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TAXONOMY OF THE KATYDIDS (ORTHOPTERA: TETTIGONIIDAE) FROM EAST ASIA AND ADJACENT ISLANDS. COMMUNICATION 17

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Summary. New material on the genera *Elbenia* Stål and *Phaulula* Bol. (Phaneropterinae: Holochlorini) is reviewed. The species composition of the latter genus is discussed. Eight new taxa from Indonesia, Malaysia and the Philippines are described: *Sulapteron* **subgen. n.** in the genus *Elbenia* s. l.; *E. (S.) kendariensis* **sp. n.**; *E. (Tamdapteron) tembelingi* **sp. n.**; *Ph. javanica* **sp. n.**; *Ph. spinulenta* **sp. n.**; *Ph. tapienomima* **sp. n.**; *Ph. tuberculata* **sp. n.**; *Ph. figurata* **sp. n.**

Key words: Orthoptera, Tettigoniidae, Phaneropterinae, Holochlorini, new taxa, South-East Asia.

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Резюме. Рассмотрен новый материал для родов *Elbenia* Stål и *Phaulula* Bol. (Phaneropterinae: Holochlorini). Обсужден видовой состав последнего рода. Из Индонезии, Малайзии и Филиппин описаны восемь новых таксонов: *Sulapteron* **subgen. n.** в роде *Elbenia* s. l.; *E. (S.) kendariensis* **sp. n.**; *E. (Tamdapteron) tembelingi* **sp. n.**; *Ph. javanica* **sp. n.**; *Ph. spinulenta* **sp. n.**; *Ph. tapienomima* **sp. n.**; *Ph. tuberculata* **sp. n.**; *Ph. figurata* **sp. n.**

INTRODUCTION

This paper is the seventeenth communication in my series of papers on Indo-Malayan and Papuan Tettigoniidae. It continues the previous communication in this series devoted to the genus *Elbenia* Stål from the tribe Holochlorini of the subfamily Phaneropterinae (Gorochov, 2023). Also in the present paper, the material on the genus *Phaulula* Bol. from the same tribe is considered with a discussion on the species composition of this genus. Some of the species previously included in *Phaulula* have important characters which are not characteristic of this genus; probably these species must be transferred to some other genera.

The material studied here (including the types of new taxa) is deposited at the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg (ZIN). This material is dry and pinned; it was collected in different countries of South-East Asia and nearest islands. The internet catalogue Orthoptera Species File is here cited as OSF (Cigliano *et al.*, 2024).

TAXONOMY

Subfamily Phaneropterinae

Tribe Holochlorini

Genus *Elbenia* Stål, 1876

Subgenus *Sulapteron* Gorochov, subgen. n.

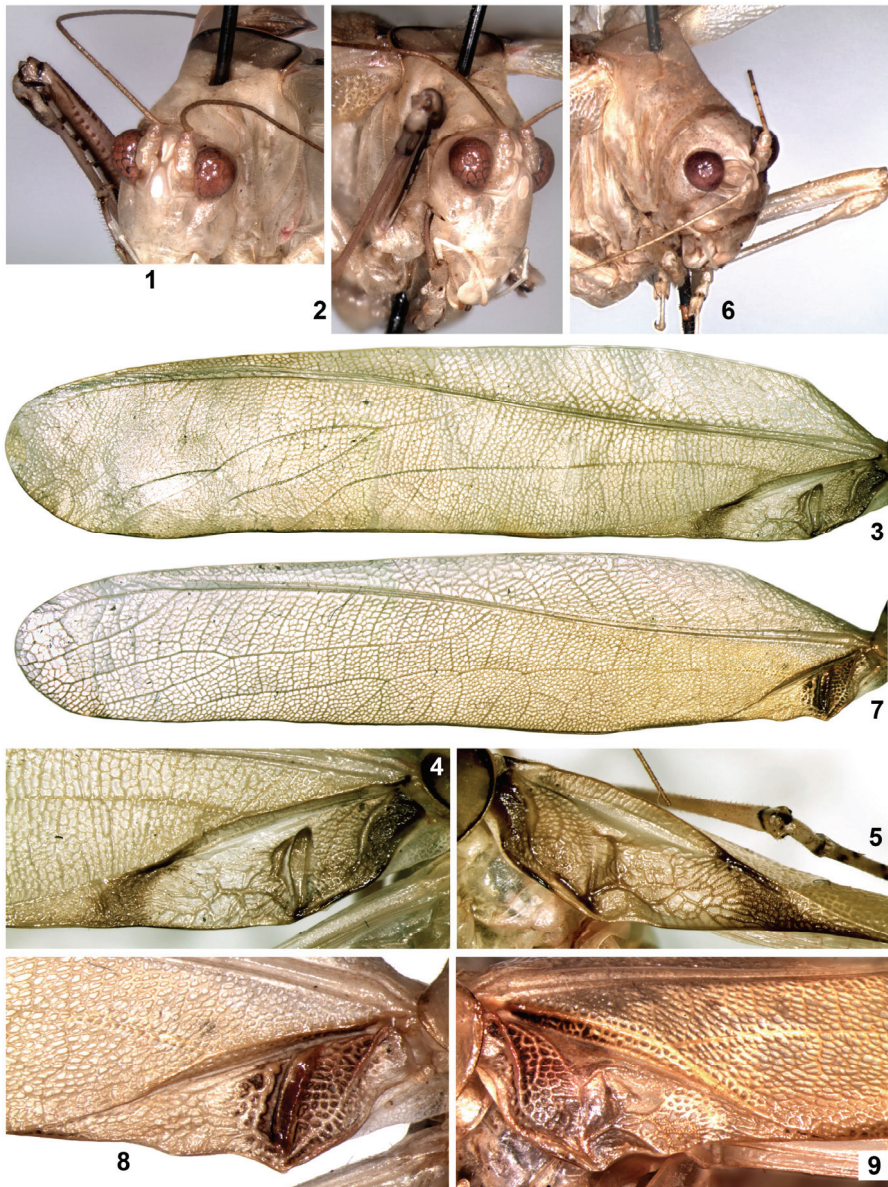
<https://zoobank.org/NomenclaturalActs/53FD2DC9-F4E6-4ABA-AF82-5C2702A83549>

Type species – *Elbenia (Sulapteron) kendariensis* sp. n.

DIAGNOSIS. Stridulatory apparatus in left male tegmen with stridulatory vein clearly shorter than in other congeners, and in both tegmina without distinct more or less angular projection of anal tegminal edge near this vein (Figs 4, 5); male last tergite distinctly smaller (narrower and shorter) than in all other subgenera of genus *Elbenia* but with a pair of distinct groove-like lateral concavities dividing it into narrow lateral parts and wide median part, and with rather large and distally bifurcated posteromedian process (Figs 11, 12, 15); epiproct and paraprocts in male small and rather deeply drawn under latter tergite; male cerci very short and rather thick proximally, with apical hooks directed medially (as in subgenera *Elbenia* s. str. and *Aequapteron* Gorochov, 2023 of *Elbenia* s. l.; Figs 11–13); male genital plate large and distally bifurcated, with a pair of moderately long posterior lobes curved somewhat upwards and having specialized apices which consisting of short lobules and small tubercles (Figs 13–15); male genitalia completely membranous.

INCLUDED SPECIES. Type species only.

COMPARISON. The new subgenus is distinguished from *Elbenia* s. str. and *Aequapteron* by the following important features: the male tegminal stridulatory apparatus has a shorter left stridulatory vein and a widely rounded anal tegminal



Figs 1–9. *Elbenia*, male: 1–5 – *E. (Sulapteron* subgen. n.) *kendariensis* sp. n. (pronotum somewhat deformed); 6–9 – *E. (Tamdaopteron) tembelingi* sp. n. Head with pronotum and fore leg, anterior/dorsolateral view (1, 2, 6); left tegmen (3, 7); dorsal field of left (4, 8) and right (5, 9) tegmina.

edge near this vein (*vs* this edge near the stridulatory vein has a more or less angular projection, as in majority of other subgenera; compare Figs 4, 5 and 8, 9); the male last tergite is clearly smaller as well as having distinct groove-like concavities and a partly bifurcated posteromedian process (in some other subgenera of *Elbenia* s. l., this process is sometimes also not completely divided into a pair of lobes); the male cerci are distinctly shorter. From the subgenera *Tamdaopteron* Gorochov, 2005 and *Javapteron* Gorochov, 2023 of this genus, it differs in the same characters and in the apical hooks of the male cerci directed medially (not laterally); additionally from *Aequapteron* and *Javapteron*, in a much deeper posteromedian notch of the male genital plate; and from the subgenus *Hemielbenia* Gorochov, 2023 (also belonging to *Elbenia* s. l.), in the posteromedian process of the male last tergite deeply bifurcated (*vs* not bifurcated).

ETYMOLOGY. This subgeneric name consists of parts of the following words: Sulawesi (island where this subgenus was collected) and *Tamdaopteron* (name of another related subgenus).

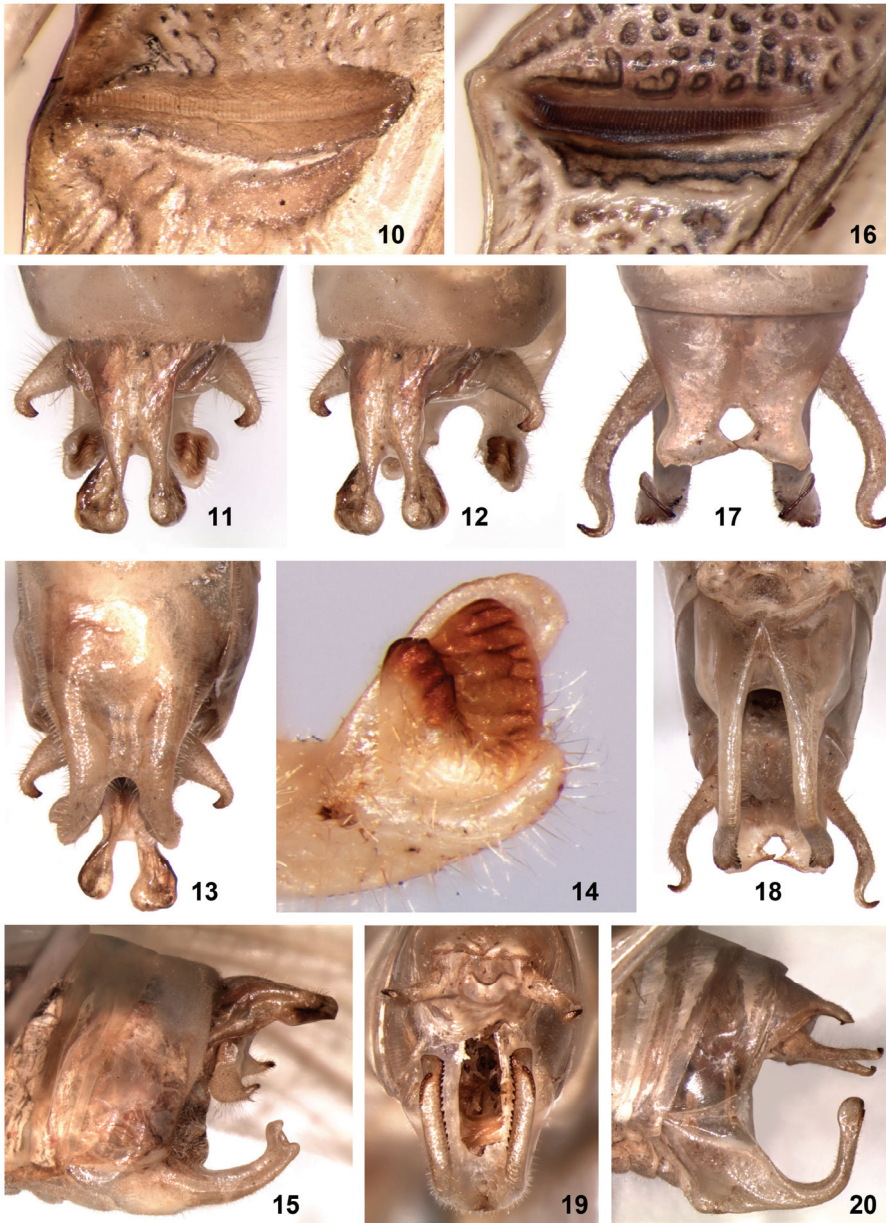
***Elbenia (Sulapteron) kendariensis* Gorochov, sp. n.**

<https://zoobank.org/NomenclaturalActs/605EC95C-4690-4E82-927D-AEA1EB612A5D>

Figs 1–5, 10–15

MATERIAL. Holotype – ♂, **Indonesia**: Sulawesi I., southeast part of island, ~30 km SE of Kendari City, Moramo Waterfall, 4°13'33" S, 122°44'9" E, forest on hill, on leaf of bush at night, 29.IX 2015, A. Gorochov, M. Berezin, I. Kamskov, E. Tkatsheva (ZIN).

DESCRIPTION. *Male* (holotype). Body medium-sized for this genus. Coloration yellowish with greenish tinge and following marks: ocelli whitish; eyes light brown; antennal flagellum light yellowish grey in proximal portion and brownish grey in rest part; pronotal disc with brownish grey hind lobe and dark brown (almost blackish) line along lateral and posterior edges of this lobe (Figs 1, 2); tegmina with greyish brown basal areas and most part of each plectrum, small brown spot at base of each M-Cu area, brownish grey area in each dorsal field near fusion of MP with CuA1 and slightly behind it, with light brown to very light brown venation near stridulatory vein (including part of this vein) in both tegmina, and greyish stripes along anal edges of lateral fields (Figs 3–5); hind wings with yellowish venation having whitish veins and veinlets in costal parts, and with completely transparent membranes (but membranes in apical parts of these wings almost transparently yellowish); femora with small dark brown spots at apices and brownish spines, as well as with light rose most part of fore and middle femora having dark brown stripe along ventral surface of fore femur and spots along ventral inner edge of this femur (also this femur with light brown to brown two longitudinal stripes on inner surface and longitudinal row of dots between these stripes); tibiae with similarly colored spines and spurs, somewhat darkened marks around tympana of fore tibia and near proximal spines of middle tibia (Figs 1, 2, 5), and dark brown ventral surface of hind tibia as well as spots near spines of this tibia; tarsi with dark edges of tarsal lobules as well as sparse and small



Figs 10–20. *Elbenia*, male: 10–15 – *E. (Sulapteron* subgen. n.) *kendariensis* sp. n. (last tergite slightly deformed); 16–20 – *E. (Tamdaopteron) tembelingi* sp. n. Stridulatory vein of male left tegmen from below (10, 16); male abdominal apex from above (11, 17), from above and slightly laterally (12), from below (13, 18), from side (15, 20), and from behind (19); apical part of right lobe of male genital plate, inner (medial) view (14).

darkish marks on some other places; abdomen with light brown distal parts of last tergite posteromedian process and apical parts of genital plate, as well as with somewhat more darkened apical hooks of cerci (Figs 11–15). Upper rostral tubercle with very narrow apical part directed forwards and slightly downwards, dorsally convex (in profile) more hind part, barely distinct dorsal concavity between these parts in profile, distinct median groove along complete dorsum of this tubercle, and large rounded and almost vertical lateral ocelli on lateral sides of convex part of this tubercle; lower rostral tubercle more or less vertical, almost angular at apex, triangularly widened downwards, and with flat anterior surface having large oval median ocellus on most part of latter surface (Figs 1, 2). Pronotum with disc having almost straight anterior edge and widely rounded posterior one, with rounded ventral parts of lateral lobes as well as rounded but not narrow humeral notches (Figs 1, 2); tegmina long and rather narrow, with venation as in Figs 3–5, and with stridulatory vein of left tegmen rather short and thick as well as moderately light (almost light brown; Figs 4, 10). Abdomen with following features: posterior edges of tergites more or less straight, but last tergite with posteromedian process long and moderately wide as well as having a pair of posterior lobes which distally somewhat widened and flattened, apically rounded, with concave dorsomedian parts, and with rather deep notch between these lobes (latter notch almost two thirds of this process in length; Fig. 11, 12, 15); epiproct and paraprocts short and roundly lobule-like; cerci as in Figs 11–13, 15; genital plate with moderately long and strong posterior lobes which somewhat arcuately curved upwards and with apical parts as in Figs 13–15.

Female unknown.

Length (in mm). Body 22; body with wings 53; pronotum 6; tegmina 45; hind femora 28.

COMPARISON. The differences of the new species from all other congeners are the same as for the subgenus *Sulapteron* **subgen. n.** (see above).

ETYMOLOGY. The new species is named after the Kendari City situated near its type locality.

***Elbenia (Tandaopteron) tembelingi* Gorochov, sp. n.**

<https://zoobank.org/NomenclaturalActs/DA2FC43D-6C63-47B3-A3B7-A010C8139CF0>

Figs 6–9, 16–20

MATERIAL. Holotype – ♂, **Malaysia**: Pahang State (Malay Peninsula), Taman Negara National Park on Tembeling River, ~100 m, primary forest, on leaf of bush at night, 28.XI–5.XII 2014, A. Gorochov, M. Berezin, E. Tkatsheva (ZIN).

DESCRIPTION. *Male* (holotype). Body medium-sized for this subgenus. Coloration light greenish with yellowish tinge, light greyish brown eyes, a few very small but distinct darkish spots on proximal part of left antennal flagellum (such spots on right flagellum almost indistinct), light brown most part of left stridulatory vein (but its ventral part almost dark brown) as well as venation in most part of left basal tegminal area and in lateral half of right basal tegminal area, brown membranes between veins and veinlets of this venation and in proximal portion of M-Cu area as

well as in only left tegmen behind stridulatory vein (but near it), intensively yellow tegminal M (before base of MP) and stripe along anal edge of lateral tegminal field (but this stripe with one row of very small darkened membranes), yellowish to greyish most part of venation in hind wings, whitish venation in these wings near costal edge, transparent membranes in these wings and in central part of stridulatory apparatus of right tegmen (but membranes in apical part of hind wings slightly yellowish with greenish tinge), and greyish brown denticles and keels of genital plate as well as apical parts of cerci (Figs 6–9, 16–20) and of spines and spurs in hind tibiae. Structure of body similar to that of *E. (T.) major* Gorochov, 2005 and *E. (T.) pendleburyi* Karny, 1926 (including shape of posterior lobes of last tergite; Fig. 17) but with following features: upper rostral tubercle of head with very narrow and almost denticle-like apical part which slightly more separated from rest of this tubercle (i.e., barely curved upwards; Fig. 6); tegmina with posterior branch on RA and anterior branch on RS ending almost at tegminal apex (Fig. 7), and with stridulatory apparatus as in Figs 8, 9, 16; abdominal apex with last tergite lacking any spine-like process directed downwards and located at apex of each posterolateral lobe, with cerci more or less similar to those of *E. (T.) pendleburyi* and *E. (T.) appendiculata* Brunner-Wattenwyl, 1898 in shape, with genital plate having narrow and very deep posteromedian notch as well as long and strongly curved posterolateral lobes (each of these lobes rather wide and flattened in proximal portion, rather thin and curved upwards in middle portion, almost same but straight in most part of distal portion, somewhat widened and lamellar as well as rounded in apical part, and having distinctly denticulated inner edge of distal portion as well as rather short and low ventral or posterior subapical keel; Figs 17–20), and with membranous genitalia.

Female unknown.

Length (in mm). Body 21; body with wings 44; pronotum 4.9; tegmina 34.5; hind femora 20.

COMPARISON. The new species is distinguished from *E. (T.) pendleburyi* (from Perak) mainly by the male genital plate more deeply notched, and by the distal portions of its posterolateral lobes more straight as well as with subapical keels and more widened apical parts; from *E. (T.) major* (from Vietnam and South China), by this plate with denticulated distal portions of the posterolateral lobes and with rounded and lamellar apical parts (*vs* each of these portions is without denticles and with two apical lobules); from *E. (T.) appendiculata* (from Sumatra), by the absence of any ventral spine-like process on the apical part of each posterior lobe of the male last tergite; and from all other species of this subgenus, by wider (not almost spine-like) or less widely distant posterior lobes of the male last tergite.

ETYMOLOGY. The new species is named after the Tembeling River situated very near its type locality.

Genus *Phaulula* Bolivar, 1906

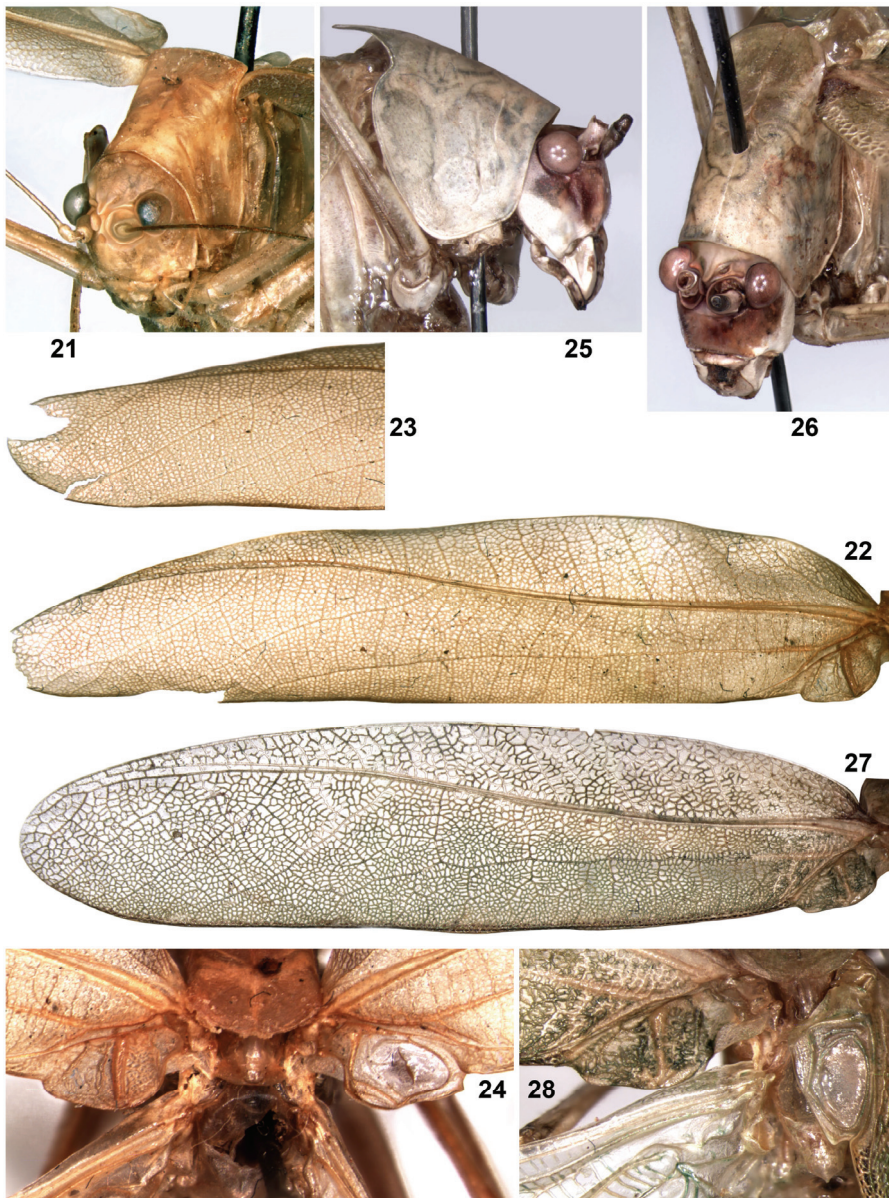
NOTES. This genus was firstly described as *Phaula* Brunner-Wattenwyl, 1878 for four new species from the Philippines, Java and Singapore (Brunner-Wattenwyl,

1878). Later: one of these species (*Phaula laevis*) was designated as its type species, the two non-Philippine species were transferred to other genera (*Stictophaula* and *Arnobia*), the name *Phaula* in connection with its homonymy was replaced by a new generic name (*Phaulula*), and numerous additional species were attributed to *Phaulula* from different localities of Indo-Malayan and Papuan Regions (but some of these species were originally described in other genera, and these genera were synonymized with *Phaulula*) (see references to these actions in OSF).

In accordance to OSF, this genus has three generic synonyms (*Phaula*; *Phauloidea* Matsumura et Shiraki, 1908; *Dichophaula* Karny, 1926) and includes 28 valid species which are not grouped into subgenera. However, its composition is very problematic, because ten of these species (*Phaula gracilis* Brunner-Wattenwyl, 1891; *Ph. indica* Brunner-Wattenwyl, 1891; *Ph. peregrina* Brunner-Wattenwyl, 1891; *Ph. lenzi* Brunner-Wattenwyl, 1891; *Ph. inconspicua* Brunner-Wattenwyl, 1891; *Ph. sumatrana* Brunner-Wattenwyl, 1891; *Ph. cornuta* Brunner-Wattenwyl, 1891; *Ph. gigantea* Karny, 1923; *Dichophaula longipes* Karny, 1926; *D. habroides* Karny, 1926) really or probably belong to other genera, two of the rest species (*Phaula denticauda* Brunner-Wattenwyl, 1891; *Ph. reticulata* Karny, 1926) are insufficiently known for any generic determination, and one generic name (*Dichophaula* Karny, 1926 with *D. longipes* as its type species) possibly belongs to a separate genus.

All the other species (16) really or probably belong to *Phaulula* and may be characterized by the following features: the upper rostral tubercle is rather narrow but dorsoventrally flattened and with its apical part barely erected above the apex of the lower rostral tubercle; the dorsal field of each male tegmen is with the widened proximal portion having a stridulatory apparatus as well as distinctly separated from the very narrow more distal portion by an almost rectangular medial notch (similar to that of *Mirolliini*) and usually by a small oblique fold (this fold may be developed in the both tegmina or only in the left tegmen, and the widened proximal portion of the right dorsal field has a small posteromedial lobule; Figs 24, 28, 55, 57, 59); the tegminal lateral fields are with all branches of the tegminal RS usually branching from the tegminal R and RA (Figs 22, 27, 50, 52), but sometimes this RS with two branches (Fig. 54); the legs are typical of *Holochlorini* including the presence of a distinct spine on each fore coxa as well as open outer tympana and slit-like inner ones in the fore tibiae; the last abdominal tergite in male has a diverse posteromedian process which is not bilobed or only slightly bilobed (but not deeply bifurcated; Figs 29–31, 33–48, 61–70); the cerci and genital plate in male are rather simple in shape, but these cerci usually lack additional branches or processes, and this plate is moderately short and with a rather wide posteromedian notch as well as with indistinct styli (Figs 29, 31, 35, 40, 42, 44, 46, 48, 62–64, 66, 67, 69, 70).

These species are here grouped into three tentative groups on the base of the male abdominal structure: *Ph. laevis* group, *Ph. ensigera* group and a group with rather diverse male abdominal apices. The first group has the male last tergite gradually narrowing into a rather long and moderately thin posterior process which is more or less curved downwards in its distal half (Figs 29, 30, 33–45); this group contains the following species (in the original binomen): *Phaula laevis* Brunner-Wattenwyl, 1878 (type species); *Phauloidea daitoensis* Matsumura et Shiraki, 1908; *Ph. gracilis*



Figs 21–28. *Phaulula*, male: 21–24 – *Ph. javanica* sp. n.; 25–28 – *Ph. tapienomima* sp. n. Head with pronotum from above/side and in front (21, 26), as well as from side (25); left tegmen (22, 27); distal part of right tegmen in reversed view (23); tegminal stridulatory apparatus from above (24, 28).

Matsumura et Shiraki, 1908, **nom. res.** [= *Phaulula macilenta* Ichikawa, 2004, **syn. n.**; the latter species name was proposed as a replacement one for *Phauloidea gracilis*, but the species with the older homonymic species name *Phaula gracilis* is here removed from *Phaulula* (see above)]; *Phaula malayica* Karny, 1926; *Dichophaula leefmansii* Karny, 1926; *Phaulula apicalis* Liu, 2011; possibly *Phaula dammermani* Karny, 1926 and *Phaulula trukensis* Willemse, 1951. The second group has this process very thin (spine-like) and distinctly separated from the last tergite (Figs 61–64); this group consists of *Phaula rugulosa* Brunner-Wattenwyl, 1878, *Ph. ensigera* Karny, 1926 and possibly *Phaulula carolinensis* Willemse, 1951. The third group includes five remaining but evidently unrelated species: *Phaula compressa* Brunner-Wattenwyl, 1891; *Ph. phaneropteroides* Brunner-Wattenwyl, 1891; *Ph. galeata* Hebard, 1922; *Ph. luzonica* Hebard, 1922; *Ph. neglecta* Karny, 1931.

***Phaulula javanica* Gorochof, sp. n.**

<https://zoobank.org/NomenclaturalActs/7B9E5BB9-AB24-483F-A317-25BAFAE1E690>

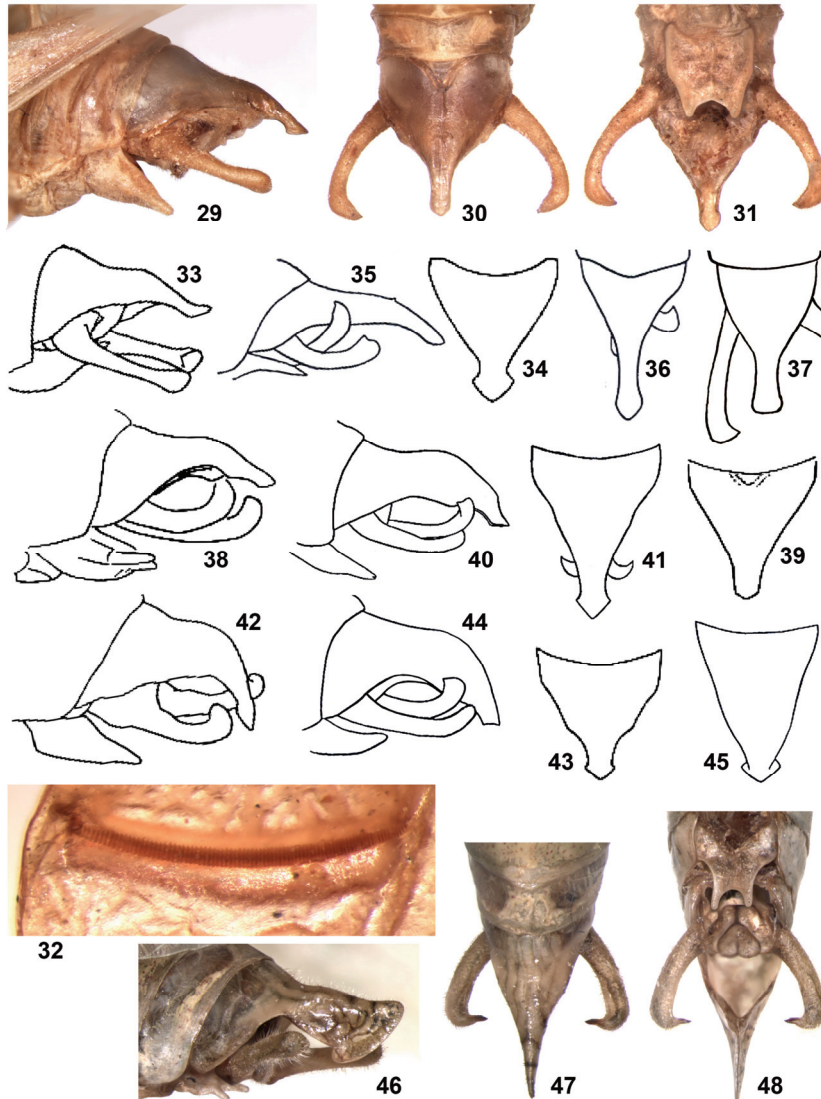
Figs 21–24, 29–32

MATERIAL. Holotype – ♂, **Indonesia:** Java I., “Java. Soerabaja [Surabaya]. Dr. Fisches 1883”, “17819” (ZIN).

DESCRIPTION. *Male* (holotype). Body medium-sized for this genus and more or less matte (but lower half of head, legs, wings and last tergite slightly shining). Coloration uniformly yellowish with greenish tinge, one short dark brown longitudinal stripe on dorsal surface of fore tibia between tympana as well as transparent membranes in most part of stridulatory apparatus of right tgmens and in hind wings (but apical parts of these wings semitransparently yellowish). Upper rostral tubercle with anterior half which almost twice as narrow as scape, having slightly flattened and narrowly rounded apex and distinct median groove on dorsum; lower rostral tubercle very small (almost convexity-like) and clearly not reaching previous tubercle; pronotum with barely sinuate anterior edge, widely rounded posterior edge of disc, rounded lateral bents between disc and lateral lobes (these lobes rather high and having obliquely truncated ventral edges and weakly rounded posteroventral edges), as well as moderately narrow and rounded humeral notches (Fig. 21); tegmina long and rather narrow, with all RS branches starting from R and RA (Figs 22, 23), with stridulatory apparatus as in Figs 24 and 32, and with barely distinct small fold separating widened proximal part of dorsal field from its narrow distal part in right tegmen (Fig. 24); hind wings somewhat longer than tegmina; legs typical of this genus; last tergite with posteromedian process as in Figs 29, 30; cercus slightly arcuate, with distal part strongly curved medially and clearly thickened subapically as well as with denticle-like apex directed medially (Figs 29–31); epiproct almost longitudinally oval, located under aforementioned process of last tergite and directed downwards/forwards (Fig 29, 31); paraprocts small (shorter than epiproct) and roundly lobule-like; genital plate short, narrowing to rather widely notched apical part (this apical notch moderately deep, almost angular) and with lobules around this notch rather short and moderately thin (almost finger-like but somewhat conical; Figs 29, 31).

Female unknown.

Length (in mm). Body 21.5; body with wings 40; pronotum 5; tegmina 31; hind femora 18.3.



Figs 29–48. *Phaulula*, male: 29–32 – *Ph. javanica* sp. n.; 33, 34 – *Ph. daitoensis*; 35, 36 – *Ph. malayica*; 37 – *Ph. trukensis*; 38, 39 – *Ph. apicalis*; 40, 41 – *Ph. laevis*; 42, 43 – *Ph. gracilis*; 44, 45 – *Ph. leefmansii*; 46–48 – *Ph. tapienomima* sp. n. Abdominal apex from side (29, 33, 35, 38, 40, 42, 44, 46), from above (30, 34, 36, 37, 39, 41, 43, 45, 47) and from below (31, 48). [33, 34, 38, 39, 42, 43 – after Kang *et al.* (2014); 35, 36, 40, 41, 44, 45 – after Karny (1926); 37 – after Willemsse (1951), modified.]

The new species belongs to *Ph. laevis* group and has the male abdominal apex most similar to that of the male from Japan determined by Ichikawa (2004) as “*Ph. macilenta*” (= *Ph. gracilis*) and distinguished from *Ph. javanica* **sp. n.** by a slightly shining body with fine stripes on the pronotum and tegmina as well as with uniformly greenish fore tibiae (the new species has a mostly matte body and a dark mark on each fore tibia, and its pronotum and tegmina are without any stripes); however, *Ph. gracilis* was described from Taiwan I. and in accordance to some other authors (Kang et al., 2014) has this abdominal apex clearly different: the last tergite is with the posterior process very strongly curved downwards (Figs 42, 43). From *Ph. apicalis* (from Hainan I.) also having a similar male abdominal apex, the new species is distinguished by the narrowest part of the posterior process of the male last tergite somewhat longer and narrower as well as with the subapical part barely lower (see in profile) but having more distinctly angular ventral tubercle near apex (compare Figs 29, 30 and 38, 39); from *Ph. daitoensis* (from Japan), by the apical part of this process not widened and not curved upwards at the apex (compare Figs 29, 30 and 33, 34), and clearly narrower tegmina (but for this species, the above-mentioned authors in the same publications indicated somewhat different male genital plates: Kang et al., approximately as in the new species; Ichikawa, with a distinctly wider and less deep posteromedian notch); from *Ph. malayica* (from Durian I. near Singapore) and *Ph. trukensis* (from Caroline Islands), by the male last tergite with a shorter narrowed part of the posterior process, and additionally by this process somewhat higher in the middle part (from *Ph. malayica*) and not truncated apically (from *Ph. trukensis*) (compare Figs 29, 30 and 35, 36, 37); from *Ph. laevis* (from Philippines) and *Ph. leefmansii* (from Karakelong I. between Mindanao and Halmahera), by this process less curved downwards and less convex dorsally (compare Figs 29, 30 and 40, 41, 44, 45); and from *Ph. dammermani* (from Krakatau Islands between Sumatra and Java), by the absence of a pair of distinct dorsal tubercles on the same process. It is also possible that some of these species (including the new one) are only a few subspecies of the same widely distributed species. From all other true and possible congeners, the new species differs in a clearly different shape of the male abdominal apex and/or uniformly light coloration with only a distinct dark mark on the dorsoproximal part of each fore tibia.

ETYMOLOGY. The new species is named after the Java Island where it was collected.

***Phaulula spinulenta* Gorochov, sp. n.**

<https://zoobank.org/NomenclaturalActs/9F780FF7-0BEA-46A9-990F-0CC85460C139>

Figs 49, 50, 55, 56, 61–63

MATERIAL. Holotype – ♂, **Indonesia**: New Guinea I., Papua Prov., Kasonaweja Vill. on Mamberamo River near Van Rees Range, primary forest on hill, at light, 25–27.I.2012, A. Gorochov (ZIN).

DESCRIPTION. *Male* (holotype). General appearance similar to that of *Ph. javanica* **sp. n.** but with following differences: integument slightly shining, but abdominal tergites (except for last one) and sternites more or less matte; coloration uniformly yellowish (including fore tibiae) with transparent some membranes of wings (as in this species) and brown apical tubercle of each cercus (Figs 49, 50, 55, 61–63); pronotum with slightly shagreen surface (Fig. 49); tegmina with somewhat less longitudinal (more oblique) branches of R (Fig. 50), barely shorter widened proximal part of each dorsal field (Fig. 55), and stridulatory vein as in Fig. 56; last tergite with long and thin (spine-like) posteromedian process which roundly curved downwards/backwards after proximal third of its length (apical part of this process very thin and acute; Figs 61–63); cercus with distal portion less strongly curved medially, with strongly thickened (almost bulbous) subapical part, and with somewhat larger (wider and higher) apical denticle directed medially (Figs 61, 62); genital plate as in Figs 62, 63.

Female unknown.

Length (in mm). Body 21.5; body with wings 38; pronotum 5.2; tegmina 29; hind femora 17.5.

COMPARISON. The new species belongs to *Ph. ensigera* group, but it differs from *Ph. ensigera* (from Luzon I.) in the process of the male last tergite clearly curved downwards (not almost straight), and the male cercus significantly more widened (thickened) in its distal part. From *Ph. rugulosa* (also from Luzon I.), the new species is distinguished by the same process curved in its more proximal part (this process before the curvature is almost twice shorter than after it, but in *Ph. rugulosa*, this curvature is located almost in the middle of the process), and the male cercus with one distal tubercle (*vs* with two such tubercles; compare Figs 61–63 and 64); and from *Ph. carolinensis* (from Caroline Islands), by a longer posterior process of the male last tergite, and a much wider (thicker) distal part of the male cercus. From all other true and probable congeners, the new species differs in a long and thin (spine-like) posteromedian process of the male last tergite and/or the following characters: from *Ph. reticulata* (from Buru I.), in the pronotum and femora lacking reddish dots, and the fore tibia without blackish marks near its tympana; and from *Ph. denticauda* (from Jolo I. in Philippines), in the body size distinctly smaller (lengths of pronotum, tegmen and hind femur are about 4.9, 29, 17.5 mm in the new species and about 6, 40, 21 mm in *Ph. denticauda*, respectively).

ETYMOLOGY. The new species name is the Latin word “spinulenta” (spiky, with a spine or spines) given due to the presence of a spine-like process on the male last tergite.

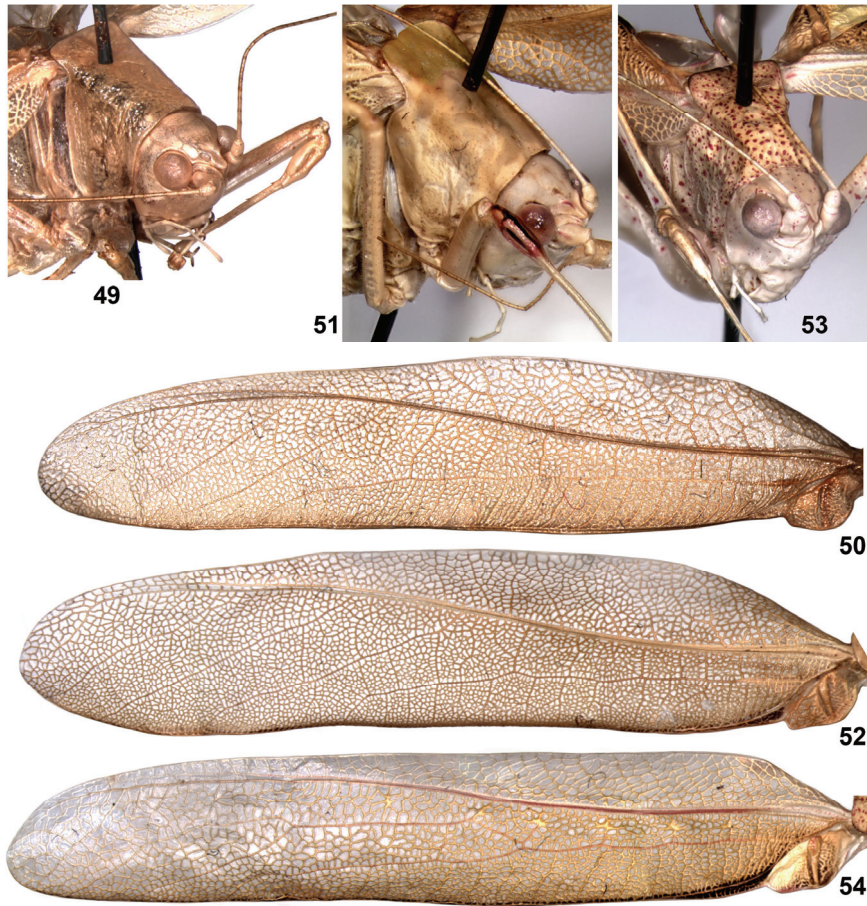
***Phaulula tapienomima* Gorochoy, sp. n.**

<https://zoobank.org/NomenclaturalActs/FF566F95-A6A2-4037-8166-55DA45831000>

Figs 25–28, 46–48

MATERIAL. Holotype - ♂, **Indonesia**: Sulawesi I., Sulawesi Tengah Prov., ~75 km SE of Palu City, Lore Lindu National Park, environs of Wuasa Vill. (near

eastern edge of this park), ~1000 m, secondary forest, at light, 7–12.II 2011, A. Gorochov (ZIN).



Figs 49–54. *Phaulula*, male: 49, 50 – *Ph. spinulenta* sp. n.; 51, 52 – *Ph. tuberculata* sp. n.; 53, 54 – *Ph. figurata* sp. n. Head with pronotum and fore leg from above/side and somewhat in front (49, 51, 53); left tegmen (50, 52, 54).

DESCRIPTION. *Male* (holotype). General appearance also similar to that of *Ph. javanica* sp. n. and with following differences from it: integument slightly shining, but pronotum, dorsal halves of abdominal tergites (except for last one) and all sternites as well as genital plate matte; coloration light green with brown to light brown area on anterior part of head (this area including apical part of upper rostral tubercle, antennal cavities, pedicel, anterior parts of genae as well as anterior epicranial surface above and near clypeal suture), but fore tibia completely uniformly

light, and transparent areas of wings as in this species (antennal flagellum missing); pronotum (including its lateral lobes) distinctly longer (see measurements), with deeper humeral notches and very small posteromedian notch on hind lobe (Figs 25, 26); tegmina more similar to those of *Ph. spinulenta* **sp. n.** but with distal portion of widened part of each dorsal field slightly longer and barely narrower as well as with stridulatory vein of left tegmen rather narrow dorsally (Figs 27, 28); last tergite with posterior process much higher in distal half, with vertically lamellar keel along posteroventral edge of this process, with almost angularly elongated distal part of this process in profile, and with small rounded lobule-like tubercle (projection) separating this keel from less high part of this process in profile (Figs 46, 47); cercus somewhat shorter, less arcuate but with more strongly curved distal part as well as with larger apical denticle and shallow medial concavity subapically (Figs 46–48); genital plate with slightly deeper posteromedian notch and somewhat longer posterolateral lobules around it (Figs 46, 48).

Female unknown.

Length (in mm). Body 22; body with wings 40; pronotum 6.3; tegmina 32; hind femora 16.



Figs 55–60. *Phaulula*, male: 55, 56 – *Ph. spinulenta* **sp. n.**; 57, 58 – *Ph. tuberculata* **sp. n.**; 59, 60 – *Ph. figurata* **sp. n.** Tegminal stridulatory apparatus from above (55, 57, 59); stridulatory vein of left tegmen from below (56, 58, 60).

COMPARISON. The new species falls into the third group of this genus and is most similar to *Ph. galeata* (from Mindanao I.) in the posterior process of the male last tergite having a very high distal part in the profile, but in *Ph. tapienomima* **sp. n.**, this high part longer, with the dorsal angular projection directed mainly backwards (but not upwards), and with only one ventral tubercle in the profile. From all other true and possible congeners, the new species differs in the above-mentioned process with a distinctly higher distal part and/or a uniformly greenish coloration with only a large brown area on the head.

***Phaulula tuberculata* Gorochov, sp. n.**

<https://zoobank.org/NomenclaturalActs/7EF823F5-1F23-4BEE-9BB8-D8E647C4B6A2>

Figs 51, 52, 57, 58, 65–67

MATERIAL. Holotype – ♂, **Philippines**: Mindanao I., ~150 km NNW of Dabaw City, environs of Dahilayan Adventure Park (8°11'38" N, 124°51'39" E), 1000–1500 m, primary/secondary forest, at light, 2–9.II 2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN). Paratypes: 3 ♂, same data as for holotype (ZIN).

DESCRIPTION. *Male* (holotype). Coloration and structure of body more or less similar to those of *Ph. javanica* **sp. n.**, *Ph. spinulenta* **sp. n.** and *Ph. tapienomima* **sp. n.** but with following characteristic features: body slightly smaller (see measurements); integument more or less matte, but head (except for epicranial dorsum), legs, wings and last tergite as well as distal halves of cerci somewhat shining; coloration yellowish with a pair of short rose lines on proximal half of upper rostral tubercle above lateral ocelli, rose to light brown tympanal area in each fore tibia but with dark brown short dorsal longitudinal stripe between tympana, dark brown cell membranes in narrow part of each dorsal tegminal field (behind stridulatory apparatus) and one row of small cell membranes in each lateral tegminal field very near dark membranes of dorsal field (Figs 51, 52, 57), transparent some wing membranes (as in these species), brown to brownish dots on some abdominal tergites, and blackish apical parts of cerci (Figs 65–67); pronotum more similar to that of *Ph. javanica* **sp. n.** and *Ph. spinulenta* **sp. n.** in shape but shorter than in *Ph. tapienomima* **sp. n.** (Fig. 51); tegmina with branches of R more similar to those of *Ph. javanica* **sp. n.** than to those of *Ph. spinulenta* **sp. n.** and *Ph. tapienomima* **sp. n.** (Fig. 52), and with stridulatory apparatus as in Figs 57, 58; last tergite with moderately short and very wide posteromedian process (this process flattened dorsoventrally, with median lobe widest and longest but roundly obtuse-angled posteriorly, and with lateral lobes somewhat smaller and rounded as well as almost horizontally lamellar; Figs 65, 67); cercus mostly straight and with distinct dorsal tubercle near strongly curved distal portion which almost straight and spine-like but directed medially (Figs 65–67); genital plate as in Figs 66, 67.

Variations. One paratype with numerous and very small (poorly distinct) rose to brownish dots on pronotum and all femora; posterior edge of median lobe of last tergite posteromedian process varied from almost obtuse-angled to sinuate (i.e., with three very short lobules posteriorly); genital plate also varied from that with distinct posteromedian notch to that with almost truncated apex.

Female unknown.

Length (in mm). Body 15–18; body with wings 36–38; pronotum 4.7–4.9; tegmina 28–29; hind femora 15.5–16.

COMPARISON. The new species belongs to the third tentative group (with diverse male abdominal apices) and differs from *Ph. luzonica* (from Luzon I.) and *Ph. phaneropteroides* (also from Luzon I.) in a larger (longer) process of the male last tergite and a distinctly less widened distal part of the male cercus. From *Ph. galeata* (from Mindanao I.), the new species is distinguished by this tergal process clearly less high in the profile, and the male cercus with a distinct dorsal tubercle in the subapical part; from *Ph. neglecta* (from Sulawesi I.) and *Ph. compressa* (from Key I.), by the aforementioned process clearly wider and with a roundly angular posteromedian part (*vs* this process is distally bilobed or truncated); from all other true and probable congeners, by the following combination of characters: the process of the male last tergite is distinctly wider, the male cercus has a distinct dorsal tubercle in the subapical part, the body size is clearly smaller (approximately as in *Ph. spinulenta* **sp. n.**), and the pronotum is distinctly longer (lengths of pronotum, tegmina and hind femur are about 5, 30, 15.5 mm in the new species and about 4.3, 31, 15.7 mm in *Ph. reticulata*, respectively).

***Phaulula figurata* Gorochov, sp. n.**

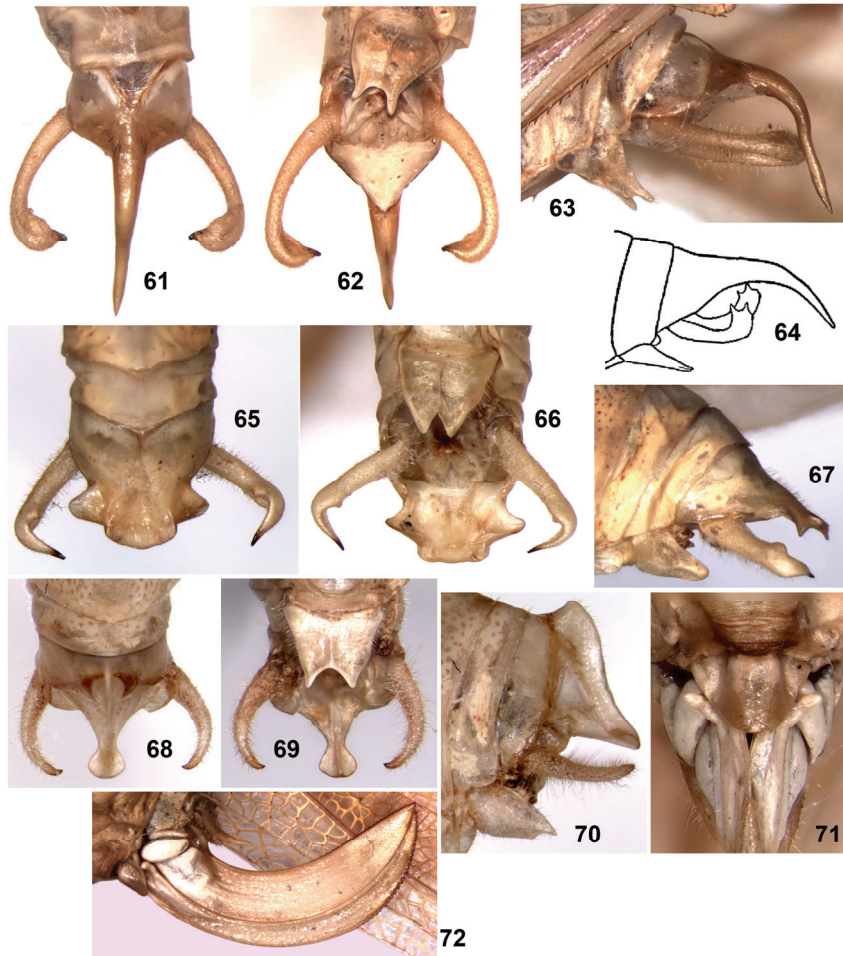
<https://zoobank.org/NomenclaturalActs/52DED021-24B4-435E-8AF6-FE5740AFB385>

Figs 53, 54, 59, 60, 68–72

MATERIAL. Holotype – ♂, **Philippines**: Mindanao I., ~150 km NNW of Dabaw City, environs of Dahilayan Adventure Park (8°11'38" N, 124°51'39" E), 1000–1500 m, primary/secondary forest, at light, 2–9.II 2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN). Paratypes: 1 ♂, 5 ♀, same data as for holotype (ZIN).

DESCRIPTION. *Male* (holotype). General appearance somewhat different from that of all species described above in more distinctly dotted coloration and narrower tegmina with two branches on RS (more primitive condition). Also this male distinguished from them by the following characters: body size approximately as in *Ph. tuberculata* **sp. n.**; integument matte, but most part of head (except for epicranial dorsum), legs, transparent wing membranes and last tergite somewhat shining; coloration yellowish with slight brownish tinge, whitish head (except for yellowish epicranial dorsum and darkened most part of antennal flagellum) and lower part of thorax and abdomen, numerous reddish dots on different body parts (epicranial dorsum, pronotum, pleurites, femora and abdominal tergites; but last tergite without dots, and dots on pronotal disc and abdominal tergites slightly larger than other ones), sparse rose dots on middle and hind tibiae, greyish brown middle and distal portions of antennal flagellum (having very sparse and small whitish spots), brown posterior edge of hind pronotal lobe, dark brown marks in tegmina and transparent wing membranes as in *Ph. tuberculata* **sp. n.**, almost yellowish lemon widened part of left dorsal tegminal field after stridulatory vein, and some darkened marks on tarsi

(Figs 53, 54, 59, 68–70); body structure distinguished from that of *Ph. tuberculata* sp. n. by somewhat shorter pronotum (see measurements) with roundly truncated posterior edge of disc, by slightly narrower tegmina with two branches on RS (Fig. 54) and with stridulatory apparatus as in Figs 59 and 60, by last tergite having distinctly narrower posteromedian process (this process moderately short, strongly narrowed in subapical part, roundly widened and dorsoventrally flattened in apical part, with dorsomedian vertical keel running almost from base of last tergite to this apical part and having highest portion in shape of distinct angular projection at base of this keel; as in Figs 68, 70), and by cerci and genital plate as in Figs 68–70.



Figs 61–72. *Phaulula*: 61–63 – *Ph. spinulenta* sp. n.; 64 – *Ph. rugulosa*; 65–67 – *Ph. tuberculata* sp. n.; 68–72 – *Ph. figurata* sp. n. Male abdominal apex from above (61, 65, 68), from below (62, 66, 69) and from side (63, 64, 67, 70); female genital plate from below (71); ovipositor from side (72). [64 – after Karny (1926).]

Variations. Paratype with pronotal darkened dots smaller, abdominal and femoral ones almost indistinct, and posterior edge of pronotum completely light.

Female. Size, coloration and many other characters similar to those of males, but: widened proximal parts of dorsal tegminal fields gradually narrowing to their narrow distal parts, without distinct stridulatory apparatus, and uniformly yellowish with dark brown cell membranes in distal portions of these widened parts; last tergite smaller and simple, with almost straight posterior edge; epiproct also small, similar to short and roundly lobule-like paraprocts in shape; genital plate and ovipositor as in Figs 71, 72 (base of each lower valve of ovipositor with one small and tubercle-like spinule directed laterally).

Length (in mm). Body: male 16–18, female 17–20; body with wings: male 36.5–38, female 40–43; pronotum: male 3.9–4.1, female 4.2–4.5; tegmina: male 29–30, female 31–33.5; hind femora: male 16–16.5, female 17–19; ovipositor 7.2–7.6.

COMPARISON. The new species also belongs to the third group and is distinguished from all other true and possible congeners by the following combination of features: the body is approximately as in *Ph. tuberculata* **sp. n.** in the size but with numerous reddish dots, without darkened marks on the fore tibiae, with the tegminal RS having two branches in the distal third of each tegmen, with the male last tergite having a very characteristic posteromedian process (Figs 68–70), and with the male cercus having thin and almost spine-like as well as somewhat hooked distal part. Another species from the same island (*Ph. galeata*) has the posteromedian process of the male last tergite clearly larger than in the new species and vaguely intermediate between that of *Ph. tapienomima* **sp. n.** and *Ph. figurata* **sp. n.** in the shape.

ETYMOLOGY. The new species name is the Latin word “figurata” (figurate, figured) given due to a characteristic shape of the male last tergite posteromedian process.

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