925) with the pronotal disc “broadly rounded into paranota” but “only in apical area flattened” (Ingrisch, 2011), as well as with a pair of rather small and setose semi-sclerotized plates (sometimes partly fused with each other) on the medial lobes of the male genitalia (Figs 131, 134). *Amirollia* includes the type species *Mirollia furcata* (Ingrisch, 2011) **comb. nov.**, *M. ulla* Gorochov, 2008 and *M. biapicalis* **sp. nov.**, which have disc of pronotum “flattened throughout” (Ingrisch, 2011), the lateral edges of this disc almost in form of low keels, and the medial lobes of the male genitalia with small and more or less rounded semi-membranous structures possibly homologous to the semi-sclerotized plates of *Hemimirollia* (Fig. 139). *Mirollia* s. str. contains numerous remaining species (see OSF) with the pronotum practically as in *Hemimirollia*, and with all other body parts somewhat more diverse than in the previous subgenera, but the male genitalia in this subgenus have very diverse semi-sclerotized to sclerotized structures usually located on both the medial and lateral lobes or sometimes only on the lateral lobes (Figs 143, 175–193, 195).

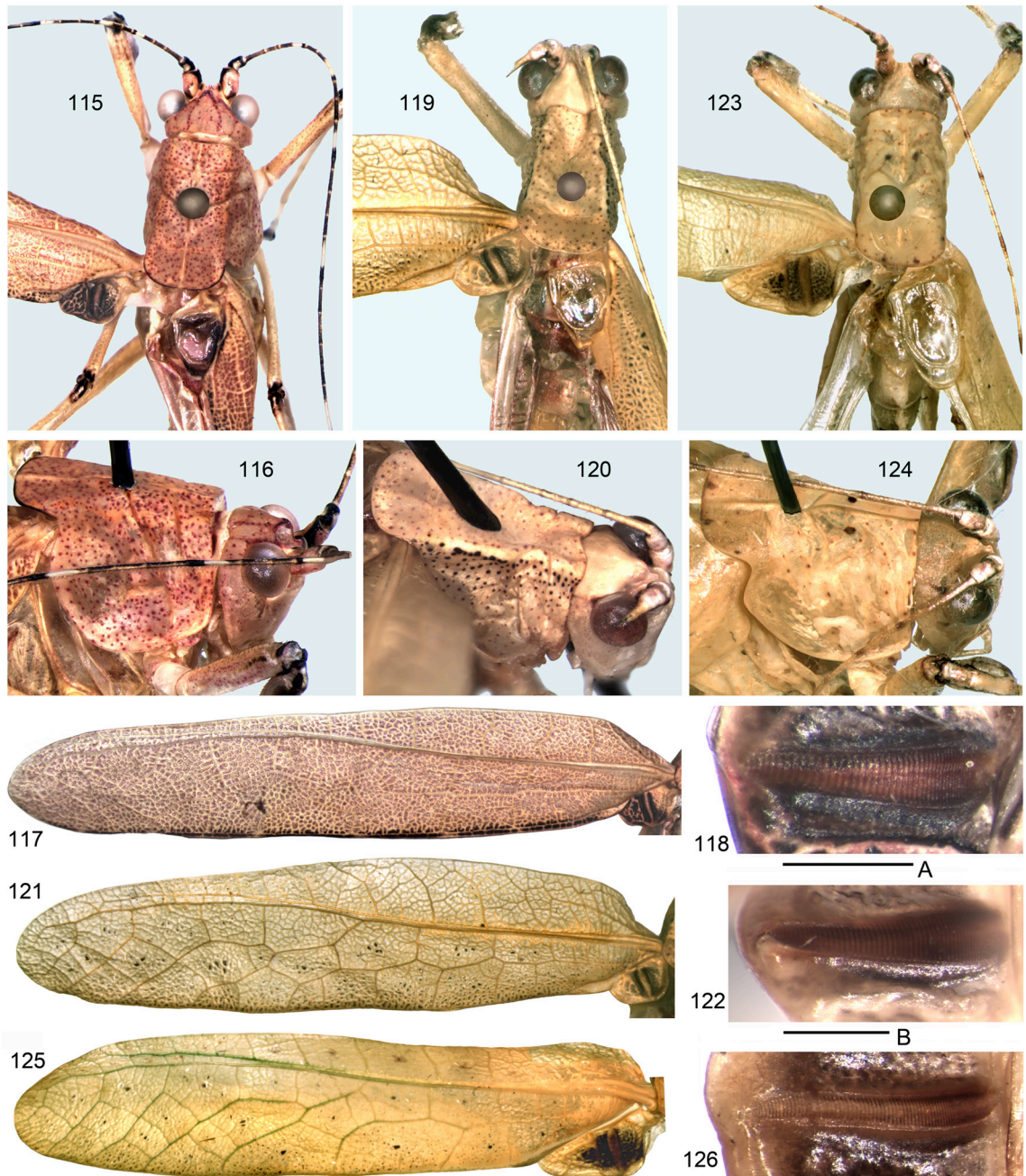
### ***Mirollia (Hemimirollia) gracilis* Karny, 1925, **comb. resurr.****

(Fig. 134)

**New material examined:** 2 males, 1 female, MALAYSIA, Borneo I., Sabah State, Crocker Range National Park not far from Keningau Town, 1000–1300 m, secondary/primary forest, 2–6.V.2013 (A. Gorochov, M. Berezin, V. Gorochova, E. Tkatsheva) (ZIN); 1 male, same country and island, Sarawak State, environs of Miri Town near Lambir Hills National Park, 100–300 m, forest, 29.III–1.IV.2012 (A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov) (ZIN); 2 females, same state, environs of Kuching City near Kubah National Park (Matang Mt), 200–500 m, forest, 27.XI–1.XII.2016 (A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov) (ZIN).

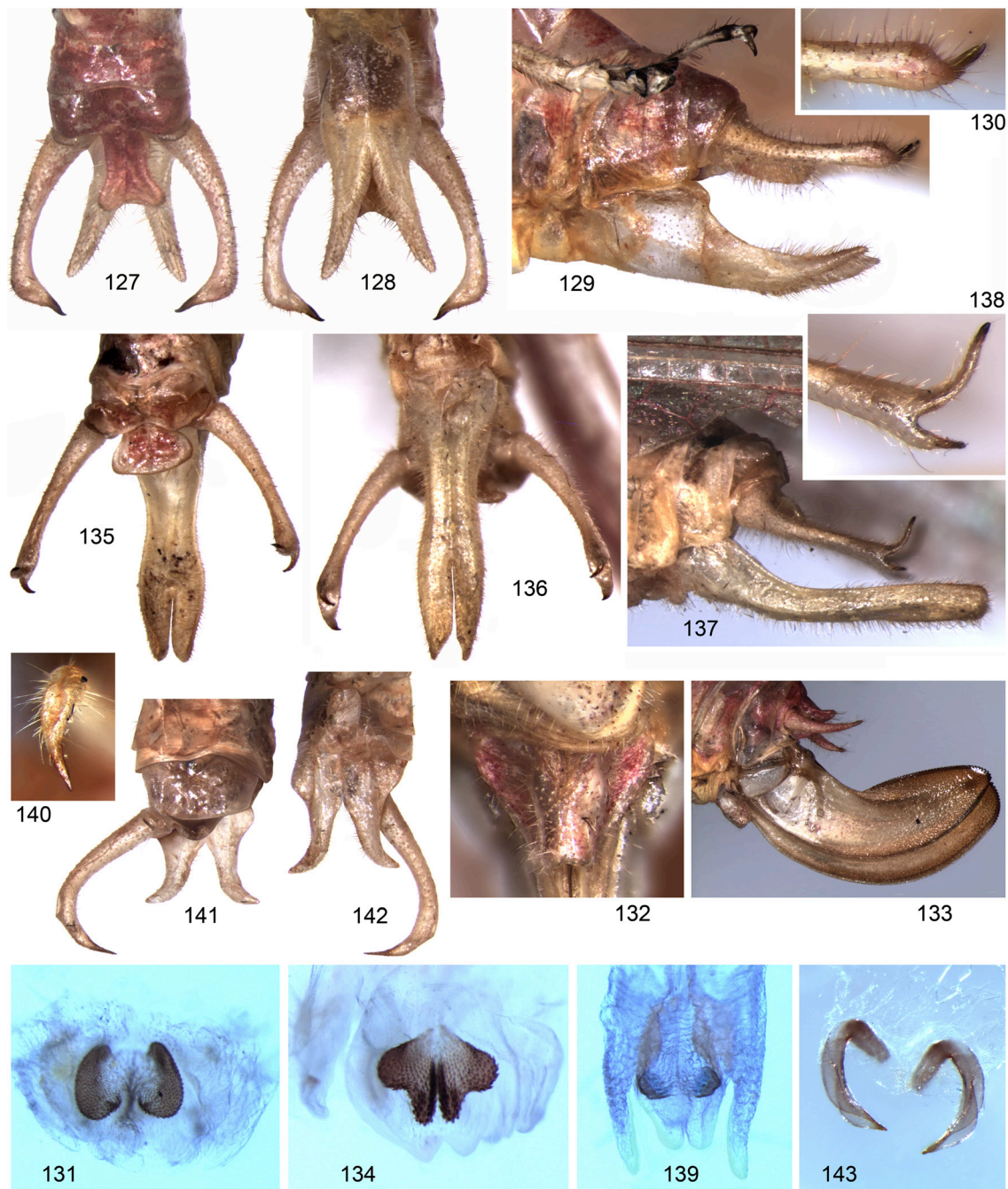
**Note.** This species was originally described from one locality in Borneo (Sarawak: Dulit Mt) and recorded from some other Bornean localities (Sabah: Trus Madi Mt; Sorinsim; Tawai; Sandakan) by Gorochov (2008) and Ingrisch (2011). Here it is recorded from additional Bornean localities. All the specimens studied by the latter authors are very similar to each other and to the original description (Karny, 1925) in their general appearance, and their male genitalia are almost identical (Fig. 134).





**Figs 115–126.** *Mirollia* spp., male: 115–118 – *M. (Hemimirollia) aceh* **sp. nov.**; 119–122 – *M. (Amirollia) biapicalis* **sp. nov.**; 123–126 – *M. (Mirollia) indica* **sp. nov.** Head with pronotum as well as parts of wings (tegmina and partly hind wings spread) and of some legs from above (115, 119, 123); head with pronotum and nearest body parts from side and slightly above (116) as well as from side/above (120, 124); left tegmen (117, 121, 125); stridulatory vein of left tegmen from below (118, 122, 126). Scale bars = 0.5 mm: A – only for 118; B – only for 122 and 126.





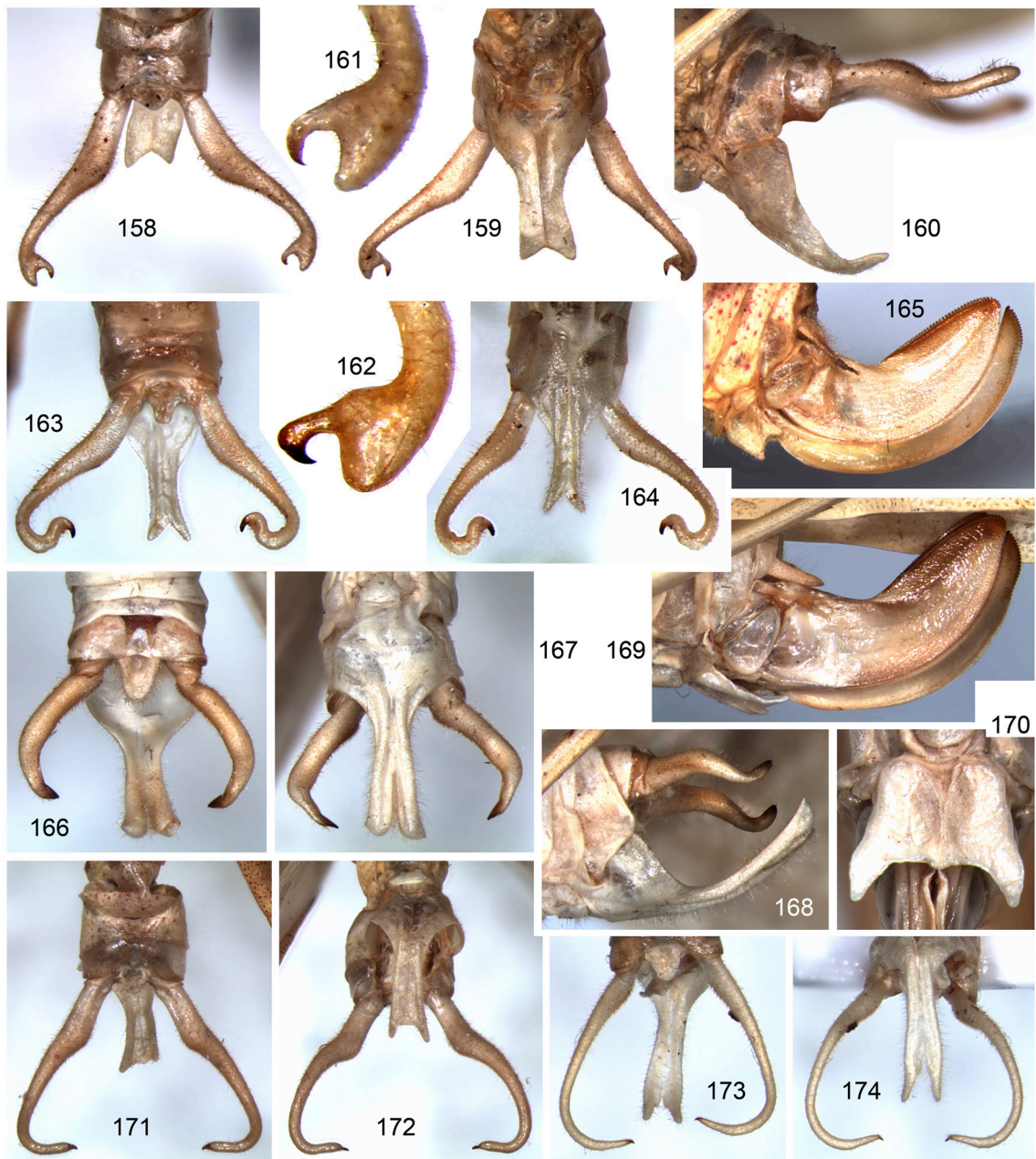
**Figs 127–143.** *Mirollia* spp., male (127–131, 134–143) and female (132, 133): 127–133 – *M. (Hemimirollia) aceh* sp. nov.; 134 – *M. (H.) gracilis* Karny; 135–139 – *M. (Amirollia) biapicalis* sp. nov.; 140–143 – *M. (Mirollia) indica* sp. nov. Male abdominal apex with both cerci from above (127, 135), from below (128, 136) and from side (129, 137); same apex but with only left cercus from above (141) and from below (142); distal part of left cercus from side (130, 138) and from behind (140); male genitalia (131, 134, 139) and their sclerites (143) from above and slightly behind; female genital plate from below (132); ovipositor from side (133).



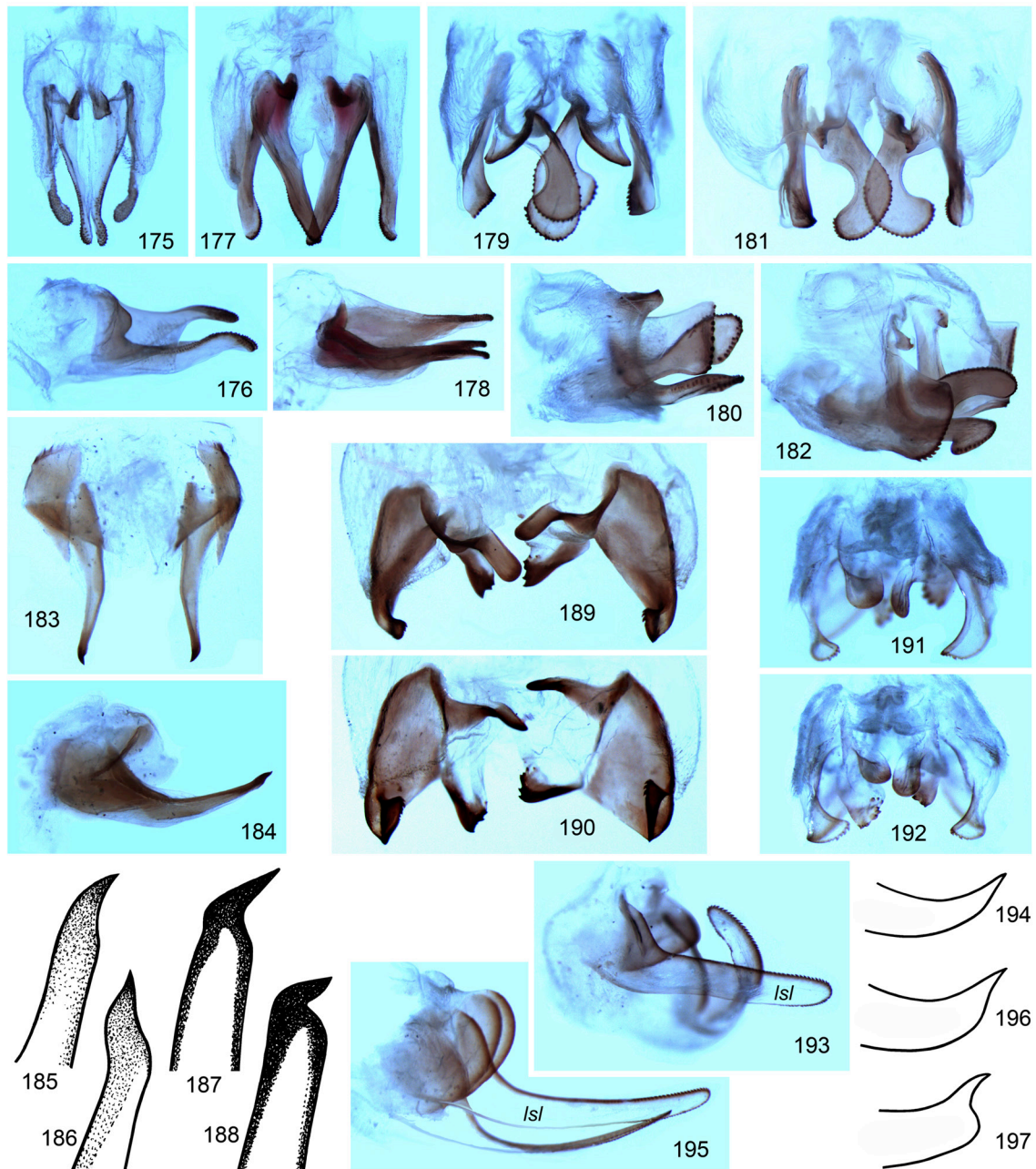


**Figs 144–157.** *Mirollia (Mirollia)* spp., male: 144–147 – *M. (M.) tarbinskyi* **sp. nov.**; 148–150 – *M. (M.) parabnormis* **sp. nov.**; 151–153 – *M. (M.) terminalis complanata* **subsp. nov.**; 154 – *M. (M.) elegantia australis* **subsp. nov.**; 155–157 – *M. (M.) fallax stenolobos* **subsp. nov.** Head with pronotum as well as parts of wings (wings partly spread) and of some legs from above (144, 148, 151, 154, 155); pronotum from side and slightly above (145); stridulatory vein of left tegmen from below (146, 149, 152, 156); left tegmen (147, 150, 153, 157). Scale bars = 1.0 mm: A – only for 146; B – only for 149; C – only for 152; D – only for 156.





**Figs 158–174.** *Mirollia (Mirollia)* spp., male (158–164, 166–168, 171–174) and female (165, 169, 170): 158–161 – *M. (M.) tarbinskyi* **sp. nov.**; 162 – *M. (M.) cerciata* Heb.; 163–165 – *M. (M.) parabnormis* **sp. nov.**; 166–170 – *M. (M.) terminalis complanata* **subsp. nov.**; 171, 172 – *M. (M.) fallax stenolobos* **subsp. nov.**; 173, 174 – *M. (M.) elegantia australis* **subsp. nov.** Abdominal apex from above (158, 163, 166, 171, 173), from below and slightly behind (159, 164, 167, 172, 174), and from side and slightly below (160, 168); cercal apex from above (161, 162); ovipositor from side (165, 169); female genital plate from below (170).



**Figs 175–197.** *Mirollia* (*Mirollia*) spp., male: 175, 176 – *M. (M.) tarbinskyi* sp. nov.; 177, 178 – *M. (M.) cerciata* Heb.; 179, 180 – *M. (M.) parabnormis* sp. nov.; 181, 182 – *M. (M.) abnormis* Karny; 183–186 – *M. (M.) terminalis complanata* subsp. nov.; 187, 188 – *M. (M.) t. terminalis* Wang et al.; 189, 190 – *M. (M.) fallax stenolobos* subsp. nov.; 191, 192 – *M. (M.) f. fallax* B.-Bien.; 193, 194 – *M. (M.) elegantia australis* subsp. nov.; 195, 196 – *M. (M.) e. elegantia* Gor.; 197 – *M. (M.) obscuripennis* Liu. Genitalia from below (175, 177, 189, 191), from above (179, 181, 183), from side (176, 178, 180, 184, 193, 195), from side/behind (182), from behind and slightly below (190), and from below and slightly behind (192); apical part of lateral lobe of genitalia from above (185), from side (186) and from unknown positions (187, 188); apical part of left cercus from side/behind (194, 196, 197). *Abbreviations:* *lsl* – lateral semi-sclerotized lobe of genitalia. [187, 188, 197 – after photographs from Wang et al. (2015: figs 5I, 5G, 5E)].



***Mirollia (Hemimirollia) aceh* sp. nov.**

<http://zoobank.org/179B7CA1-853F-4586-9705-59CE036F18A0>

(Figs 115–118, 127–133)

**Type material.** *Holotype*: male, INDONESIA, Sumatra I., Aceh Province not far from North Sumatra Province, environs of Kedah Lodge on Angkasan River near Gunung Leuser National Park (Mr. Jali's Bungalows), 3.97 N, 97.25 E, 1000–1500 m, primary forest, at light, 9–15.II.2023 (A. Gorochov, M. Omelko, A. Fomitshev) (ZIN). *Paratypes*: 3 males, 2 females, same data as for holotype (ZIN); 1 male, 2 females, same province, environs of Ketambe Village on Alas River near Gunung Leuser National Park, 3°41–42' N, 97°38–39' E, 300–500 m, primary forest, at light, 15–24.IV.2018 (A. Gorochov, M. Berezin, I. Kamskov, E. Tkatsheva) (ZIN); 2 males, 2 females, same data, but 29.I–8.II.2023 (A. Gorochov, M. Omelko, A. Fomitshev) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *M. (H.) gracilis*. Coloration yellowish with following pattern: dorsal parts of both head and pronotum as well as most part of tegmina with orange tinge; head dorsum also with intensively rose mark on upper rostral tubercle and four lines running from this tubercle to posterior edge of epicranium (Fig. 115); each antennal cavity border with dark brown medial dot; antenna with blackish spots on scape and pedicel (scape with smaller medial spot, but pedicel mainly blackish) as well as with brown to dark brown flagellum having sparse and small whitish spots; pronotum with very numerous intensively rose dots and dark brown interrupted line along posterior edge of disc (Figs 115, 116); tegminal lateral field with slightly lighter costal area and darker band along anal edge (this band consisting of narrow dark brown anal stripe, and darkened cell membranes near it; Fig. 117); dorsal field in left tegmen dark brown to blackish with light brown central part of stridulatory vein and dark brown ventral stridulatory teeth as well as yellowish some other veins and basal part (Figs 115, 117, 118), but in right tegmen, this field mainly semi-transparent with light rose mirror, yellowish veins and basal area, dark marks along lateral edge and slightly darkened areas near base of mirror and near distal edge (Fig. 115); hind wings transparent with yellowish venation and slightly darkened (light brown to dark brown) cell membranes in distal portion of costal part; legs with sparse rose dots on fore and middle coxae and on all femora, light brown ventral spines of hind femur, greyish brown to blackish marks on apices of all femora and on proximal part of all tibiae (on fore tibia, these marks larger), brown to dark brown marks on distal part of hind tibia and on all tarsi (hind tarsus with such marks on all segments, but other tarsi with darkened marks on three distal segments only); abdomen with rose tinge on tergites and epiproct as well as brown apical spine of each cercus (Figs 127–130). Upper rostral tubercle with almost acute apical denticle and rather short but high more posterior part of this tubercle; latter part having almost vertical anterior edge and separated from apical denticle by distinct rectangular notch (these details clearly visible in profile; Fig. 116), but dorsally this part with distinct median groove in anterior half (Fig. 115); tegmina narrow and long, reaching distal part of hind tibia, and with stridulatory apparatus as in Figs 115, 117, 118; all abdominal tergites with almost straight posterior edges; epiproct rather long, narrowed in proximal half and gradually widening to almost truncate apex in distal half (Fig. 127); cerci and genital plate practically identical to those of *M. (H.) gracilis* (Figs 127–130), but genitalia with a pair of semi-sclerotized arcuate plates having numerous microscopical (almost indistinct) setae (in *M. gracilis*, these plates more or less roundly triangular with narrower posterior corners, clearly concave posterolateral edges and slightly larger setae; compare Figs 131 and 134).

*Variations.* Rose marks on head and pronotum as well as on legs often less numerous and sometimes absent; abdominal tergites sometimes without rose tinge; darkened parts of dorsal tegminal fields varied in size and intensity; hind wing sometimes with distal portion of costal part lighter (almost completely yellowish); epiproct often with distinct median concavity dorsally.

*Female.* Structure and coloration of body as in males, but dorsal fields of both tegmina yellowish with brown to blackish cell membranes, venation of these fields irregular (densely reticular), and epiproct elongately lobule-like but smaller and without any widening in posterior part; genital plate more or less triangular but laterally compressed and with truncated apex (Fig. 132); ovipositor as in Fig. 133.

*Length* in mm. Body: male 15.0–17.0, female 15.0–16.5; body with wings: male 31.0–34.0, female 33.0–35.0; pronotum: male 3.8–4.2, female 4.0–4.4; tegmina: male 22.0–25.0, female 24.0–27.0; parts of hind wings exposed behind tegminal apices: male 3.3–3.7, female 3.4–3.9; hind femora: male 11.0–13.0, female 13.5–15.0; ovipositor 5.6–5.8.

**Comparison.** This species differs from the most similar and related species *M. (H.) gracilis* in the characters of the male genitalia given above, in the description.

**Etymology.** The new species is named after Aceh Province where it was collected.

***Mirollia (Amirollia) biapicalis* sp. nov.**

<http://zoobank.org/B1CB4534-56C4-4565-AA8C-AFB88F855D52>

(Figs 119–122, 135–139)

**Type material.** *Holotype*: male, MALAYSIA, Sarawak State, 80–90 km WNW of Kuching City, Gunung Gading National Park, 100–300 m, forest, 22–26.X.2016 (A. Gorochov, M. Berezin, E. Tkatsheva, I. Kamskov) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of *M. (A.) ulla* Gorochov, 2008, **comb. resurr.** and *M. (A.) furcata* (Ingrisch, 2011), **comb. nov.** Coloration yellowish green with following marks: dorsal parts of epicranium and



pronotum almost yellow; scape with a few small brown to dark brown marks; pedicel with two larger blackish spots on dorsal and lateral surfaces (these spots connected with each other by short blackish stripe along apical edge); pronotum with rather sparse and very small rose dots on disc and on lower halves of lateral lobes as well as with slightly and barely larger blackish to dark brown dots on upper halves of these lobes (Figs 119, 120); tegminal lateral field with one row of small groups of brown to dark brown dots along median line and with stripe consisting of more numerous darkened dots along anal edge; dorsal field of left tegmen with greyish brown areas around stridulatory vein (but not near its lateral and medial ends) and almost dark brown ventral stridulatory teeth, but in right tegmen, this field practically transparent with yellowish venation and light yellowish small laterobasal area (Figs 119, 121, 122); hind wing transparent with rose some veins and yellowish green distal portion of costal part having a few darkish dots; legs with greyish brown proximal area of fore tibia (but tympanic membranes light) and a few very small brown to dark brown marks on hind tarsus; abdomen with rose tinge on dorsum of abdominal tergites (except for last tergite only) and on epiproct, as well as with slightly darkened small apical spinules on cercus (Figs 135–138). Upper rostral tubercle similar to that of *M. (H.) aceh* **sp. nov.** but with less vertical anterior edge of posterior (higher) portion of this tubercle (Fig. 120); posterior part of pronotal disc with traces of low median keel (anterior and middle parts of disc somewhat deformed); wings more or less similar to those of *M. (H.) aceh* **sp. nov.** in structure, with stridulatory apparatus as in Figs 119, 121, 122. Abdomen also similar to that of this species, but some its structures different: epiproct shorter and slightly wider in apical part, more or less triangular with narrow anterior part and almost truncate but slightly convex posterior edge (Fig. 135); cercus rather thin, moderately long, almost straight (barely arcuate), with two rather short and thin apical lobules having acute apices (upper lobule longer, lamellar, strongly curved upwards and with almost spinule-like apex; lower lobule clearly shorter, almost not lamellar and not curved but with hook-like apex; Figs 135–138); genital plate rather long, straight in profile, distinctly narrowed in middle and apical parts but slightly less narrowed in subapical part, with very narrow and moderately deep posteromedian notch as well as with a pair of roundly angular apical lobes around it (Figs 135–137); genitalia with a pair of comparatively small and semi-membranous rounded structures possibly homologous to setose plates of *Hemimirollia* (Fig. 139).

*Female.* Unknown.

*Length* in mm. Body 14.0; body with wings 27.0; pronotum 4.0; tegmina 19.5; parts of hind wings exposed behind tegmina 5.0; hind femora 11.0.

**Comparison.** The new species is clearly distinguished from the both other species of this subgenus by smaller (shorter) lobules (branches) of the male cercus and the location of their bases in the distal (not middle) cercal portion.

**Etymology.** This species name originates from the Latin prefix “bi-” (two) and the Latin word “apicalis” (apical, summit) due to the presence of two lobules on the distal part of the male cercus.

***Mirollia (Mirollia) indica* sp. nov.**

<http://zoobank.org/C6C17ACF-2162-417C-A18F-5DDFA9287DFF>

(Figs 123–126, 140–143)

**Type material.** *Holotype*: male, INDIA, Tamil Nadu State, Nilgiris Distr., environs of Devala Town in Nilgiri Mts (data and collector unknown) (ZIN).

**Description.** *Male* (holotype). General appearance typical of *Mirollia* s. str. Coloration yellowish green with following marks: dorsum of epicranium with greyish tinge; scape with light brown area on dorsal surface; pedicel with dark brown lateral spot and brown proximial mark; antennal flagellum with sparse and small light brown to brown spots; pronotum with two pairs of distinct brown dots on middle and posterior parts of disc (latter pair located very near posterior edge of disc) as well as very sparse and small rose dots on lateral lobes (Figs 123, 124); tegminal lateral field with very sparse light brown to dark brown dots in almost all areas (Fig. 125); dorsal field of left tegmen with light greyish brown stridulatory vein and brown areas near it (before and behind this vein) as well as brown ventral stridulatory teeth (Figs 123, 125, 126), but in right tegmen, this field transparent as well as with light yellowish venation and small basal area; Fig. 123); legs with darkened spots around tympanic membranes in fore tibia, very small dark marks in region of femur-tibia articulation of middle and hind legs, and darkened middle part of all tarsi; abdomen with almost whitish sternites and light brown apices of cerci (Figs 140–142). Upper rostral tubercle almost as in *M. (A.) biapicalis* **sp. nov.**; pronotum with low but distinct median keel on anterior and middle parts of disc as well as with less distinct median keel on posterior part of disc (these keels not connected with each other before latter part; Figs 123, 124); tegmina more or less similar to those of *M. (H.) aceh* **sp. nov.** and *M. (A.) biapicalis* **sp. nov.** in shape (Fig. 125) and with stridulatory apparatus as in Figs 123, 125, 126. Abdomen also similar to that of these species, but with some distinct differences: epiproct smaller and slightly elongate as well as roundly triangular in distal and lateral parts (Fig. 141); cercus moderately long and thin, with barely thickened proximal and subapical parts, strongly arcuate distal portion and almost spine-like apical part (this spine-like part directed medially and slightly curved in posterior view) (Figs 140–142); genital plate short for this genus, somewhat narrowed in middle part, with very deep and narrowly angular posteromedian notch reaching proximal half of this plate, and with rather long apical lobules (distal portions of these lobules curved laterally; Fig. 142); genitalia with a pair of elongate and rather thin sclerites which strongly curved and having acute posterolateral

apices (medial parts of these sclerites possibly homologous to a pair of semi-sclerotized or semi-membranous structures in *Hemimirollia* and *Amirollia*, but lateral parts of these sclerites, to lateral membranous lobes of these subgenera; Fig. 143).

*Female.* Unknown.

*Length* in mm. Body 13.8; body with wings 28.0; pronotum 3.9; tegmina 18.5; parts of hind wings exposed behind tegmina 3.7; hind femora 10.5.

**Comparison.** The new species is clearly distinguished from all known Indian congeners (collected in Assam and Darjiling) by the different shape of the male cerci and the male genital plate as well as the male genitalia sclerites. These sclerites in the new species are more or less similar to those of *M. (M.) hamata* Ingrisch, 1998 (Thailand); however, such sclerites in *M. (M.) indica* **sp. nov.** are with acute apices, but in *M. (M.) hamata*, they are with widely rounded apices (these species also clearly differ from each other in some other abdominal characters; Ingrisch, 1998).

**Etymology.** This species is named after India, the country where it was collected.

***Mirollia (Mirollia) tarbinskyi* sp. nov.**

<http://zoobank.org/6E38F089-5DB9-4B40-BC3E-630E8A6A7AC3>

(Figs 144–147, 158–161, 175, 176)

**Type material.** *Holotype:* male, INDONESIA, Sumatra I., Aceh Prov. not far from border with North Sumatra Prov., environs of Ketambe Village on Alas River near Gunung Leuser National Park, 3°41–42' N, 97°38–39' E, 300–500 m, primary forest, at light, 15–24.IV.2018 (A. Gorochov, M. Berezin, I. Kamskov, E. Tkatsheva) (ZIN). *Paratype:* 1 male, same data, but 29.I–8.II.2023 (A. Gorochov, M. Omelko, A. Fomitshev) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *M. (M.) cerciata* Hebard, 1922 from Borneo. Coloration yellowish green with almost yellow dorsal parts of both epicranium and pronotum as well as with some other marks: head with a pair of brown longitudinal stripes behind eyes, brownish rose most part of dorsal and lateral surfaces of scape, almost completely brownish rose pedicel and short basal portion of antennal flagellum, as well as sparse and small light brown to brown spots on rest of this flagellum; pronotum with a pair of rather large blackish dots on disc near its middle part and numerous very small brown to dark brown dots on rest of disc and on upper parts of lateral lobes (Figs 144, 145); tegminal lateral field with one longitudinal row of sparse dark dots not far from anal edge of proximal half of this field and a few such dots in almost all areas of distal half of this field (Fig. 147); dorsal field of left tegmen almost yellow with large brown area in middle part and more or less brown ventral stridulatory teeth (Figs 144, 146, 147), but this field in right tegmen transparent with light yellowish venation and small basal area as well as greyish middle part of stridulatory vein (Fig. 144); hind wing approximately as in *M. (M.) indica* **sp. nov.** but with venation yellowish to almost transparent (Fig. 144); legs with reddish brown spot on outer side of proximal part of fore femur and on each femoral apex as well as area around dark brown tympanic membranes of fore tibia, small brownish rose marks at bases of middle and hind tibiae as well as on outer side of proximal half of hind tibia, rose middle part of all tarsi, and brownish rose to brown lateral marks on proximal part of hind tarsus; abdomen with light brown apices of subapical (medial) hook on each cercus (Figs 158–161). Upper rostral tubercle almost as in *M. (H.) aceh* **sp. nov.**; pronotum with keels of disc similar to those of *M. (M.) indica* **sp. nov.**; wings also similar to those of this species (Fig. 147), but dorsal fields of tegmina larger and with stridulatory apparatus in Figs 144, 146, 147. Abdomen distinguished from that of this species by following features: last tergite with rounded posteromedian notch containing membrane between this tergite and epiproct (Fig. 158); cercus with more specialized distal part similar to that of *M. (M.) cerciata* but having narrower (almost acute) apical tubercle and less strongly curved subapical (medial) hook (compare Figs 161 and 162); genital plate longer and with less deep posteromedian notch (this plate also similar to that of *M. cerciata*, but its posteromedian notch widely triangular, i.e. less deep and with less narrow median part; Figs 159, 160); genitalia distinguished from those of *M. (M.) cerciata* by following characters (compare Figs 175, 176 and 177, 178): a pair of long medial lobes semi-membranous but with semi-sclerotized distal and lateral parts; these lobes fused with each other up to their distal third (*vs.* these lobes mostly sclerotized or semi-sclerotized, fused with each other almost up to their middle); each of these lobes with microscopical denticles on dorsal surface in distal part and along lateral edge in distal and middle parts (*vs.* it with small denticles only along lateral edge in distal part); subapical part of these lobes rather thin, but apical one barely thickened and almost finger-like (*vs.* distal part of medial lobes flattened and with slight subapical widening); each of lateral lobes more or less similar to medial lobe but distinctly shorter and with semi-membranous lateral part as well as with microscopical denticles on dorsal surface of distal part and along lateral and medial edges of this part (*vs.* lateral lobe slightly shorter than medial one, more sclerotized than in *M. tarbinskyi* **sp. nov.**, with flattened distal part and small denticles only along its dorsolateral edge).

**Variations.** Marks on head and pronotum darker (dark brown to blackish) and slightly larger; dorsal field of left tegmen with darker (dark brown) area and lighter (almost yellowish) stridulatory teeth; each medial lobe of genitalia with microscopical denticles only along lateral edge in distal and middle parts.

*Female.* Unknown.

*Length* in mm. Body 9.0–13.5; body with wings 23.0–25.0; pronotum 3.6–3.8; tegmina 17.0–18.5; parts of hind wings exposed behind tegmina 2.4–2.8; hind femora 9.5–10.5.

**Comparison.** The new species is most similar to *M. (M.) cerciata* but distinguished from it by the characters of the male cerci, male genital plate and male genitalia noted above. From all the other congeners with known males, *M. (M.) tarbinskyi* **sp. nov.** differs in the male cercal apical tubercle almost acute and with a small thin hook at the base as well as in some other characters of the male abdominal apex.

**Etymology.** This species is named in memory of the Russian and Soviet orthopterist Sergei P. Tarbinsky.

***Mirollia (Mirollia) parabnormis* sp. nov.**

<http://zoobank.org/9AFF3BA7-B975-4BB5-B8CE-AEADA6F74B0F>

(Figs 148–150, 163–165, 179, 180)

**Type material.** *Holotype*: male, MALAYSIA, Borneo I., Sabah State, environs of Pensiangan Town, 4°34.948' N, 116°19.935' E, 516 m, 27.V–2.VI.2014 (E. Shcherbakov) (ZIN). *Paratype*: 1 female, same country and island, Sarawak State, environs of Miri Town, Lambir Hills National Park, 100–300 m, primary forest, 19–20.XI.2016 (A. Gorochoy, M. Berezin, E. Tkatsheva, I. Kamskov, N. Grigoreva) (ZIN).

**Description.** *Male* (holotype). General appearance similar to that of *M. (M.) tarbinskyi* **sp. nov.** Coloration yellowish green with small light brown mark on scape, large brown spot on pedicel, sparse and small brown to light brown spots on antennal flagellum, two pairs of brown marks on pronotal disc, sparse brown to light brown dots on lateral tegminal field, large light brown area and brown ventral stridulatory teeth on left dorsal tegminal field, almost completely transparent (with some yellowish veins) right dorsal tegminal field, light brown marks on femoral apices and in proximal parts of tibiae as well as two small outer dots on distal half of middle tibia, brown to dark brown outer dots on hind tibia (from base to apex), brown to light brown middle part of tarsi, and almost dark brown apices of cerci (Figs 148–150, 163, 164). Upper rostral tubercle similar to that of *M. (A.) biapicalis* **sp. nov.** and *M. (M.) indica* **sp. nov.** in shape; pronotum with distinct but rather low median keel on anterior half of disc and slightly less distinct median keel on its posterior half; wings more similar to those of *M. (M.) tarbinskyi* **sp. nov.** but with tegminal stridulatory apparatus as in Figs 148–150; last tergite somewhat concave in posteromedian part; epiproct rather small but elongate, with slightly widened proximal half and with moderately narrowed distal portion having widely rounded apex; cercus long and more or less S-shaped as well as rather thin but with somewhat thickened proximal third, and distal cercal portion strongly curved (almost loop-like) and with S-shaped apical part having small acute hook at apex (Figs 163, 164); genital plate rather long, with strongly narrowed distal half which slightly and gradually widening to angularly notched apex (Fig. 164); genitalia very similar to those of *M. (M.) abnormis* Karny, 1926, but their dorsomedial semi-sclerotized lobes much larger (wider), and their ventromedial semi-sclerotized lobes (these lobes very large and S-shaped in both species) less curved, narrower in middle parts and with almost round (less arcuate) distal parts (compare Figs 179, 180 and 181, 182).

*Female.* Coloration and structure of body as in male, but dorsal tegminal fields lighter (yellowish green with small darkened cell membranes only) and with densely reticular venation (i.e. without stridulatory apparatus), lateral tegminal fields with more distinct (dark brown to blackish) dots, femora and abdominal tergites with rose dots, epiproct almost oval, and cerci smaller and not specialized (more or less fusiform) as well as without dark marks; genital plate compressed laterally and with three more or less angular apical lobules (these lobules almost equal to each other in length; Fig. 165); ovipositor as in Fig. 165.

*Length* in mm. Body: male 15.0, female 14.5; body with wings: male 27.0, female 29.0; pronotum: male 3.9, female 4.2; tegmina: male 21.0, female 23.0; parts of hind wings exposed behind tegminal apices: male 3.5, female 4.0; hind femora: male 11.0, female 11.7; ovipositor 5.6.

**Comparison.** The new species is almost indistinguishable from *M. (M.) abnormis* in the general appearance (including external structures of male abdominal apex), but it clearly differs from the latter species in the above-mentioned characters of the male genitalia and possibly a longer posteromedian lobule of the female genital plate. However, these differences are not very significant, and these congeners may be only two subspecies of the same species: new one from southern part of Sabah and northern part of Sarawak; “nominotypical subspecies” from more northern localities of Sabah [if this taxon is correctly determined by Gorochoy (2008) and Ingrisch (2011), because *M. abnormis* was originally described after a female from “Nordborneo” without indication of more exact locality (Karny, 1926)].

***Mirollia (Mirollia) terminalis complanata* subsp. nov.**

<http://zoobank.org/166691BE-3FF6-477B-8A74-E76A43E1D2D2>

(Figs 151–153, 166–170, 183–186)

**Type material.** *Holotype*: male, VIETNAM, Ha Giang Prov., Quan Ba Distr., environs of Tung Vui Community, 400 m, forest, 1–16.VI.2019 (N. Orlov, L. Iogansen) (ZIN). *Paratype*: 1 female, same data as for holotype (ZIN).

**Description.** *Male* (holotype). General appearance more or less similar to that of *M. (M.) indica* **sp. nov.**, *M. (M.) tarbinskyi* **sp. nov.** and *M. (M.) parabnormis* **sp. nov.** Coloration yellowish green with light brown lateral stripe on scape,

brown to greyish brown large spots on pedicel, sparse and small greyish brown to light brown spots on antennal flagellum, rather numerous brown to brownish dots on upper part of pronotum (Fig. 151), darkened dots in cell membranes of median and anal parts of lateral tegminal field (Fig. 153), brown dorsal part of stridulatory vein as well as dark brown to blackish areas around it and ventral stridulatory teeth in left tegmen (Figs 151–153), transparent most part of dorsal field in right tegmen (but some veins and apical part of this field yellowish; Fig. 151), legs having light brown to brown marks only on proximal parts of fore tibiae, light brown anteromedian spot on last tergite, and darkened apical parts of cerci (Figs 166–168). Upper rostral tubercle and pronotum almost as in *M. (M.) parabnormis* **sp. nov.**, but notch between apical denticle of this tubercle and more posterior part of this tubercle slightly less deep in profile; wings also more or less similar to those of this species (Fig. 153), but stridulatory apparatus as in Figs 151, 152; last tergite with almost straight posteromedian edge; epiproct elongate, moderately narrow in basal part, slightly narrower in rest part, and with rounded apex (Fig. 166); cercus moderately long, slightly thickened in short basal part, barely thinner between this part and insignificantly inflated middle part, and with more or less dorsoventrally flattened distal portion which moderately (not strongly) curved and directed medially (in dorsal view) as well as S-shaped (in lateral view) and having characteristic apical tooth (Figs 166–168); genital plate with posterior (narrowed) half narrowest at base as well as moderately and gradually widening to apical part, and this part with rather deep and very narrow posteromedian notch as well as somewhat inflated rounded apices of posterolateral lobules (each of these apices having angular posterolateral projection directed laterally and slightly backwards/upwards; Figs 167, 168); genitalia with two semi-sclerotized plates (dorsal and ventral) on each lateral membranous lobe and a pair of rather small medial plates, but dorsal plate much longer than ventral one as well as with posterior half reaching apex of this lobe and gradually narrowing to thin acute spinule (all plates of lateral half of genitalia partly fused with each other, but left and right plates widely separated from each other; Figs 183–186).

*Female.* Coloration and structure of body as in male, but darkened spots on antennal flagellum somewhat darker, and dorsal tegminal fields very similar to those of *M. (M.) parabnormis* **sp. nov.**; genital plate wide, dorsoventrally flattened, with a pair of rather long posterolateral lobules directed backwards/laterally, and with rather wide and straight posterior edge between them having very small projection at middle (Fig. 170); ovipositor as in Fig. 169.

*Length* in mm. Body: male 18.5, female 17.5; body with wings: male 31.0, female 33.0; pronotum: male 4.2, female 4.1; tegmina: male 23.0, female 24.5; parts of hind wings exposed behind tegminal apices: male 4.5, female 4.7; hind femora: male 14.0, female 14.5; ovipositor 6.3.

**Comparison.** The new subspecies is distinguished from *M. (M.) t. terminalis* Wang, Wang et Shi, 2015 (China: Guangxi Prov.) by the stridulatory vein of the left male tegmen slightly thicker in its middle part, the male cercus slightly less curved and with an insignificantly inflated middle part as well as a more or less dorsoventrally depressed distal portion (in *M. t. terminalis*, this cercus is with its middle part not inflated, and with its “apex compressed laterally”; Wang et al., 2015), and the lateral sclerites of the male genitalia with less specialized apices (compare Figs 185, 186 and 187, 188). The male genitalia of the nominotypical subspecies are insufficiently described, and it is very possible that the new subspecies is a distinct species.

**Etymology.** The new subspecies name is the Latin word “complanata” (compressed, flattened) due to dorsoventrally depressed (flattened) distal portions of the male cerci.

***Mirollia (Mirollia) elegantia australis* subsp. nov.**

<http://zoobank.org/F8C694BA-CE7B-4832-9B8D-67331004BC0D>

(Figs 154, 173, 174, 193, 194)

**Type locality.** *Holotype:* male, VIETNAM, Binh Phuoc Prov., 13 km NE of Bu Gia Map Village, Bu Gia Map National Park, 12°11'37" N, 107°12'24" E, 540 m, 18–31.V.2011 (L. Anisyutkin, A. Anichkin) (ZIN). *Paratypes:* 2 males, same data as for holotype (ZIN).

**Description.** *Male* (holotype). Coloration and structure of body very similar to those of *M. (M.) e. elegantia* Gorochov, 2005. General color yellowish green, but some darker marks developed: scape with light brown dorsal spot; pedicel with rather large brown ventrolateral area; antennal flagellum with sparse and small light brown spots; pronotal disc with a pair of large dark brown dots on anterior half and a few smaller brown to light brown dots on lateral parts of posterior third (Fig. 154); coloration of wings similar to that of *M. (M.) terminalis complanata* **subsp. nov.**, but lateral tegminal fields with more distinct brown to dark brown small spots and dots, left dorsal tegminal field with light brown stridulatory vein as well as brown areas around this vein and brown to light brown ventral teeth of this vein, and right dorsal tegminal field transparent with some yellowish veins (Fig. 154); legs with slightly darkened small marks on femoral apices and on bases of middle and hind tibiae, greyish brown marks on proximal part of fore tibia and on outer side of hind tibia, and darkened middle parts of all tarsi; apical denticle of cercus also darkened (Figs 173, 174). Structure of upper rostral tubercle, pronotum and wings more or less similar to that of *M. (M.) t. complanata* **subsp. nov.**, but tegminal stridulatory apparatus as in Fig. 154; last tergite with deeply but roundly concave posteromedian edge; epiproct rather small, triangular but rounded at apex and separated from last tergite by distinct membranous area; cercus very thin and long, with slightly thicker proximal portion, and strongly and arcuately curved distal portion having very thin apical part (this part S-shaped, with small spinule-like denticle at apex and without roundly



projected lobe under base of this denticle; Figs 173, 194); posterior (narrowed) half of genital plate narrowest in basal part as well as gradually and moderately widening to apical part (this apical part with rather deep and narrowly angular posteromedian notch, and with a pair of apical lobules gradually narrowing to their almost acute apices and directed backwards/laterally; Fig. 174); genitalia with each medial semi-sclerotized lobe rather large and rounded (as in nominotypical subspecies), but their very long lateral semi-sclerotized lobe clearly shorter and slightly wider than in this subspecies as well as more gradually widening at base (compare Figs 193 and 195).

*Variations.* Scape sometimes almost without light brown spot; darkened marks on pronotum and tegmina varied from slightly lighter to slightly darker; narrowest part of genital plate sometimes somewhat narrower than in holotype.

*Female.* Unknown.

*Length* in mm. Body 15.0–16.5; body with wings 28.0–30.0; pronotum 4.2–4.4; tegmina 22.0–23.0; parts of hind wings exposed behind tegmina 3.7–4.0; hind femora 12.0–15.0.

**Comparison.** The new subspecies (Southern Vietnam) is distinguished from the nominotypical one (Central Vietnam) mainly by a slightly thinner apical part of the male cercus and shorter lateral lobes of the male genitalia, and by these lobes more gradually widening in the basal parts (compare Figs 193, 194 and 195, 196). From all other representatives of this subgenus, the new subspecies differs in the same characters as *M. (M.) e. elegantia* (for example, these subspecies differ from the rather similar Chinese species *M. (M.) obscuripennis* Liu, 2004 in a somewhat different shape of the male cercal apical part; see Figs 194, 196 and 197).

**Etymology.** The new subspecies name is the Latin word “australis” (southern) due to the more southerly distribution of this subspecies.

### *Mirollia (Mirollia) elegantia elegania* Gorochov, 2005

(Figs 195, 196)

**New material examined.** 1 male, VIETNAM, Quang Binh Prov., Phong Nha – Ke Bang National Park, 17°38'16" N, 106°05'38" E, 300 m, 15–19.XI.2007 (A. Abramov) (ZIN); 2 females, same country, Quang Nam Prov., 8 km SW of La Dee, Song Thanh Nature Reserve, 15°33'48" N, 107°23'23" E, 1070 m, 24.IV–11.V.2019 (A. Abramov) (ZIN).

**Note.** This subspecies was described as a species from Con Tum Province (type locality) and Quang Tri Province in Central Vietnam (Gorochov, 2005). Here this subspecies is recorded from some other localities of Central Vietnam. Also it is necessary to add that *M. (M.) obscuripennis* Liu from China, judging by its redescription without holotype study (Wang et al., 2015), may be another subspecies of the same species. These two possible subspecies differ from each other in the following characters: the stridulatory vein of the male left tegmen in Chinese “subspecies” is slightly S-shaped but not barely arcuate; the dorsal field of the male right tegmen in *M. (M.) e. elegantia* has a more convex medial edge (especially in its posterior half); the male cercus of the latter subspecies lacks any distinct rounded lobe under the apical denticle (compare Figs 196 and 197); the male genital plate in this subspecies somewhat shorter as well as with slightly shorter and clearly narrower apical lobules around the posteromedian notch.

### *Mirollia (Mirollia) fallax stenolobos* subsp. nov.

<http://zoobank.org/A4CAE3C4-A814-48D1-BA42-88B37E7E86D5>

(Figs 155–157, 171, 172, 189, 190)

**Type material.** *Holotype:* male, LAOS, Vientiane Prov., ~70 km NNW of Vientiane City, Nam Lik Eco Village on Nam Lik River, 18.61469° N, 102.40847° E, ~200 m, secondary forest, at light, 10–30.VI.2017 (A. Gorochov, M. Omelko) (ZIN). *Paratypes:* 2 males, 4 females, same data as for holotype (ZIN); 1 male, VIETNAM, Quang Binh Prov., 17 km S of Phong Nha Town, 17°26'54.39" N, 106°14'11.82" E, 400 m, 13–20.V.2022 (A. Abramov) (ZIN).

**Description.** *Male* (holotype). General appearance very similar to that of *M. (M.) f. fallax* Bey-Bienko, 1962 but with some characteristic features: coloration distinguished from that of *M. (M.) e. australis* subsp. nov. by only a pair of small brown dots on anterior half of pronotal disc (Fig. 155), less distinct darkened marks on tegminal lateral fields (Fig. 157), and darker pattern on left tegminal dorsal field (stridulatory vein light brown, its ventral teeth brown, and areas around this vein dark brown; Figs 155–157); upper rostral tubercle similar to that of the latter subspecies but with even less deep dorsal notch between apical denticle and rest of this tubercle; relief of pronotal disc and tegminal stridulatory apparatus as in Figs 155–157; last tergite with deep and rather narrow posteromedian notch occupied by membranous area (Fig. 171); epiproct, cerci and genital plate practically indistinguishable from those of nominotypical subspecies (including almost straight posterior edge of genital plate between apical lobules; Figs 171, 172); genitalia comparatively larger than in this subspecies, with ventromedial semi-sclerotized lobules moderately elongate (longer and slightly narrower than in *M. f. fallax*) as well as rounded at apex

and lacking denticles, with dorsomedial semi-sclerotized lobules apically denticulate and similar to those of nominotypical subspecies in shape, and with lateral semi-sclerotized lobes more strongly curved than in this subspecies (compare Figs 189, 190 and 191, 192).

*Variations.* Pronotum sometimes with a few very small brownish dots on dorsum of hind lobe; genital plate with posterior edge between apical lobules varied from distinctly convex to barely concave; curved distal parts of lateral lobes of genitalia in male from Vietnam somewhat longer (higher) than in males from Laos.

*Female.* Coloration and structure of body as in holotype; however, tegminal dorsal fields and structures of abdominal apex similar to those of females of *M. (M.) t. complanata* **subsp. nov.** and *M. (M.) parabnormis* **sp. nov.**, but these fields almost completely light, and genital plate indistinguishable from that of female of nominotypical subspecies.

*Length* in mm. Body: male 14.0–15.5, female 14.0–15.0; body with wings: male 27.0–30.0, female 30.0–32.0; pronotum: male 3.8–4.2, female 3.9–4.0; tegmina: male 21.0–23.0, female 23.5–24.0; parts of hind wings exposed behind tegmina: male 3.0–3.4, female 3.3–3.6; hind femora: male 11.0–12.0, female 12.0–12.5; ovipositor 5.1–5.3.

**Comparison.** The new subspecies (Central Vietnam and nearest part of Laos) differs from the nominotypical one (Northern Vietnam and nearest part of China) in a deeper posteromedian notch of the male last tergite as well as in some characters of the male genitalia listed above. Some other species also have the male genitalia more or less similar to those of *M. (M.) f. stenolobos* **subsp. nov.**, but the latter taxon is distinguished from them by the following features: from *M. (M.) composita* Bey-Bienko, 1962 and *M. (M.) ranongi* Gorochov, 1998, by clearly shorter and less curved semi-sclerotized lateral lobes of these genitalia; from *M. (M.) javae* Gorochov, 1998, by the latter lobes distinctly curved in their distal parts (*vs.* these lobes are almost not curved); from *M. (M.) yunnani* Gorochov et Kang, 2005, *M. (M.) hainani* Gorochov et Kang, 2005, *M. (M.) secunda* Ingrisch, 2011, *M. (M.) tawai* Ingrisch, 2011 and *M. (M.) rumidi* Ingrisch, 2011, by very different shape of the male genitalia medial lobes and/or of the male cercal apical part.

**Etymology.** The new subspecies name originates from two Latinized Greek parts: the prefix “steno-” (narrow) and the word “lobos” (lobe). This name is given in connection with shape of the ventromedial semi-sclerotized lobule in the male genitalia.

### ***Mirollia (Mirollia) fallax fallax* Bey-Bienko, 1962**

(Figs 191, 192)

**New material examined:** 1 male, VIETNAM, Tuyen Quang Prov., 5 km E of Na Hang, 22°20'59" N, 105°25'36" E, 290 m, 4–13.XI.2015 (D. Logunov) (ZIN).

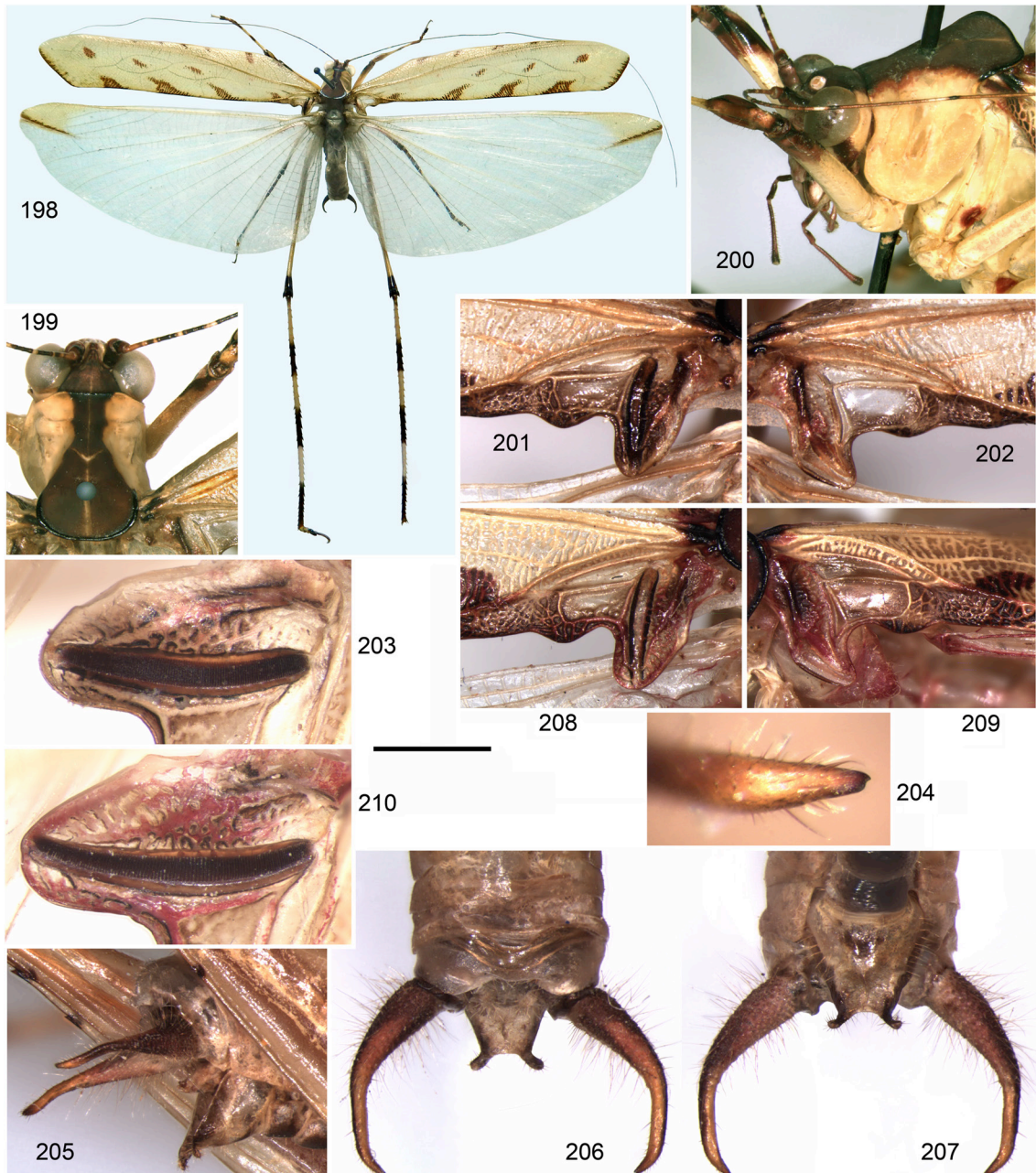
**Note.** This specimen is very similar to the type material from China as well as to some additional material from Northern Vietnam (Gorochov, 1998: Ha Son Binh Prov.). From *M. (M.) f. stenolobos* **subsp. nov.**, distributed in more southern territories, it differs in the characters listed above (see the description of *M. f. stenolobos* **subsp. nov.**). Here the nominotypical subspecies is recorded from a new locality in Northern Vietnam.

### **Genus *Sergeitarbinskia* gen. nov.**

<http://zoobank.org/02B8F7D2-5474-41BF-B796-52889DCF1649>

Type species – *Sergeitarbinskia excellens* **sp. nov.**

**Diagnosis.** Body medium-sized, somewhat larger than in *Mirollia* and most taxa of *Deflorita*. Head typical of *Mirolliini*, but lower rostral tubercle slightly more distinct (denticle-like), upper rostral tubercle almost without apical denticle (this denticle in form of small rounded convexity) and with larger but low (rounded in profile) posterior part of this tubercle having a pair of almost vertical and large lateral ocelli as well as one rather deep dorsomedian groove on anterior half of this part, maxillary palpus with very long apical segment (it almost 2.5 times as long as short subapical segment; in other *Mirolliini* taxa, it more or less twice as long as subapical segment). Pronotal disc with anterior half rather narrow but having thin and slight median groove, with posterior half distinctly but gradually widening to widely truncated apex (lateral corners of this apex rounded), and with anterior and posterior edges barely keel-like; lateral pronotal lobes rather high, with concave anterior edge, rounded ventral edge and somewhat oblique posteroventral edge, as well as with distinct vertical fold on anterior half (this fold similar to that of some *Deflorita* species) and rather deep humeral notch (Figs 199, 200). Tegmina long, not wide, with obliquely but somewhat roundly truncated apices, as well as with very characteristic male dorsal fields (female unknown): these fields very narrow but with short widenings in proximal part; most proximal widening largest but very short and in form of distinct lobe including almost only stridulatory vein; subproximal widening smaller and in form of short convexity near mirror apex; mirror in both tegmina almost identical, clearly visible, narrow (elongate) and located between two above-mentioned widenings (Figs 198, 201, 202, 208, 209). Hind wings somewhat longer than tegmina, more or less elongate



**Figs 198–210.** *Sergeitarbinskia excellens* gen. et sp. nov., male: 198–207 – holotype from Sumatra; 208–210 – paratype from Borneo. Body with spread wings from above (198); head with pronotum and nearest body parts from above (199) as well as from side and slightly above (200); stridulatory apparatus of left (201, 208) and right (202, 209) tegmina; stridulatory teeth of left tegmen from below (203, 210); apical part of left cercus from side and partly behind (204); abdominal apex from side and slightly behind (205), from above and slightly behind (206) as well as from below (207). Scale bar (only for 203 and 210) = 1.0 mm.

and with thickened apical part short and almost triangular (Fig. 198). Legs also typical of *Mirolliini*, thin, without distinct lobes and large spines; however, fore tibia with widened tympanic region having open but elongate and slightly immersed outer tympanum as well as slit-like and somewhat inflated inner one, and hind femur with moderately widened proximal half. Male abdomen with following features: dorsal gland absent; posterior edges of tergites practically straight but with rather wide and very short posteromedian lobe on last tergite; epiproct and paraprocts small and simple in shape, but epiproct with distinct median posterodorsal concavity; cercus also simple, almost fusiform but rather long and arcuately curved (Figs 205,



206); genital plate rather short (significantly shorter than cerci), narrowing to roundly concave apex and having a pair of small posterolateral lobules (Figs 205, 207); genitalia membranous, with rather short lobes.

**Included species.** Only type species.

**Comparison.** The new genus is distinguished from *Mirollia* and *Deflorita* by the pronotal disc narrower in its anterior half, the pronotal lateral lobes with somewhat deeper humeral notches, the male tegmina with a different structure of their dorsal fields (the mirror is clearly visible and almost identical in the both tegmina as well as located between the two proximal lobes of the dorsal fields; vs. it more or less reduced and almost indistinct in the left tegmen as well as larger and more membranous in the right tegmen), the male abdomen lacking any dorsal gland and having a rather simple shape of the structures of the abdominal apex (including the male genitalia which are membranous and more similar to those of *Deflorita*). These differences clearly show that the new genus is less closely related to *Mirollia* and *Deflorita* than the latter genera to each other, and if *Sergeitarbinskia* **gen. nov.** really belongs to Mirolliini, this tribe may be divided into two subtribes: nominotypical one for *Mirollia* and *Deflorita*, and a special subtribe for the new genus.

Also the new genus is more or less similar to the Asian genera *Alloducetia* Xia et Liu, 1993, *Macedna* Karsch, 1891 and *Execholyrus* Henry, 1940 as well as to the African genus *Poreuomena* Brunner-Wattenwyl, 1878 in the structure of its tegminal dorsal fields (these fields are very narrow but with short proximal lobes, and such lobe in the left tegmen is very short and including almost only the stridulatory vein; Figs 201, 203, 208, 210). However, *Alloducetia* has all the tympana open, but *Sergeitarbinskia* **gen. nov.** has its inner tympanum slit-like (i.e. as in all other taxa of Mirolliini); *Macedna* and *Execholyrus* have the right dorsal tegminal field with a proximal lobe containing a rather large mirror, but in the new genus, this mirror narrow and located after the largest lobe of this field and before the smaller second lobe of this field (Figs 202, 209); *Poreuomena* is with a pair of posterior processes on the male last tergite and possibly with a strongly reduced or obliterated mirror in the male right tegmen, but the new genus is without processes on this tergite and with a distinct mirror in this tegmen (Figs 202, 209).

**Etymology.** This genus is named in memory of Sergei P. Tarbinsky.

***Sergeitarbinskia excellens* sp. nov.**

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(Figs 198–210)

**Type material.** *Holotype*: male, INDONESIA, Sumatra I., West Sumatra Prov., environs of Padang City, forest, at light, IV.2004 (M. Berezin) (ZIN). *Paratype*: 1 male, MALAYSIA, Borneo I., Sabah State, Trus Madi Mt, ~1000 m, primary/secondary forest, at light, 13–25.V.2007 (A. Gorochov) (ZIN).

**Description.** *Male* (holotype). Body rather variegate (Fig. 198): epicranium with brown dorsum, a pair of oblique stripes on middle part of genae and a pair of vertical stripes under eyes, with rose to yellowish area between latter (vertical) stripes and between lower halves of antennal cavities as well as border of each of these cavities, and with yellowish ocelli and rest parts of genae; mouthparts with rose clypeus, labrum and subgenae, with yellowish each mandible having reddish brown anteromedial part of upper half, and with rose to yellowish rest mouthparts having brown apices of apical segments of palpi; antenna with reddish brown scape and pedicel having yellowish rose base of scape and dark brown base of pedicel, and with dark brown flagellum having rather numerous but more or less sparse yellowish marks; pronotum with brown disc having a few lighter lines and dark brown anterior and posterior edges as well as lateral edges of hind lobe, and with yellowish lateral lobes (Figs 199, 200); lateral tegminal field yellowish green with three longitudinal rows of light brown spots (row along costal edge with 7 small spots, median row with 4 similar spots, and row along anal edge with 4 larger and somewhat oblique spots; Fig. 198); dorsal tegminal fields after mirror with greyish brown cell membranes and brownish to greyish proximal veinlets, but these fields in more proximal part with transparent (in right tegmen) and semi-transparent (in left tegmen) mirror and area near its lateral edge, and more or less darkened most part of areas near medial edge of mirror and before mirror (but left stridulatory vein dark brown and with dark ventral teeth; Figs 201–203); legs yellowish with light brown to brown apical areas on femora, brown ring around inner tympanum and 2 light brown spots on fore tibia, 3 brown spots on middle tibia (but proximal one large and with smaller yellowish marks), 4 brown spots on hind tibia (but proximal one small, and distal spot longest; Fig. 198), and brown middle part of all tarsi (but fore tarsus with light brown proximal portion); other body parts yellowish with greyish brown area on each abdominal sternite (Fig. 207), light brown to greyish brown cerci, and 3 darkish spots on genital plate (a pair of these spots on posterolateral parts and one small median spot near base of this plate) (Figs 205–207). Structure of head, pronotum and legs as in generic diagnosis; tegmina reaching distal third of hind tibiae, and their structure (including stridulatory apparatus) as in Figs 198, 201–203; abdominal apex with cerci having rather thin and almost



acute apical part slightly curved upwards and medially (Figs 204–206), and with genital plate having rather wide and insignificantly concave apex as well as posterolateral lobules almost lamellar, rounded at apex and somewhat curved downwards/laterally (Figs 205, 207).

*Variations.* Paratype very similar to holotype but with rose marks on pleurites, thoracic sternites and hind coxae, with reddish brown areas on abdominal sternites (apical part of its genital plate missing) and barely smaller mirror in both tegmina as well as slightly longer and dorsally lighter stridulatory vein of left tegmen having two darker transverse lines (proximal and distal) on dorsal surface (compare Figs 201–203 and 208–210).

*Female.* Unknown.

*Length* in mm. Body 16.0–17.0; body with wings 40.0–43.0; pronotum 4.8–5.1; tegmina 32.0–34.0; parts of hind wings exposed behind tegmina 4.2–4.3; hind femora 21.5–23.0.

**Comparison.** Differences of the new species from all known representatives of *Mirolliini* and from some other similar taxa are given in the generic comparison.

**Etymology.** This species name is the Latin word “excellens” (excellent, perfect) due to the characteristic nice coloration of the body.

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