Russian Entomol. J. 34(1): 19–36

Taxonomy of Podoscirtinae (Orthoptera: Gryllidae). Part 17: some Madagascan genera and *Varitrella*

Таксономия подсемейства Podoscirtinae (Orthoptera: Gryllidae). Часть 17: некоторые мадагаскарские роды и *Varitrella*

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KEY WORDS: Orthoptera, Gryllidae, Podoscirtinae, Podoscirtini, crickets, Madagascar, Indo-Malayan Region, taxonomy, new taxa.
КЛЮЧЕВЫЕ СЛОВА: Orthoptera, Gryllidae, Podoscirtinae, Podoscirtini, сверчки, Мадагаскар, Индо-малайская область, таксономия, новые таксоны.

ABSTRACT. Five Madagascan and one Indo-Malayan genera, belonging to the tribe Podoscirtini, are considered: *Podoscirtus* Serv., *Eupodoscirtus* Gor., *Ombrotrella* Gor., *Allotrella* Gor., *Fryerius* Uv. and *Varitrella* Gor. The former genus *Brevitrella* Gor. is firstly included in *Fryerius* s.l. as its subgenus. Ten new species and one new subspecies of these genera are described: *O. reducta* **sp.n.** and *F.* (*B.*) *intermedius* **sp.n.** from Madagascar; *V.* (*Cantotrella*) *mindanao* **sp.n.**, *V.* (*C.*) *simillima* **sp.n.**, *V.* (*C.*) *contraria* **sp.n.**, *V.* (*C.*) *sympatrica* **sp.n.**, *V.* (*C.*) *paraiso* **sp.n.**, *V.* (*C.*) *robusta luzoni* **subsp.n.**, *V.* (*C.*) *exculta* **sp.n.** and *V.*? *ocellata* **sp.n.** from the Philippines; *V.* (*C.*) *sumatra* **sp.n.** from Indonesia. Previously unknown female for *E. stolarczyki* Gor. and for *Eupodoscirtus* is briefly described. The genera *Ombrotrella* and *Allotrella* as well as *O. beccalonii* Gor. and *A. analogica* Gor. are briefly redescribed, and the confusion with their male genitalia in the original descriptions is corrected. Information on the lifestyle of *Podoscirtus* and *Eupodoscirtus* representatives as well as some other additional data are also given.

РЕЗЮМЕ. Рассмотрены пять мадагаскарских и один индо-малайский роды, принадлежащие к трибе Podoscirtini: *Podoscirtus* Serv., *Eupodoscirtus* Gor., *Ombrotrella* Gor., *Allotrella* Gor., *Fryerius* Uv. и *Varitrella* Gor. Бывший род *Brevitrella* Gor. впервые включен в *Fryerius* s.l. в качестве его подрода. Описаны десять новых видов и один новый подвид этих родов: *O. reducta* **sp.n.** и *F.* (*B.*) *intermedius* **sp.n.** из Мадагаскара; *V.* (*Cantotrella*) *mindanao* **sp.n.**, *V.* (*C.*) *simillima* **sp.n.**, *V.* (*C.*) *contraria* **sp.n.**, *V.* (*C.*) *sympatrica* **sp.n.**, *V.* (*C.*) *paraiso* **sp.n.**, *V.* (*C.*) *robusta luzoni* **subsp.n.**, *V.* (*C.*) *exculta* **sp.n.** и *V.*? *ocellata* **sp.n.** с Филиппин; *V.* (*C.*) *sumatra* **sp.n.** из Индонезии. Кратко описана ранее неизвестная самка для *E. stolarczyki* Gor. и *Eupodoscirtus*. Кратко переописаны роды *Ombrotrella* и *Allotrella*, а также *O. beccalonii* Gor. и *A. analogica* Gor.; исправлена путаница с гениталиями самцов в их первоописаниях. Кроме того, приведены сведения по образу жизни представителей *Podoscirtus* и *Eupodoscirtus*, а также некоторые другие дополнительные данные.

Introduction

The seventeenth communication in a series of publications on the taxonomy of the cricket subfamily Podoscirtinae completes my study of new material on the Madagascan taxa of this subfamily [Gorochov, 2021a, b, 2022, 2023]. It is devoted to the genera *Podoscirtus* Serville, 1839, *Eupodoscirtus* Gorochov, 2004, *Ombrotrella* Gorochov, 2006, *Allotrella* Gorochov, 2006 and *Fryerius* Uvarov, 1940. Also, this paper continues our collective work on the Indo-Malayan genus *Varitrella* Gorochov, 2003 [Gorochov, 2003, 2006; Gorochov, Tan, 2014; Tan *et al*., 2020, 2022, 2023].

Material and methods

All the materials used in this paper are deposited at the Zoological Institute, Russian Academy of Sciences, St Petersburg (ZIN). The Madagascan material was collected by Russian entomologists in two protected areas near the Andasibe Village (Madagascar) with the assistance of the Mitsinjo Association, which oversees the study of the nature of these areas. And the material on *Varitrella* was collected also mainly by Russian specialists but in different localities of Indo-Malayan Region. All the specimens are dry and pinned. Photographs of

How to cite this article: Gorochov A.V. 2025. Taxonomy of Podoscirtinae (Orthoptera: Gryllidae). Part 17: some Madagascan genera and *Varitrella* // Russian Entomol. J. Vol.34. No.1. P.19–36. doi: 10.15298/rusentj.34.1.03

their morphological structures were made using a Leica MZ16 stereomicroscope and DFC290 camera.

Taxonomic part

Tribe Podoscirtini Saussure, 1878
Genus *Podoscirtus* Serville, 1839

Podoscirtus crocinus Serville, 1839

MATERIAL EXAMINED. **Madagascar:** 2 ♂♂, 1 ♀, Toamasina Prov., Moramanga Distr., Analamazaotra Forest Station near Andasibe Vill. (18º56′S, 48º25′E), ~900 m, primary forest, on leaves of Pandanus-like plants, 1–20.III.2013, A. Gorochov, L. Anisyutkin (ZIN).

NOTE. These specimens from central-eastern part of Madagascar are very similar to the neotype of this large species designed by me on the base of a male from southern part of this island [Gorochov, 2004]. The two specimens of *P. crocinus* from "Rogez" (unknown part of Madagascar), received by ZIN in exchange with Paris Museum (Muséum national d'histoire naturelle) and attributed in the same paper to this species, are also very similar to my specimens. However, they all have some small differences in their body coloration and the male genitalia structure: the tegminal lateral fields may be almost completely light greyish brown with darker veins, or the proximal membranes in these fields may be brown to dark brown; hind femora may be almost uniform (brown or light brown) but with a pair of dark lateroapical spots, whereas in most specimens from the environs of Andasibe, all the apical parts of these femora are darkened; differences in the male genitalia are insignificant, within the limits of species variability. Such wide distribution of this species in Madagascar is possibly connected with life of these insects on the widely distributed Pandanus-like plants: during the daytime they hide between the bases of the leaves of these plants, but at night they openly climb these very long leaves in search of food and sexual partners.

Genus *Eupodoscirtus* Gorochov, 2004

Eupodoscirtus stolarczyki Gorochov, 2004

MATERIAL EXAMINED. **Madagascar:** 8 ♂♂, 12 ♀♀, Toamasina Prov., Moramanga Distr., Analamazaotra Forest Station near Andasibe Vill. (18º56′S, 48º25′E), ~900 m, primary forest, on leaves of Pandanus-like plants and at light, 11.II–20.III.2013, A. Gorochov, L. Anisyutkin (ZIN).

NOTE. Up to now, all four species of *Eupodoscirtus* are known from males and distinguished from each other mainly by their male genitalia [Gorochov, 2004]. But these species are very similar to each other in their general appearance, and for determination of their females, we must find any differences between these species in non-sexual characters of males. The types of these species have such differences only in the coloration: *E. stolarczyki* and *E. voeltzkowi* Gorochov, 2004 are with an uniformly dark anterior part of the head dorsum and a very short darkened proximal portion in the area between tegminal Sc and R; but *E. affinis* Gorochov, 2004 and *E. idoneus* Gorochov, 2004 are with lighter marks on the above-mentioned dark part of the head and a long darkened area between tegminal Sc and R.

The males from my new material (collected practically in the type locality of *E. stolarczyki*) are slightly varied in their coloration and in their male genitalia structure: their head sometimes is with slightly lighter marks around the ocelli; the apical ectoparameral hooks in their genitalia are somewhat different in length (these hooks are from those as in the holotype of this species to those as in the holotype of *E. voeltzkowi*, but the rest ectoparameral parts are always distinctly longer than in the latter specimen [see Gorochov, 2004: figs 4 and 9]). The females from this material have their coloration similar to males of *E. stolarczyki* and may be determined as belonging to this species, because males of another similar species (*E. voeltzkowi*) are unknown in this locality. Thus, I give here a first brief description of female (nov.) for this species and for *Eupodoscirtus*: female of *E. stolarczyki* has the coloration and external morphology as in male of this species, but its body is slightly larger, its genital plate is rather large and somewhat similar to that of *P. crocinus* (this plate is slightly or moderately longer than wide, more or less narrowing to a pair of rather widely rounded but not roundly angular lobes, as well as having barely convex lateral sides and a more narrowly rounded but moderately deep notch at the apex; this notch is almost five times as short as this plate), and its ovipositor is rather long (hind femur is approximately 1.1 times as long as ovipositor) as well as with the apical part drilling and typical of this subtribe in the structure.

Majority of the above-mentioned new specimens of *E. stolarczyki* were collected in the same conditions as those of *P. crocinus*, i.e. these species have similar mode of life.

Eupodoscirtus affinis Gorochov, 2004

MATERIAL EXAMINED. **Madagascar:** 2 ♂♂, Toamasina Prov., Moramanga Distr., Analamazaotra Forest Station near Andasibe Vill. (18º56′S, 48º25′E), ~900 m, primary forest, at light and on leaf of Pandanus-like plant, 1–7.III.2013, A. Gorochov, L. Anisyutkin (ZIN).

NOTES. These males are almost identical to the holotype of this species, but in one of them, darkened parts on the head and tegmina are barely lighter (i.e. slightly less distinct), because it was killed soon after its imaginal moulting. This species was collected in the same conditions as *P. crocinus* and *E. stolarczyki* and is recorded here for another Madagascan place which is situated not near its type locality.

Genus *Ombrotrella* Gorochov, 2006

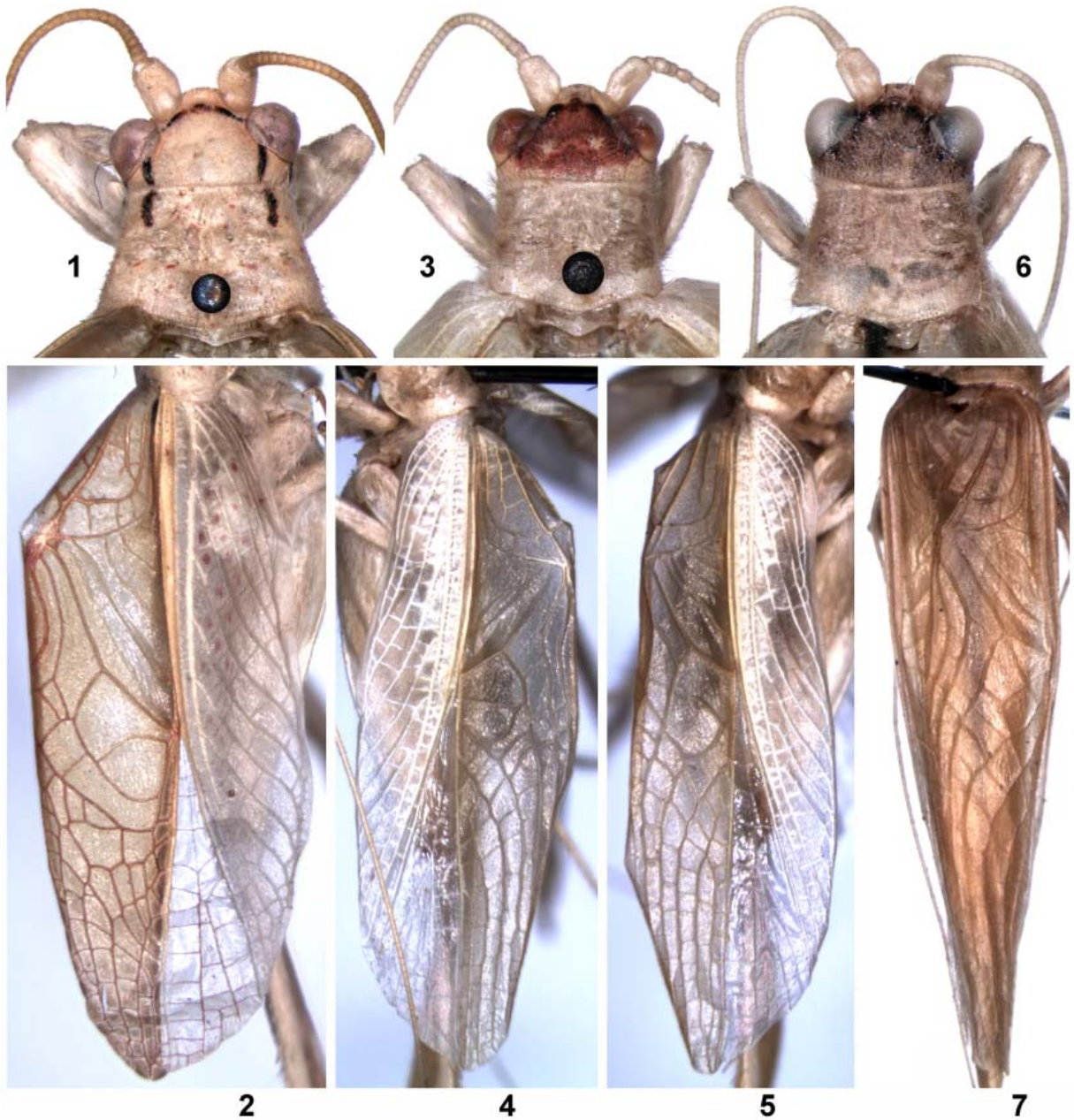
NOTE. This genus was established for only type species (*O. beccalonii* Gorochov, 2006) described from a single male [Gorochov, 2006]. But the new material, considered here, shows that the male genitalia of this male were mixed with those of *Allotrella analogica* Gorochov, 2006 which is also a unique species of the genus *Allotrella* with a single known specimen. Thus, the descriptions of all these taxa contain erroneous data on their male genitalia and must be corrected.

The external morphology of *Ombrotrella* type species as well as of a new species from this genus, considered below, is in accordance to the original description of *Ombrotrella*: the body is rather small and depressed dorsolaterally; head and pronotum are short and low, with large eyes and a more or less angular (in profile) rostrum (this rostrum is approximately equal to the scape in width) as well as distinct ocelli situated more or less transversally (Figs 1, 3, 6); metanotal gland in male is absent; legs are rather short and stout, with the outer and inner tympana open and rather large (elongate); tegmina are long, in male with normal or almost normal stridulatory apparatus having elongate but not large or even partly reduced mirrors (Figs 2, 4, 5, 7); hind wings are clearly longer than the tegmina; proximal part of male anal plate is short and apically looking slightly notched or truncate (Fig. 18), but its distal

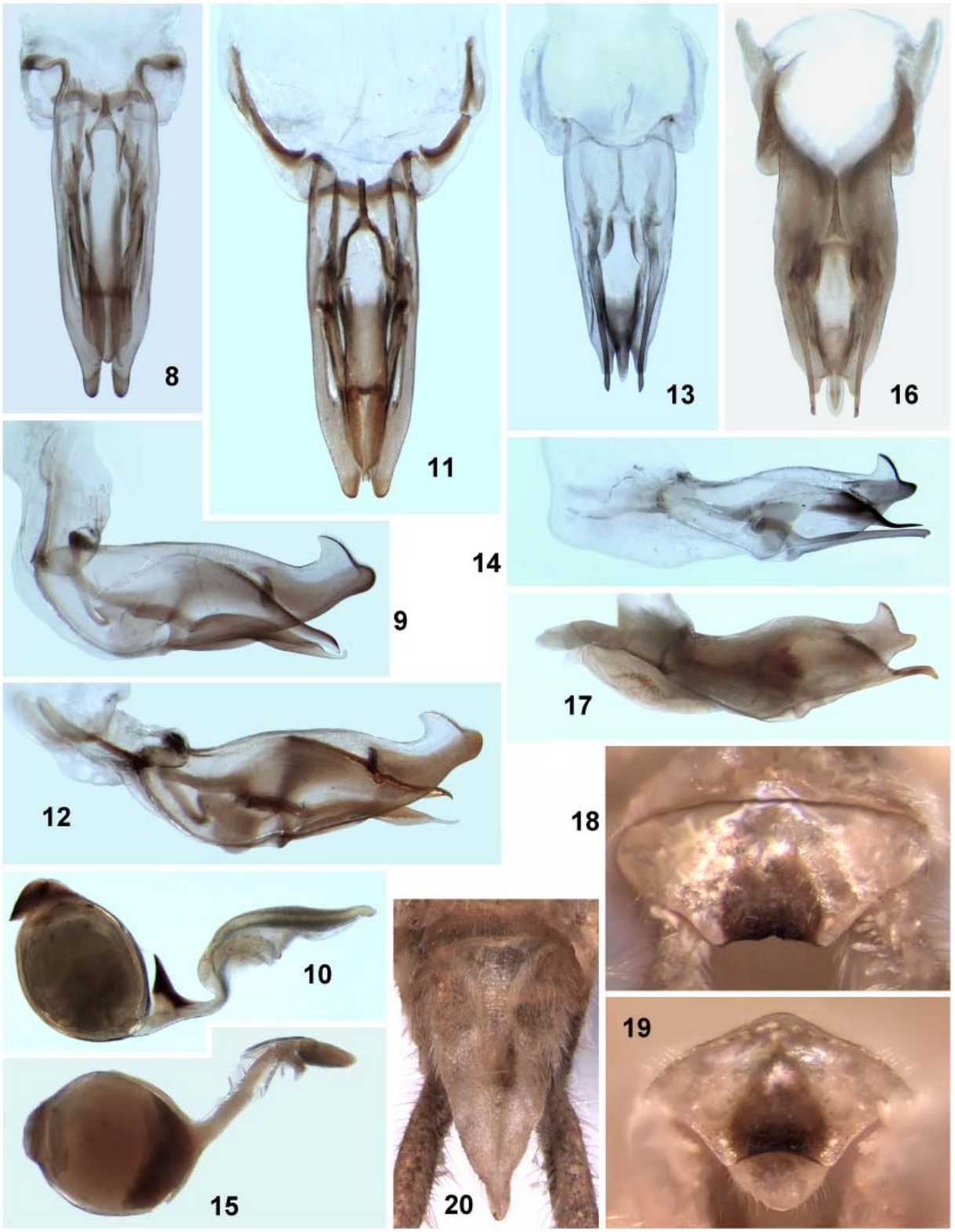
part is roundly lobule-like and sharply curved downwards or downwards/forwards (Fig. 19); male genital plate is moderately elongate, having the apical part narrow and almost acute (Fig. 20). However, the male genitalia are different from those described in this description: they are long and rather narrow; epiphallus is also long, with an unpaired dorsal (subapical) projection directed upwards, and with a pair of short apical lobes directed backwards; rachis and endoparameres (including endoparameral apodemes) are comparatively short; ectoparameres are long and rather thin; formula has moderately short posterior tongues (Figs 8, 9, 11, 12, 13, 14, 16, 17). All these genital characters as well as some features of the spermatophore (Figs 10, 15) were originally (erroneously) ascribed to the genus *Allotrella* [Gorochov, 2006: figs IX, 6–9].

Ombrotrella beccalonii Gorochov, 2006
Figs 1, 2, 8–12.

MATERIAL EXAMINED. **Madagascar**: 2 ♂♂, Toamasina Prov., Moramanga Distr., Analamazaotra Forest Station near Andasibe Vill. (18º56′S, 48º25′E), ~900 m, primary forest, at light, 8–20.III.2013, A. Gorochov (ZIN).



Figs 1–7. *Ombrotrella*, male: 1, 2 — *O. beccalonii*; 3–7 — *O. reducta* **sp.n.**, holotype (3–5) and paratype (6, 7). Head with pronotum and fore legs from above (1, 3, 6); right (2, 5) and left (4) tegmina; dorsal field of right tegmen (7).
Рис. 1–7. *Ombrotrella*, самец: 1, 2 — *O. beccalonii*; 3–7 — *O. reducta* **sp.n.**, голотип (3–5) и паратип (6, 7). Голова с переднеспинкой и передними ногами сверху (1, 3, 6); правое (2, 5) и левое (4) надкрылья; дорсальное поле правого надкрылья (7).



Figs 8–20. *Ombrotrella*, male: 8–12 — *O. beccalonii*, holotype (11, 12); 13–20 — *O. reducta* **sp.n.**, holotype (13–15, 18–20) and paratype (16, 17). Genitalia from below (8, 11, 13, 16) and from side (9, 12, 14, 17); spermatophore from side (10, 15); anal plate from above/behind (18) and from behind/below (19); genital plate from below (20).

Рис. 8–20. *Ombrotrella*, самец: 8–12 — *O. beccalonii*, голотип (11, 12); 13–20 — *O. reducta* **sp.n.**, голотип (13–15, 18–20) и паратип (16, 17). Гениталии снизу (8, 11, 13, 16) и сбоку (9, 12, 14, 17); сперматофор сбоку (10, 15); анальная пластинка сверху/сзади (18) и сзади/снизу (19); генитальная пластинка снизу (20).

NOTE. These specimens are collected very near the type locality of this species and distinguished from *O. beccalonii* holotype only by a few small characters: the body coloration (Figs 1, 2) is also light yellowish with a similar blackish to dark brown pattern on the head and pronotum (but in one male, the dark lines on the pronotal disc are shorter and less distinct than in the holotype and in Fig. 1), with almost whitish and semitransparent lateral tegminal fields having in one male several small rose spots (these rose spots are developed in the holotype and absent in my second male), with a yellow (as in the holotype) or almost light brown (in my latter male) humeral stripe along the lateral edge of each dorsal tegminal field, and with a light grey most part of the latter field (in the holotype, this field is mostly greenish grey); body structure is very similar to that of the holotype, but the tegminal venation are barely varied in all known specimens, the apical notch of the anal plate proximal part is slightly narrower than in the holotype, and the genital plate and genitalia as well as spermatophore are also insignificantly varied (Figs 8–12). The male genitalia and spermatophore of the holotype are previously described and illustrated in the original description of *A. analogica* [Gorochov, 2006: figs IX, 6–9).

Ombrotrella reducta Gorochov, **sp.n.**
Figs 3–7, 13–20.

MATERIAL EXAMINED. Holotype ♂, **Madagascar**, Toamasina Prov., Moramanga Distr., Analamazaotra Forest Station near Andasibe Vill. (18º56′S, 48º25′E), ~900 m, primary forest, at light, 8–20.III.2013, A. Gorochov (ZIN). Paratype 1 ♂, same data as for holotype (ZIN).

DESCRIPTION. Male (holotype). General appearance similar to that of *O. beccalonii* but with some characterisrtic features. Body coloration very light greenish with following marks: dorsum of epicranium rose (except for anterior portion of rostrum and transverse band along occiput) but with small brown spot near posterior part of median ocellus, dark brown similar spot along medial edge of each lateral ocellus and a pair of small yellowish spots between eyes (Fig. 3); eyes light greyish brown with rose dorsal parts; ocelli whitish; tegmina with whitish venation and some membranes in lateral fields, almost transparent rest of these membranes and light yellowish grey dorsal fields (these fields with greenish tinge: Figs 4, 5); abdominal apex with grey apical portion of anal plate proximal part and with greyish tinge on subapical portion of this part (Figs 18, 19) and on proximal parts of cerci (Fig. 20). All ocelli almost equal to each other in size, slightly wider than high and with barely wider (than in *O. beccalonii*) interspaces between them, as well as lateral ocelli somewhat more longitudinally located than in aforementioned species (in latter species, all ocelli strongly transverse, and median ocellus clearly smaller than lateral ones; compare Figs 1 and 3); pronotum with almost parallel lateral sides, and its disc slightly shorter than in *O. beccalonii* as well as with almost straight anterior edge and weakly convex posterior one (Fig. 3); tegmina distinguished from those of this species by diagonal and oblique veins in stridulatory apparatus shorter, mirror of this apparatus smaller (and slightly different in shape in left and right tegmina), long semicircular cell behind mirror reduced, and apical area longer and with more parallel venation (see Figs 2 and 4, 5); fore tibia slightly less flattened than in this species and with barely shorter both tympana, but inner tympanum open and similar to outer one (*vs* inner tympanum also open but insignificantly immersed); anal plate with proximal portion having almost truncate (not distinctly notched) posterior part (Fig. 18); genital plate with distal (narrowed) portion somewhat longer than in aforementioned species (Fig. 20). Genitalia and spermatophore with following differences from those of *O. beccalonii* (compare Figs 8–12 and 13–15): apical lobes of epiphallus behind its subapical (dorsal) projection narrower and longer (more distinctly separated from this projection); ectoparameres longer (protruding beyond epiphallic apices in rest position; *vs* not reaching these apices) and with not widened and almost straight distal portions as well as obliquely truncated apices (*vs* each ectoparamere slightly widened in distal portion, with thin and semimembranous as well as often hooked appendix at apex); rachis with clearly narrower distal portion; formula divided into three sclerites by very narrow membranous interspaces (*vs* it undivided into separate sclerites); spermatophore with less elongate ampulla, shorter rest part and without characteristic triangular plate on collum (neck) near ampulla.

Variation. Paratype with mainly light yellowish coloration having greyish tinge and almost brown dorsum of head as well as light brown dorsal tegminal field, and with following differences from holotype in body structure: shape of pronotal disc practically intermediate between those of holotype and *O. beccalonii*; tegminal mirror even more reduced (divided into three cells; Fig. 7); genitalia slightly wider in middle portion and with small apical parts of ectoparameres curved downwards (Figs 16, 17).

Female unknown.

Length in mm. Body 10.5–11.7; body with wings 18–18.7; pronotum 1.9–2.1; tegmina 12.8–13.5; hind femora 7.2.

COMPARISON. The new species clearly differs from *O. beccalonii* in the characters of its coloration and structure of some body parts (ocelli, tegmina, anal plate and genitalia) as well as shape of the spermatophore listed in the description above.

ETYMOLOGY. This species name is the Latin word “reducta” (reduced) due to the partly reduced stridulatory apparatus in the male tegmina.

Genus *Allotrella* Gorochov, 2006

NOTES. The genus was established for only type species (*A. analogica*) known from a single male [Gorochov, 2006]. In their original descriptions, the male genitalia of another species (*O. beccalonii*) were erroneously described and illustrated as those of *A. analogica*, but the real male genitalia of *A. analogica* were mixed with those of *O. beccalonii* as well as described and illustrated as belonging to the latter species [Gorochov, 2006: figs VIII, 6–9]. Thus, it is necessary to correct the original description of *Allotrella* which is erroneous in relation to the male genitalia. The external morphology of *Allotrella* (Figs 21–23) has been described correctly and is not redescribed here, but for the male genitalia, I must give a new description: these genitalia (Figs 30–32) are rather short and with a short epiphallus; epiphallic dorsum has a pair of spine-like apical processes directed upwards; epiphallic apical parts (located under these processes) are lobe-like but shortly and widely rounded in profile; ectoparameres are very small (partly reduced); rachis is moderately long and mostly membranous/semimembranous but with an additional dorsal fold having a pair of small membranous lobules and a pair of ventral stylet-like plates; sclerotized endoparameres are small and widely separated from each other, but their semisclerotized posterior arms are elongate and contacted with the aforementioned fold, and endoparameral apodemes are long and rather thin; formula is divided into a rather large distal plate (with four sclerotized arms: much longer anterior arms, and short posterior ones fused with the stylet-like plates of the rachis by semisclerotized interspaces) and a smaller proximal sclerite (it is trian-

gular and with a moderately long anterior apodeme); rami are well developed, rather long and sclerotized.

Allotrella analogica Gorochov, 2006
Figs 21–23, 30–32.

NOTE.The external morphology of this species (Figs 21–23) is correctly given in its original description, but its male genitalia were determined erroneously, and their first description was given in the original description of *O. beccalonii* [Gorochov, 2006: figs VIII, 6–9]. Here the male genitalia of *A. analogica* are correctly described in the notes on the genus *Allotrella* above (Figs 30–32).

Genus *Fryerius* Uvarov, 1940

NOTE. This genus was recently divided into two subgenera: *Fryerius* s. str. with eight species and *Dentitrella* Gorochov, 2023 with three species [Gorochov, 2023]. In the Orthoptera Species File [Cigliano *et al*., 2024], two additional Madagascan species (*Calyptotrypus grandidieri* Saussure, 1878 and *C. madecassus* Saussure, 1878) are attributed to *Fryerius* s.str., but their male genitalia as well as male metanotal gland are unstudied, and their subgeneric and even generic positions are unclear. The nominotypical subgenus differs from *Dentitrella* in a less narrow head rostrum, the presence of three well developed ocelli, open outer and slit-like inner tympana, symmetrical ectoparameres and formula in the male genitalia, and division of the formula in these genitalia into two isolated sclerites; *Dentitrella* has a clearly narrower head rostrum, only a pair of distinct lateral ocelli, the inner and outer tympana more or less open, the male genitalia with clearly asymmetrical ectoparameres and formula as well as with this formula undivided into isolated sclerites. One of species, previously included in *Fryerius* s.str. (*F. guichardi* Gorochov, 2004), has all the above-listed characters as in *Dentitrella* and is here transferred to this subgenus: *F.* (*D.*) *guichardi* **comb.n.** Thus, now *Fryerius* s.str. and *Dentitrella* contain seven and four species, respectively. Besides, the new understanding of *Allotrella* indicates its big similarity in the male genitalia to *Fryerius* s.str. and in the external morphology to *Dentitrella* (the similar width of rostrum, the presence of only a pair of distinct lateral ocelli, and open inner and outer tympana). *Allotrella* is also similar to *Fryerius* s.l. in the male anal plate having its proximal portion with a large semimembranous median area and a more or less widely concave posterior edge, but its distal (curved downwards) portion is clearly less transverse (in *Allotrella*, it is almost semicircular, more or less as in *Ombrotrella*). Also *Allotrella* is distinguished from this genus by the absence of male metanotal gland and some features of the male genitalia: the fold around the dorsal part of the rachis is unsclerotized (*vs* this fold is partly or mostly sclerotized), ectoparameres are much smaller, and rami are longer.

Moreover, the discovery of a new species with intermediate characters between *Fryerius* s.l. and *Brevitrella* Gorochov, 2004 (originally a subgenus of *Kilimagryllus* Sjostedt, 1909 but later a separate genus [Gorochov, 2021a]) shows that the latter taxon, decribed for two very similar species (one from Madagascar and one from Africa), is a third subgenus of the genus *Fryerius*. The subgenus *Fryerius* (*Brevitrella*) **comb.n. et stat.resurr.** is similar to *Fryerius* s.str. in all the characters except for the structure of the inner tympanum: *Brevitrella* has this tympanum open (in a new species) or absent (in two other known species including type one), but in *Fryerius* s.str., it is always developed and distinctly slit-like.

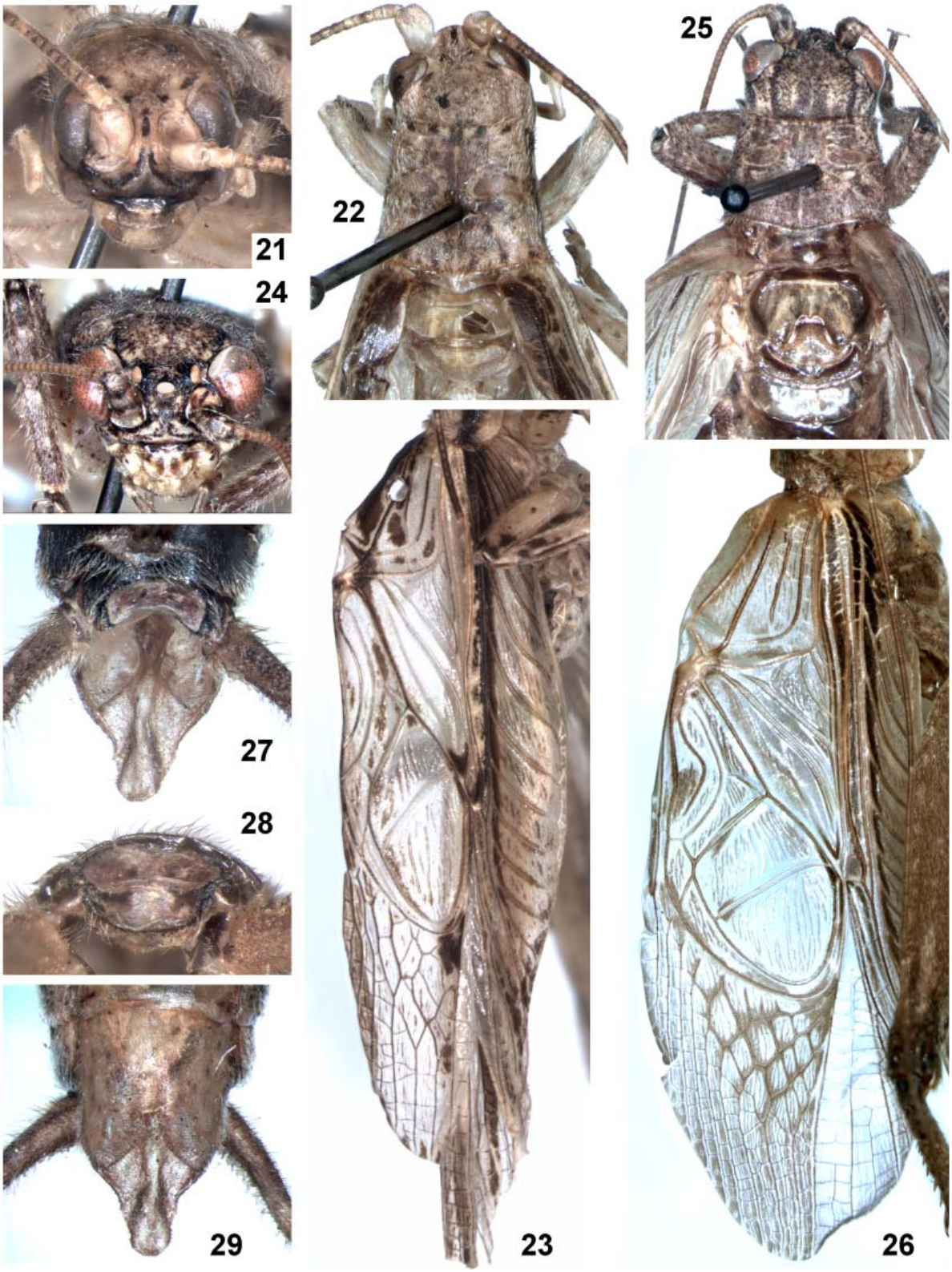
Fryerius (*Brevitrella*) *intermedius* Gorochov, **sp.n.**
Figs 24–29, 33–35.

MATERIAL EXAMINED. Holotype ♂, **Madagascar**, Toliara Prov., "Massif du Makay, dry forest, I.2011" (ZIN).

DESCRIPTION. Male (holotype). General appearance more or less similar to that of *Fryerius* s.str. and *Malgasotrella* Gorochov, 2004. Body moderately large, light greyish brown with greyish brown to brown numerous (dense) and small marks as well as with following pattern: epicranium with yellowish ocelli, light reddish brown eyes, as well as dark brown rostral dorsum and three pairs of stripes (one longitudinal from medial parts of eyes to occiput, one also longitudinal but shorter and located behind posterior parts of eyes, and one very narrow along ventral edges of antennal cavities); antennae uniformly light greyish brown but with greyish brown spots on scapes; mouthparts almost uniformly yellowish with only a few brown to light brown spots on clypeus, sparse dark brown dots on bases of mandibles and light greyish brown to greyish brown distal half of each maxillary palpus (Figs 24, 25); pronotum with greyish brown lateral lobes having distinctly lighter stripes along ventral edges of these lobes; tegmina light greyish (semitransparent) with partly greyish brown venation, dark brown membranes between proximal parts of Sc branches as well as between proximal portions of Sc stem and R, and greyish brown membranes between proximal halves of M and Cu as well as spots very near lateral corner of mirror and between chords (also lateral fields with whitish crossveins in proximal part, and dorsal field with numerous grey and rather short lines on large membranes) (Fig. 26); legs with greyish brown apical part of hind femur, basal part of hind tibia and less distinct areas on all tarsi, as well as with whitish tympanic membranes; abdominal tergites greyish brown with dark brown last one; anal plate almost blackish with large light brown median area and most part of distal (curved downwards) portion of this plate; cerci greyish brown to light greyish brown. Head rather wide and low, with rostrum roundly angular in profile and almost as wide as scape, and with moderately large ocelli located on proximal half of rostrum and not very far from each other (median ocellus slightly transverse, but lateral ones slightly larger and barely longitudinal; Fig. 24); pronotal disc and metanotal gland as in Fig. 25; pronotal lateral lobes rather low and with slightly convex ventral edges; tegmina long, distinctly protruding beyond apices of hind femora, with venation as in Fig. 26; hind wings significantly protruding beyond tegminal apices; legs rather short and stout, with both tympana (outer and inner) open and oval, but inner tympanum slightly shorter than outer one and barely immersed; anal plate typical of *Fryerius* s.l. including other species of *Brevitrella* (Figs 27, 28); genital plate as in Fig. 29. Genitalia (Figs 33–35) very similar to those of other *Brevitrella* species but with following differences: distal half of epiphallus with large membranous median area between dorsoapical epiphallic projections and before them (*vs* epiphallus entirely sclerotized); ectoparameres more curved in middle part; each sclerotized posterolateral lobule of dorsal fold of rachis high in distal part as well as with very small apical hook (*vs* this lobule narrower in profile and without apical hook, or it only with larger apical hook); distal part of formula more strongly cup-like curved, with a pair of long ventral tongues having very wide interspace between them, and with a pair of short dorsal tongues having narrow interspace between them (*vs* this part consisting of a pair of triangular or semicircular but more flat plates fused with each other in short median portion).

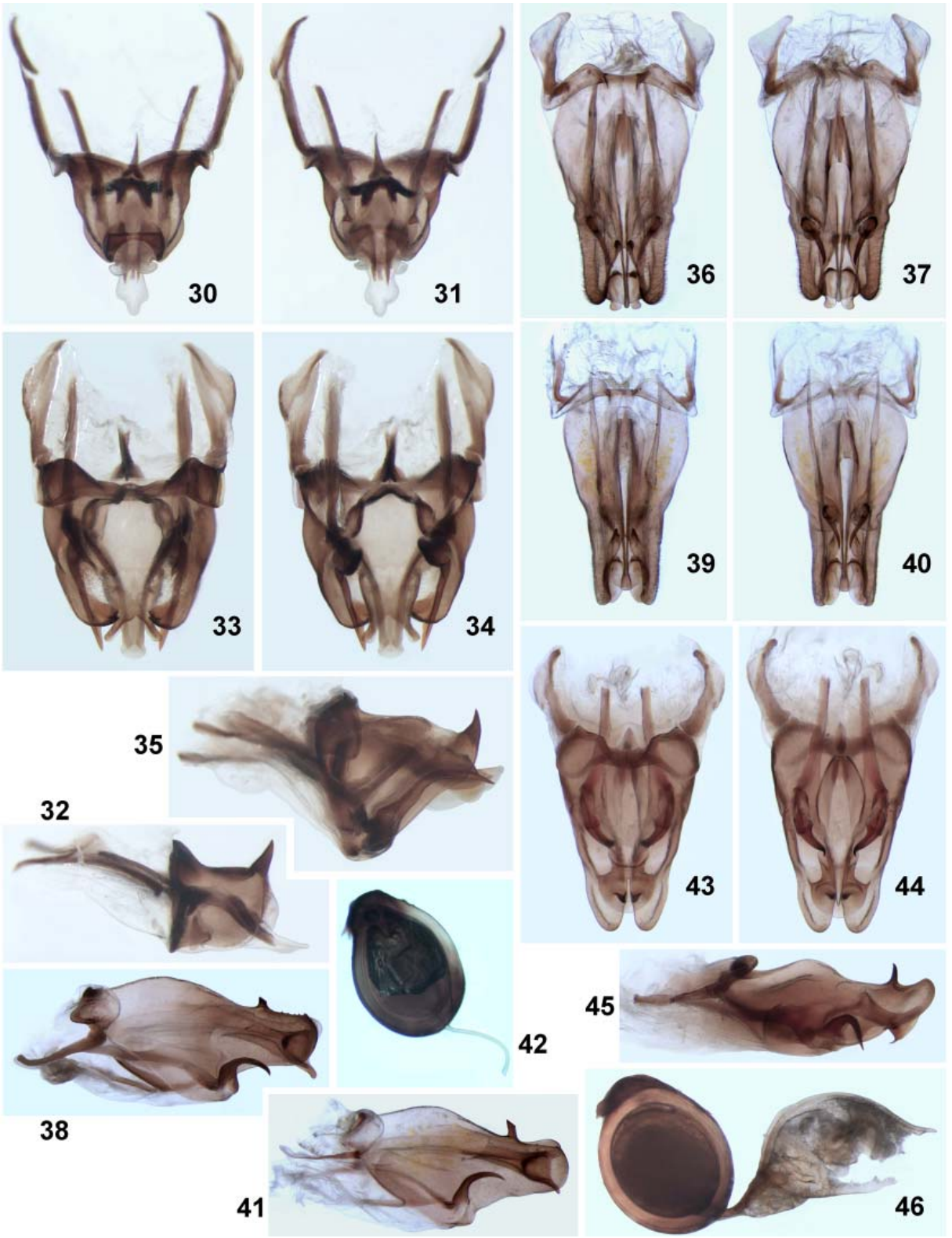
Female unknown.

Length in mm. Body 24; body with wings 33; pronotum 3.6; tegmina 23.5; hind femora 14.



Figs 21–29. *Allotrella* and *Fryerius*, male: 21–23 — *A. analogica* **sp.n.**; 24–29 — *F.* (*Brevitrella*) *intermedius* **sp.n.** Head in front (21, 24); head with pronotum, metanotal gland, fore legs and bases of partly spread wings from above (22, 25); right tegmen (23, 26); abdominal apex from above and slightly behind (27); anal plate from behind and slightly below (28); genital plate from below (29).

Рис. 21–29. *Allotrella* и *Fryerius*, самец: 21–23 — *A. analogica* **sp.n.**; 24–29 — *F.* (*Brevitrella*) *intermedius* **sp.n.** Голова спереди (21, 24); голова с переднеспинкой, метанотальной железой, передними ногами и основаниями раздвинутых крыльев сверху (22, 25); правое надкрылье (23, 26); вершина брюшка сверху и слегка сзади (27); анальная пластинка сзади и слегка снизу (28); генитальная пластинка снизу (29).



Figs 30–46. *Allotrella*, *Fryerius* and *Varitrella*, male: 30–32 — *A. analogica*; 33–35 — *F.* (*Brevitrella*) *intermedius* **sp.n.**; 36–42 — *V.* (*Cantotrella*) *mindanao* **sp.n.**, holotype (36–38) and paratypes (39–42); 43–46 — *V.* (*C.*) *sumatra* **sp.n.** Genitalia from above (30, 33, 36, 39, 43), from below (31, 34, 37, 40, 44) and from side (32, 35, 38, 41, 45); spermatophore (46) and its ampulla (42) from side.
Рис. 30–46. *Allotrella*, *Fryerius* и *Varitrella*, самец: 30–32 — *A. analogica*; 33–35 — *F.* (*Brevitrella*) *intermedius* **sp.n.**; 36–42 — *V.* (*Cantotrella*) *mindanao* **sp.n.**, голотип (36–38) и паратипы (39–42); 43–46 — *V.* (*C.*) *sumatra* **sp.n.** Гениталии сверху (30, 33, 36, 39, 43), снизу (31, 34, 37, 40, 44) и сбоку (32, 35, 38, 41, 45); сперматофор (46) и его ампула (42) сбоку.

COMPARISON. The new species from southwestern part of Madagascar is distinguished from *Fryerius* (*Brevitrella*) *madagascaricus* (Gorochov, 2004), **comb.n.** (originally *Kilimagryllus madagascaricus* from the same part of Madagascar) and *F.* (*B.*) *africanus* (Walker, 1869), **comb.n.** (originally *Platydactylus africanus* from South Africa) in larger size, less uniform coloration, a bilobate (not roundly angular or roundly truncate) apical part of the median tubercle in the male metanotal gland, longer wings, the presence of distinct inner tympana on the both fore tibiae, and small differences in the male genitalia listed above. From the enigmatic (but possibly belonging to *Fryerius* s.l.) *Calyptotrypus madecassus* and *C. grandidieri*, the new species differs in a distinctly more spotted coloration (especially on the fore part of the head) and clearly darker lateral lobes of the pronotum, and from only *C. madecassus*, in a clearly larger mirror in the male tegmen.

ETYMOLOGY. This species name is the Latin word "intermedius" (intermediate) due to an intermediate position of the new species between *Fryerius* s.str. and other *Brevitrella* species.

Genus *Varitrella* Gorochov, 2003

Type species *Madasumma nigrifrons* Chopard, 1931.

NOTES. This Indo-Malayan genus was firstly divided into two subgenera by Gorochov [2006]: *Varitrella* s.str. and *Cantotrella* Gorochov, 2006. Later in the latter subgenus, rather numerous and diverse new species were described [Gorochov, Tan, 2014; Tan *et al*., 2020, 2022]. In relation to their male genitalia structure, these species form four well-separated species groups (in the above-mentioned paper by Gorochov & Tan, five such groups were proposed, but one of them is here eliminated): the first group with *V.* (*C.*) *mjobergi* (Chopard, 1930), *V.* (*C.*) *glabra* (Ingrisch, 1997), *V.* (*C.*) *variabilis* Gorochov, 2006, *V.* (*C.*) *orion* Tan et Gorochov, 2014, *V.* (*C.*) *trusmadi* Gorochov, 2014, *V.* (*C.*) *striata* Gorochov, 2014, *V.* (*C.*) *robusta* Gorochov, 2014, *V.* (*C.*) *sukau* Gorochov, 2014, *V.* (*C.*) *tawau* Gorochov, 2014, *V.* (*C.*) *amoena* Gorochov, 2014, *V.* (*C.*) *suikei* Tan *et al*., 2020, *V.* (*C.*) *tabin* Tan *et al*., 2020 and *V.* (*C.*) *exculta* **sp.n.**; the second group with *V.* (*C.*) *conspersa* (Stål, 1877), *V.* (*C.*) *depressa* Gorochov, 2003, *V.* (*C.*) *manukan* Gorochov, 2014 and *V.* (*C.*) *paraiso* **sp.n.**, the third group with *V*. (*C.*) *saussurei* (Stål, 1877), *V.* (*C.*) ?*bakeri* (Chopard, 1925), *V.* (*C.*) *mindoroensis* Gorochov, 2006, *V.* (*C.*) *contraria* **sp.n.**, *V.* (*C.*) *sympatrica* **sp.n.** and probably *V.* (*C.*) *quadrata* (Haan, 1842) (this Haan's species is here transferred from the monobasic fifth group; thus, the latter group is eliminated); the fourth group with *V.* (*C.*) *palawanensis* Gorochov, 2006 (type species of *Cantotrella*), *V.* (*C.*) *mindanao* **sp.n.**, *V.* (*C.*) *sumatra* **sp.n.** and possibly *V.* (*C.*) *fuscoirrorata* (Chopard, 1925). For separation of the latter (fourth) group from all the others, I propose to use not the presence or absence of denticles on the apical lobes of the rachis but the location of the dorsoapical epiphalic processes, which are very close to each other in this group and rather widely spaced in other groups.

Varitrella (Cantotrella) mindanao Gorochov, **sp.n.**
Figs 36–42, 47–53.

MATERIAL EXAMINED. Holotype ♂, **Philippines**, Mindanao I., ~30 km W of Dabaw City, environs of Agco Lake on Apo Mt (7º01′03″ N, 125º13′ 23″ E), 1100–1300 m, forest, at light, 26.I–2.II.2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN). Paratypes: 2 ♂♂, 1 ♀, same data as for holotype (ZIN); 4 ♂♂, same island, ~150 km NNW of Dabaw City, environs of Dahilayan Adventure Park (8º11′38″ N, 124º51′39″ E), 1000–1500 m, forest, on leaves of bushes at night, 2–9.II.2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN).

DESCRIPTION. Male (holotype). General appearance similar to that of *V.* (*C.*) *palawanensis* and *V.* (*C.*) ?*fuscoirrorata* but with some characteristic features. Coloration light grey with following marks: dark grey fore part of epicranium under rostral apex and under antennal cavities, rather large median spot on posterior part of head dorsum (Fig. 47), median longitudinal band on pronotal disc (this band narrower in middle part and wider in anterior and posterior parts), upper half of each pronotal lobe, numerous marks on tegmina (but some of them, located near Sc and Cu, very dark; Fig. 48) as well as moderately numerous small and very small spots on other parts of body; yellowish/whitish ocelli and some marks on tegmina; greyish and semitransparent majority of tegminal membranes; numerous grey but poorly distinct oblique lines on outer side of hind femur; blackish most part of anal plate (Fig. 49). Head and pronotum rather narrow and long, with almost angular (in profile) head rostrum (apex of this rostrum almost twice as narrow as scape), small lateral ocelli, very small median ocellus (it almost obliterated and located at base of small shallow rostral concavity which similar to nearest parts of rostrum in coloration; Fig. 47), not very large eyes, weakly transverse pronotal disc (clearly narrowing to head) and moderately low lateral lobes; tegmina rather narrow and long (distinctly protruding beyond apices of hind femora), with venation as in Fig. 48; hind wings significantly protruding beyond tegminal apices; anal plate roundly lobe-like, with rather small and transverse membranous (lighter) median area on dorsal surface near its base, and with not deep dorsal median concavity near its apex (Fig. 49); genital plate as in Fig. 50. Genitalia (Figs 36–38) also most similar to those of *V.* (*C.*) *palawanensis*, but: epiphallus with lateral lobes of its anterior (dorsal) fold more widely separated from each other, with dorsoapical processes significantly shorter and having obliquely truncate (not spine-like) apical parts, with apical lobes widely rounded in profile (*vs* these lobes more narrowly rounded, almost roundly angular), and with a pair of ventral lobes (articulated with ectoparameres) more distinct and located in distal (not in proximal) half of epiphallus; each ectoparamere much shorter, more strongly curved in profile and with distinctly convex dorsal edge of proximal portion; distal part of rachis clearly narrower, lacking a pair of distinct apical notches (this part with only a pair of shallow apical concavities), with narrower dorsomedian lobule having longitudinally lamellar and vertical but not high dorsal keel, and with a pair of lamellar ventroapical lobules slightly protruding beyond rest of rachis and directed partly downwards (*vs* distal part of rachis without dorsal keel but with wider and more widely spaced ventrolateral lobules which almost not protruding beyond rest of rachis as well as having small denticles and a pair of ventral hooks); rami comparatively large but rather short, with moderately thick posterior portions. Spermatophore partly missing, but its ampulla probably as in Fig. 42.

Variations. Male paratypes distinguished from holotype by some differences in coloration (larger or less distinct darkened spots on head dorsum and pronotum, sometimes more uniform tegminal dorsal field) and small differences in male genitalia: often dorsoapical epiphallic processes somewhat longer (higher), all apical lobules of rachis not protruding beyond epiphallic apices, and rami with thinner posterior portions (compare Figs 36–38 and 39–41); sometimes above-mentioned epiphallic processes almost triangular in shape, ectoparameres with almost straight dorsoproximal edges (see Fig. 38 and 41), and posterior part of longitudinal keel on dorsoapical rachial lobule wider (see Figs 36, 37 and 39, 40).

Female. Coloration and structure of body very similar to those of male holotype but distinguished by following characters: head (Fig. 51) without dark spots near ocelli and with shorter (almost hidden under pronotum) dark median area on posterior part of dorsum; pronotum with lateral lobes somewhat lighter (upper halves of these lobes light grey with numerous and dense dark grey dots); dorsal tegminal field dark grey with some membranes grey, and with sparse and small yellowish/whitish marks (Fig. 52); lateral tegminal field completely light grey but with a few dark dots in proximal portion of Sc-R area and with sparse dark dots between some Sc branches; tegminal venation with 12–13 longitudinal branches

Figs 47–57. *Varitrella*: 47–53 — *V.* (*Cantotrella*) *mindanao* **sp.n.**, holotype (47–50) and paratype (51–53); 54–57 — *V.* (*C.*) *sumatra* **sp.n.** Head of male (47, 54) and of female (51) in front; male right tegmen (48); dorsal field of female (52) and male (55) right tegmen; male anal plate from above/behind (49, 56); genital plate of male (50, 57) and of female (53) from below.
Рис. 47–57. *Varitrella*: 47–53 — *V.* (*Cantotrella*) *mindanao* **sp.n.**, голотип (47–50) и паратип (51–53); 54–57 — *V.* (*C.*) *sumatra* **sp.n.** Голова самца (47, 54) и самки (51) спереди; правое надкрылье самца (48); дорсальная плоскость правого надкрылья самки (52) и самца (55); анальная пластинка самца сверху/сзади (49, 56); генитальная пластинка самца (50, 57) и самки (53) снизу.

in dorsal field (these branches somewhat oblique, but two middle of them significantly S-shaped, and distal ones insignificantly S-shaped or almost straight), numerous irregular crossveins between them (Fig. 52) and almost twice wider Sc-R area; anal plate smaller, roundly triangular and with light apex; genital plate as in Fig. 53; ovipositor approximately 1.2 times as short as hind femur, with drilling apical part which typical of this genus in structure (coloration of ovipositor light brown with dark both distal portion and longitudinal line on each outer side, but this distal portion with a pair of yellowish transverse outer bands near its middle).

Length in mm. Body: ♂ 17–19.5, ♀ 20; body with wings: ♂ 26–27.5, ♀ 29; pronotum: ♂ 3.1–3.3, ♀ 3.5; *tegmina*: ♂ 17–18; ♀ 19.5; hind femora: ♂ 12–12.5, ♀ 13.5; ovipositor 11.5.

COMPARISON. The new species is similar to *V.* (*C.*) *fuscoirrorata* (Chopard, 1925) from Mindanao I., which was known for a long time after a single female, and especially to the males from this island recently attributed to the latter species [Tan *et al*., 2023]. But the new species differs from the female holotype of *V.* (*C.*) *fuscoirrorata* in its clearly smaller body size: in the latter species, lengths of body with wings, of pronotum, of tegmina, of hind femora and of ovipositor are about 35, 4.5, 22.5, 15.5 and 13.5 mm, respectively; but in the new species female, these lengths are about 29, 3.5, 19.5, 13.5 and 11.5 mm, respectively (in all the males, these structures, except for ovipositor, are similar in length but distinctly shorter than in these females). Besides these females have some tegminal differences: the holotype of *V. fuscoirrorata* is with a yellowish longitudinal vein along the dorsal field lateral edge having a few small dark spots, and with three strongly S-shaped longitudinal veins (branches) in the middle part of this field; but the female of the new species is with a dark dorsal tegminal field along its lateral edge having only the proximal parts of some branches yellowish, and with two strongly S-shaped middle branches in this field (Fig. 52). Moreover, the coloration of the ovipositor distal portion in these species is also somewhat different (in *V. fuscoirrorata*, it is distinctly more uniformly darkened). But the above-mentioned males [Tan *et al*., 2023] may belong to *V.* (*C.*) *mindanao* **sp.n.**, and small differences between them in shape of their tegminal mirror and of some other structures may be subspecies ones. From *V.* (*C.*) *palawanensis*, also more or less similar to the new species, *V.* (*C.*) *mindanao* **sp.n.** is distinguished by the male characters listed above (especially in shape of some structures of the male genitalia). From all other true and possible species of this genus, it is distinguished by more distinct differences in the male genitalia and/or by more contrastingly spotted body coloration.

ETYMOLOGY. This species is named after the Mindanao Island where it was collected.

Varitrella (*Cantotrella*) *sumatra* Gorochov, **sp.n.**
Figs 43–46, 54–57.

MATERIAL EXAMINED. Holotype ♂, **Indonesia**, Sumatra I., North Sumatra Prov., ~80 km W of Medan City, environs of Bukit Lawang Vill. om Bohorok River near Gunung Leuser National Park (3º32–33′ N, 98º6–7′ E), 200–300 m, forest, at light, 6–14.IV.2018, A. Gorochov, M. Berezin, I. Kamskov, E. Tkatsheva (ZIN).

DESCRIPTION. Male (holotype). Coloration and structure of body similar to those of *V.* (*C.*) *palawanensis* and *V.* (*C.*) *mindanao* **sp.n.** but with some distinct differences. Coloration light grey with characteristic pattern: head dorsum with a few grey longitudinal stripes, three dark grey dots very near ocelli as well as two pairs of such dots near eyes and at rostral apex; antennae with dark grey dorsolateral longitudinal band on each scape as well as sparse and small grey spots on antennal flagellum; rest of head grey with some dark grey spots under rostral apex (near it) and behind eyes as well as with more or less spotted (light brownish grey with brownish grey spots) mouthparts having spots on maxillary palpi very small and almost dark brown (Fig. 54); pronotum with dark grey longitudinal median band on disc, a few dots around this band and most part of lateral lobes (but lower parts of these lobes grey); tegmina with grey, dark grey and yellowish/whitish pattern as in Fig. 55; anal plate partly brownish grey with slightly darker posterior half and barely lighter anterior half (Fig. 56); other parts of body, including legs and abdominal venter, also with darkened small spots and dots (Fig. 57). External structure of body almost as in aforementioned congeners, but median ocellus larger (similar to that of *V. palawanensis* but twice smaller than lateral ocelli and more or less round; Fig. 54), tegminal venation as in Fig. 55, anal plate with median semimembranous area larger than in *V.* (*C.*) *mindanao* **sp.n.** but smaller than in *V.* (*C.*) *palawanensis* (Fig. 56), and genital plate as in Fig. 57. Genitalia (Figs 43–45) distinguished from these species by following characters: dorsoapical epiphallic processes longer (from *V. mindanao* **sp.n.**), apical epiphallic lobes less high (from *V. mindanao* **sp.n.**), ectoparameres much shorter (from *V. palawanensis*) and more strongly curved (from all of them), rachis with distal part narrower than in *V. palawanensis* and wider than in others, apical lobules of this rachial part unseparated from each other and forming lamellar but almost cup-like semicircular plate having a pair of thin posterolateral spines directed partly forwards (from all these congeners), formula somewhat shorter than in *V. palawanensis* and wider than in others, and rami with posterior parts rather thick. Spermatophore as in Fig. 46.

Female unknown.

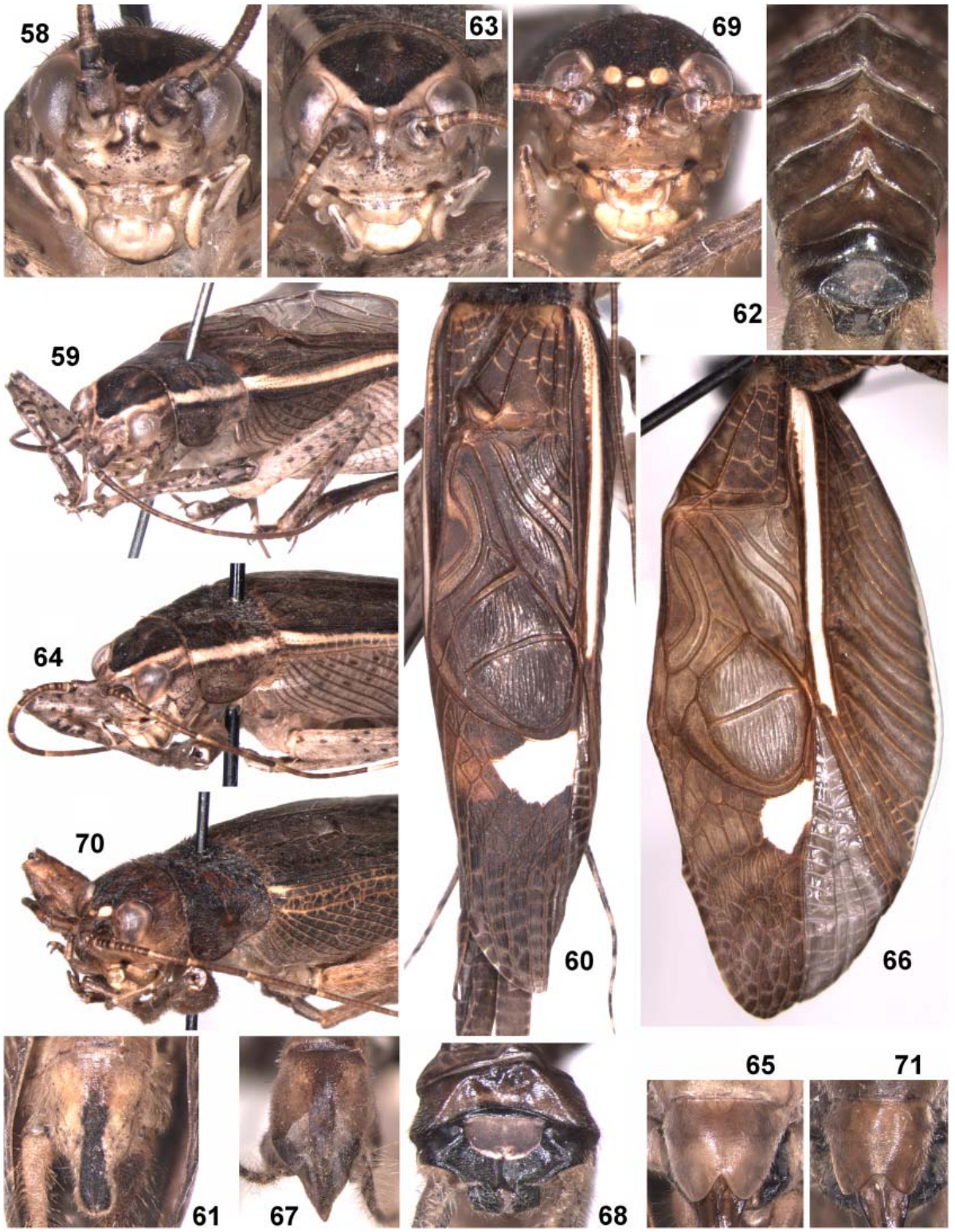
Length in mm. Body 16.5; body with wings 28; pronotum 3.2; tegmina 19; hind femora 13.

COMPARISON. The new species differs from the most similar congeners in the characters listed above. From all other species of this subgenus, it is distinguished by the combination from two characters: the dorsoapical epiphallic processes are located very near each other (i.e. they are not widely spaced), and the apical epiphallic lobules are rather long and distinctly separated from the previous processes.

Varitrella (*Cantotrella*) *contraria* Gorochov, **sp.n.**
Figs 58–65, 72–74.

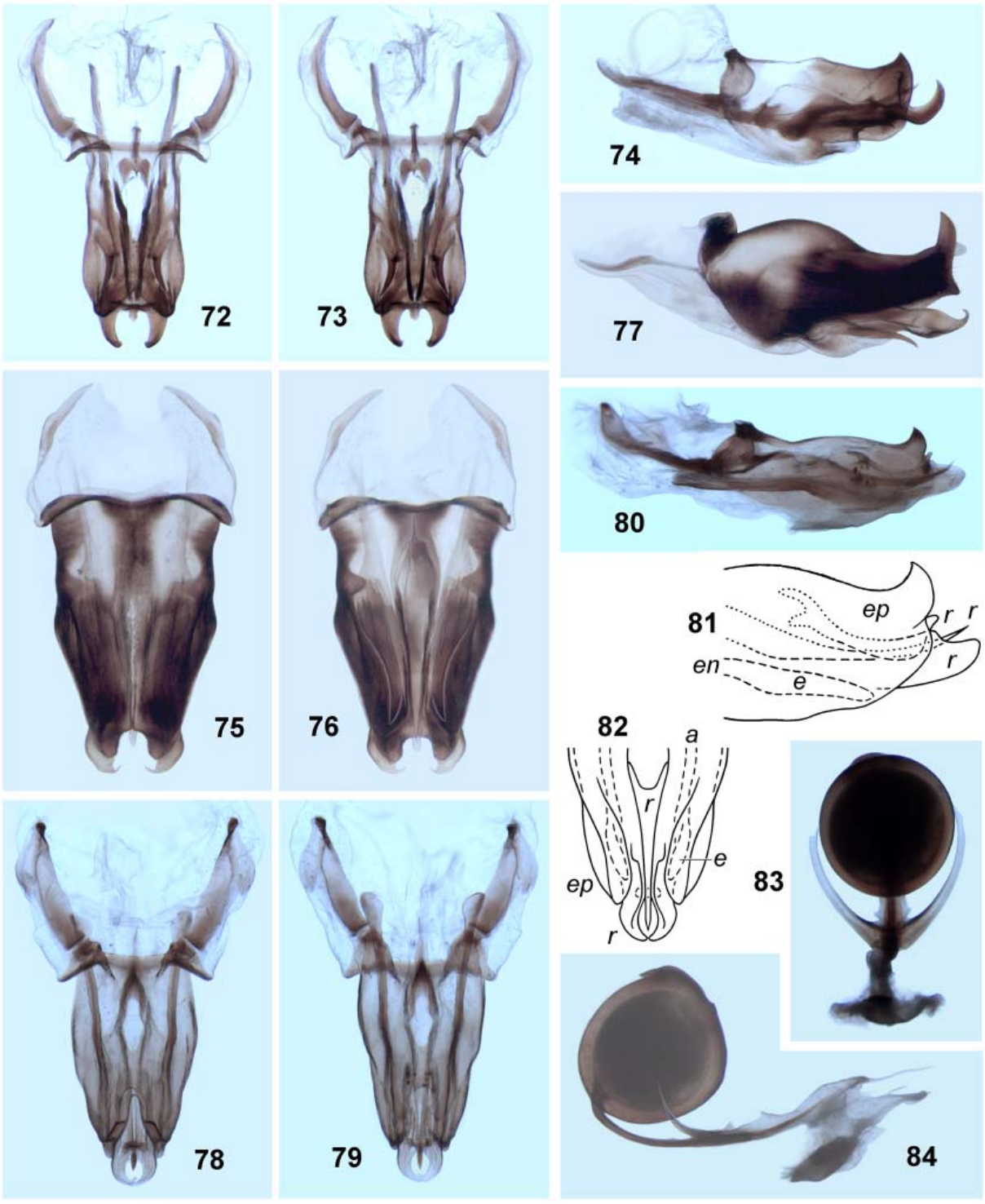
MATERIAL EXAMINED. Holotype ♂, **Philippines**, Luzon I., ~120 km NNE of Manila City, environs of Paraiso Camp (15º39′33″ N, 121º16′37″ E), 500–800 m, forest, on leaf of bush at night, 10–19.II.2023, A. Gorochov, M. Omelko, I. Naumenko (ZIN). Paratypes: 1 ♂, 6 ♀♀, same data as for holotype, but some females collected on lower parts of tree truncks and even on soil (ZIN).

DESCRIPTION. Male (holotype). General appearance similar to that of *V.* (*C.*) *mindoroensis*, but coloration darker and more contrasting: head dorsum dark grey with thin and rather short whitish median line in posterior half, a pair of yellowish stripes running from rostral apex to occiput along dorsomedial edges of eyes, and with light grey rest of rostral dorsum before median ocellus; antennae with light grey each scape having a few rather large dark marks, and with grey rest part having dark grey pedicel as well as rather sparse and small light grey to whitish spots on flagellum; other parts of head light grey with a pair of small dark grey marks between antennal cavities (under rostral apex), two grey longitudinal stripes behind each eye, sparse dark dots under eyes as well as along clypeal suture and on maxillary palpi (Fig. 58); pronotum with



Figs 58–71. *Varitrella*: 58–65 — *V.* (*Cantotrella*) *contraria* **sp.n.**, holotype (58–61) and paratypes (62–65); 66–68 — *V.* (*C.*) *sympatrica* **sp.n.**; 69–71 — *V.*? *ocellata* **sp.n.** Head of male (58) and of female (63, 69) in front; anterior half of body from above/side and partly in front, male (59) and female (64, 70); male right tegmen (66) and its dorsal field (60); genital plates of male (61, 67) and of female (65, 71) from below; distal part of male abdomen from above/behind (62); male anal plate from above/behind (68).

Рис. 58–71. *Varitrella*: 58–65 — *V.* (*Cantotrella*) *contraria* **sp.n.**, голотип (58–61) и паратипы (62–65); 66–68 — *V.* (*C.*) *sympatrica* **sp.n.**; 69–71 — *V.*? *ocellata* **sp.n.** Голова самца (58) и самки (63, 69) спереди; передняя половина тела сверху/сбоку и частично спереди, самец (59) и самка (64, 70); правое надкрылье самца (66) и его дорсальная плоскость (60); генитальные пластинки самца (61, 67) и самки (65, 71) снизу; дистальная часть брюшка самца сверху/сзади (62); анальная пластинка самца сверху/сзади (68).



Figs 72–84. *Varitrella*, male: 72–74 — *V.* (*Cantotrella*) *contraria* **sp.n.**; 75–77 — *V.* (*C.*) *sympatrica* **sp.n.**; 78–84 — *V.* (*C.*) *paraiso* **sp.n.** Genitalia from above (72, 75, 78), from below (73, 76, 79) and from side (74, 77, 80); scheme of posterior part of genitalia from side (81) and from below (82); spermatophore from below/behind (83) and from side (84). Abbreviations: *a* — apodeme of endoparamere; *e* — ectoparameral sclerotized inner ribbon; *en* — endoparamere; *ep* — epiphallus; *r* — rachis and its apical parts.

Рис. 72–84. *Varitrella*, самец: 72–74 — *V.* (*Cantotrella*) *contraria* **sp.n.**; 75–77 — *V.* (*C.*) *sympatrica* **sp.n.**; 78–84 — *V.* (*C.*) *paraiso* **sp.n.** Гениталии сверху (72, 75, 78), снизу (73, 76, 79) и сбоку (74, 77, 80); схема задней части гениталий сбоку (81) и снизу (82); сперматофор снизу/сзади (83) и сбоку (84). Обозначения: *a* — аподема эндопарамера; *e* — эктопарамеральная склеротизованная внутренняя полоска; *en* — эндопарамер; *ep* — эпифаллус; *r* — рахис и его вершинные части.

dark grey disc having a pair of whitish stripes along its lateral edges, and with intensively grey most part of lateral lobes (but this part with dark stripe along aforementioned whitish stripe and light brownish grey posterior portion having one small dark spot at middle; Fig. 59); tegmina dark grey with large white spot near mirror apex, yellowish humeral stripe, yellowish grey to light brown small marks on other parts of dorsal field (Fig. 60), and grey lateral field having dark grey narrow medial (dorsal) part, brownish grey Sc branches and anal edge of this field in its distal two thirds, and yellowish to whitih crossveins in proximal two thirds of lateral field; rest of body light grey with dark grey stripes along ventral keels of each hind femur, rather numerous and small dark to darkish spots on other parts of legs, greyish brown to dark greyish brown abdominal tergites, very dark anal plate (but its semimembranous area slightly lighter; Fig. 62), darkish to almost dark grey spots on cerci, and dark grey longitudinal median band on posterior two thirds of genital plate venter (Fig. 61). External structure of body distinguished from that of all congeners, previously described here, by some features: median ocellus well developed but not large, almost semicircular in shape and approximately as wide as space between this ocellus and lateral one (latter ocellus about 1.5 times as long as width of median one); pronotum slightly shorter; tegmina with less longitudinal (wider) mirror (Fig. 60); last abdominal tergites with characteristic angular dorsal projections directed somewhat forwards (Fig. 62); anal plate with moderately large semimembranous area in proximal half (Fig. 62); genital plate with its narrowed portion narrower and apically rounded (Fig. 61). Genitalia most similar to those of *V.* (*C.*) *saussurei* and possibly *V.* (*C.*) *bakeri* from Philippines, but they different in following characters (Figs 72–74): epiphallus clearly higher (especially its distal parts) and with almost angular dorsal convexity in middle part (*vs* this convexity rounded and very low, practically indistinct); each ectoparamere with rather long anterior arm and low ventral process (*vs* these arm and process almost undeveloped); rachis with ventroapical lobules somewhat longer and more curved as well as more widely spaced, with dorsoapical lobule almost vertical and transversally lamellar (in profile this lobule very thin, i.e. as in *V.* ?*bakeri* and clearly thinner than in *V. saussurei* [Gorochov, 2003: figs VII, 10, 12]), and with proximal (anterior) sclerotized parts clearly longer; formula with only one very small posteromedian tongue between longer posterolateral ones (*vs* without it or with a pair of such tongues).

Variations. Second male with darkish (grey) spots on genae under eyes larger, and with almost dark grey apical parts of hind femora.

Female. Coloration and structure of body as in males, but head sometimes almost without dark marks under rostral apex (Fig. 63), dark part of pronotal disc often with light greyish brown spots, lateral pronotal lobes usually slightly lighter and almost without dark stripes (Fig. 64), tegmina without white spot in dorsal field but with somewhat narrower yellowish humeral stripe and lighter lateral field (this field in some females as in Fig. 64, i.e. light greyish with grey Sc branches, whitish crossveins, almost dark grey some membranes in Sc-R area and a few dots between Sc branches; but in other females, coloration of this field more or less intermediate between this variant and that of above males), structure of dorsal tegminal field as well as of anal plate and of ovipositor very similar to that of female of *V.* (*C.*) *mindanao* **sp.n.**, and genital plate with moderately deep and almost angular posteromedian notch (Fig. 65).

Length in mm. Body: ♂ 19–21, ♀ 18–22; body with wings: ♂ 28–29, ♀ 31–34; pronotum: ♂ 3.4–3.7, ♀ 3.7–4; tegmina: ♂ 19.5–20; ♀ 21–23; hind femora: ♂ 13.5–14, ♀ 14.5–16; ovipositor 15–16.5.

COMPARISON. The new species has the male genitalia most similar to those of *V.* (*C.*) *saussurei* and *V.* (*C.*) ?*bakeri* but differs from them in darker and more contrasting coloration as well as in some small characters of the male genitalia listed above. From all the other congeners, the new species is distinguished by the same features of its body coloration, a less longitudinal and/or larger mirror in the male tegmina and some genital characters: the epiphallus is with its dorsoapical processes poorly separated from its apical lobules; the ectoparameres are normal (completely sclerotized) but comparatively short; the rachis has its dorsoapical lobule not hooked in profile.

ETYMOLOGY. This species name is the Latin word "contraria" (opposite, contrasting) due to the characteristic (contrasting) body coloration.

Varitrella (*Cantotrella*) *sympatrica* Gorochov, **sp.n.**
Figs 66–68, 75–77.

MATERIAL EXAMINED. Holotype ♂, **Philippines**, Luzon I., ~120 km NNE of Manila City, environs of Paraiso Camp (15º39′33″ N, 121º16′37″ E), 500–800 m, forest, at light, 10–19.II.2023, A. Gorochov, M. Omelko, I. Naumenko (ZIN).

DESCRIPTION. Male (holotype). Coloration and structure of body very similar to those of *V.* (*C.*) *contraria* **sp.n.** but with following differences: dark grey part of head dorsum with a pair of short yellowish longitudinal lines located near occiput between larger yellowish longitudinal stripes; each eye light grey to yellowish with three longitudinal brown stripes in dorsal half; antennae with larger dark areas on scapes; rest of head as in male paratype of this species but with more numerous darkish dots on epicranium under antennal cavities and without distinct dark marks near (under) rostral apex as well as with almost completely dark grey three distal segments of maxillary palpi; tegmina brown with dark brown some areas, light brown very narrow stripes along many veins and veinlets, smaller white spot near mirror apex, rather wide yellowish/whitish humeral stripe and narrow stripe along almost two thirds of anal edge of lateral field, and somewhat darkened membranes of intercalary triangle (Fig. 66); rest of body light grey with darkish (grey) dorsal surface of hind femur, dark grey spots on this femur along its ventral edge and apical parts of all femora as well as most part of all tibiae and tarsi (but fore and middle tibiae with small lighter marks, hind tibia also with lighter spines, and tarsi with lighter apical segments and some parts of other segments), grey to almost dark grey abdominal tergites and median parts of sternites, blackish anal plate having brownish grey semimembranous area (Fig. 68), as well as with grey genital plate having slightly darker median longitudinal band and a pair of posterolateral ones on ventral surface (Fig. 67); external structure of body distinguished only by insignificantly shorter tegmina (Fig. 66), slightly wider semimembranous area on anal plate (Fig. 68) and more angular distal part of genital plate (Fig. 67); genitalia more different in structure (Figs 75–77): epiphallus wider in anterior half and with distinctly higher dorsoapical processes as well as with much more angular ventroapical corners in profile, ectoparameres much longer, endoparameral apodemes less projecting before anterior part of epiphallus, ventroapical lobules of rachis with clearly wider proximal halves, and rami with partly reduced posterior portions.

Female unknown.

Length in mm. Body 15.5; body with wings 26; pronotum 3.5; tegmina 17.5; hind femora 13.3.

COMPARISON. The new species is most similar to *V.* (*C.*) *contraria* **sp.n.** but with its male genitalia very different (these differences are given in the description above). From all other congeners, the new species differs in the same characters as the latter species (except for the ectoparameral length which is al-

most as long as in *V.* (*C.*) *quadrata*, but from the latter species, the new one differs in much higher dorsoapical epiphallic processes).

ETYMOLOGY. This name is the Latin biological term "sympatrica" (sympatric, living in the same locality), because this species was collected in the same locality as *V.* (*C.*) *contraria* **sp.n.**

Varitrella (*Cantotrella*) *paraiso* Gorochov, **sp.n.**
Figs 78–88.

MATERIAL EXAMINED. Holotype ♂, **Philippines**, Luzon I., ~120 km NNE of Manila City, environs of Paraiso Camp (15º39′33″ N, 121º16′37″ E), 500–800 m, forest, on leaf of bush at night, 10–19.II.2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN).

DESCRIPTION. Male (holotype). General appearance more or less similar to that of *V.* (*C.*) *mindanao* **sp.n.** but with following characters: coloration light yellowish with greyish tinge on dorsum of pterothorax, numerous but rather sparsely located and small dark grey to blackish spots on most part of body (on dorsal epicranial part, antennae, pronotum, tegmina, legs and cerci; Figs 85–88), more numerous and very small grey to light grey marks on most part of hind femur and on abdominal tergites, whitish small areas on dorsal tegminal field as well as between tegminal R and M, and almost transparent some tegminal membranes (Fig. 88); head and pronotum comparatively long for this genus, with moderately small ocelli, scape approximately twice as wide as rostrum between antennal cavities, almost angular apex of this rostrum in profile, and pronotal disc barely wider than long as well as clearly narrowing to head (Fig. 85); tegmina distinctly protruding beyond apices of hind femora and with venation as in Fig. 88; hind wings clearly protruding beyond tegminal apices; anal plate with poorly distinct (almost whitish) semimembranous median area near anterior edge and with a few shallow keel-like folds on posterior portion (Fig. 86); genital plate as in Fig. 87. Genitalia most similar to those of *V.* (*C.*) *conspersa* and *V.* (*C.*) *depressa* from Philippines, but epiphallus with distinctly less convex middle part of dorsal edge in profile and less high dorsoapical processes, ectoparameral sclerotizations (each ectoparamere in all these species in form of low membranous lobe slightly and roundly projecting under epiphallic apices as well as having longitudinal sclerotized ribbon on inner surface) shorter than in *V.* (*C.*) *conspersa* and narrower (less high in profile) than in *V.* (*C.*) *depressa*, endoparameral apodemes with distinct apical widenings (absent in two latter congeners), formula also more deeply bifurcated than in these congeners, and rami much longer (compare Figs 78–82 and some published illustrations [Gorochov, 2003: figs VII, 4–6, 14]); spermatophore with anchor having a pair of long lateral spine-like processes directed to globular ampulla (Figs 83, 84).

Female unknown.

Length in mm. Body 21.5; body with wings 31; pronotum 3.2; tegmina 21; hind femora 14.

COMPARISON. The new species is most similar to *V.* (*C.*) *conspersa* and *V.* (*C.*) *depressa* in the structure of their male genitalia but differs from them in the above-mentioned (listed in the description) characters of these genitalia. From *V.* (*C.*) *manukan*, the new species is distinguished by the dorsoapical epiphallic processes dictinctly lower (shorter) and proximally wider in profile (for comparison see Figs 80, 81 and the published photograph [Gorochov, Tan, 2014: fig. 55]), and from all other species of this genus, by a lighter coloration, longer head and pronotum, and a membranous sac-like ectoparamere having only inner sclerotized ribbon (*vs* the ectoparamere is completely sclerotized and articulated with the ventral epiphallic projection).

ETYMOLOGY. This species is named after the Paraiso Camp situated very near its type locality.

Varitrella (*Cantotrella*) *robusta luzoni* Gorochov, **subsp.n.**
Figs 89–91, 96–99.

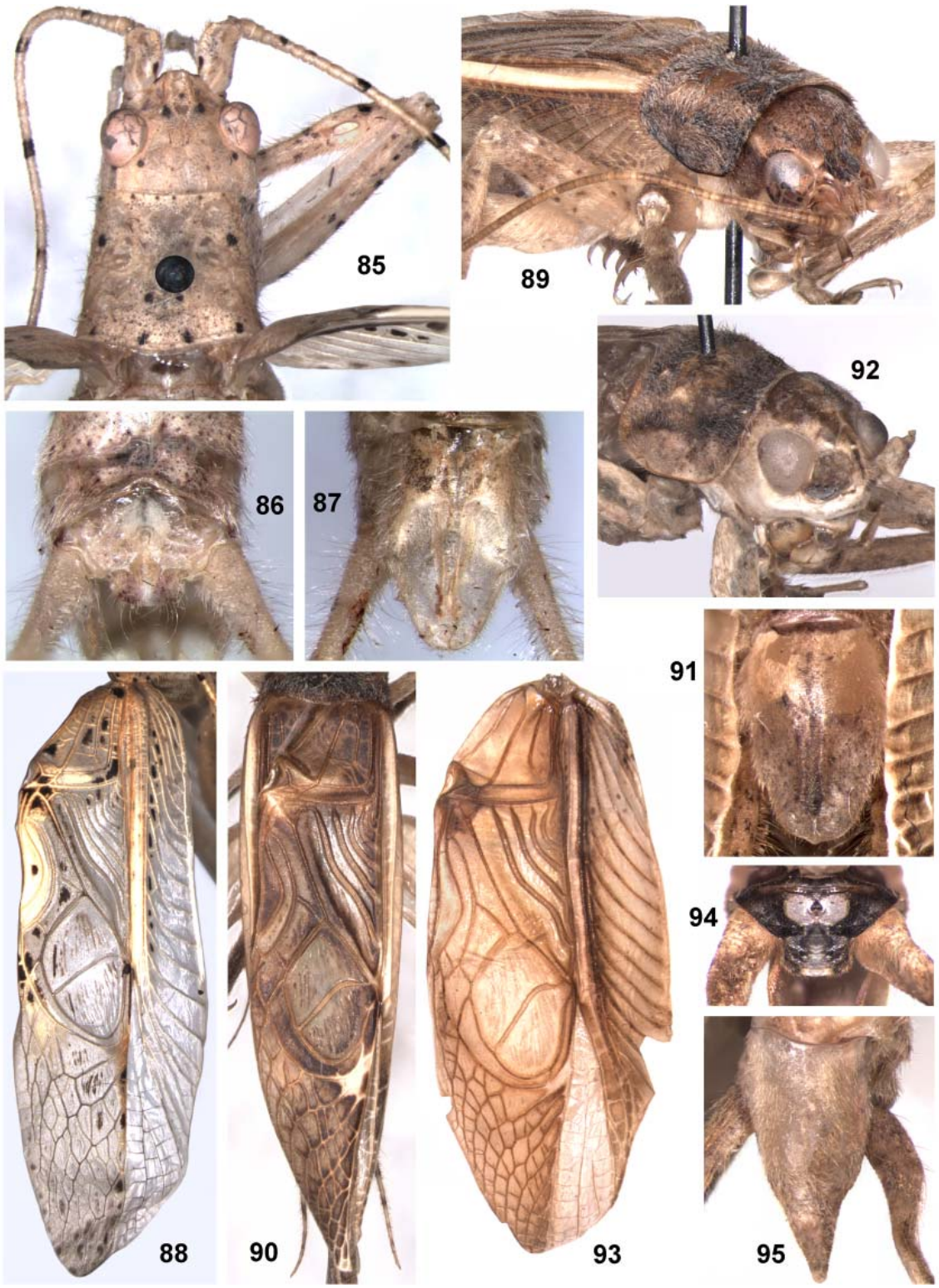
MATERIAL EXAMINED. Holotype ♂, **Philippines**, Luzon I., ~120 km NNE of Manila City, environs of Paraiso Camp (15º39′33″ N, 121º16′37″ E), 500–800 m, forest, at light, 10–19.II.2024, A. Gorochov, M. Omelko, I. Naumenko (ZIN). Paratype ♀, same island, ~60 km NWW of Manila City, environs of Bataan National Park on Natibi Mt (14º44′37″ N, 120º25′08″ E), 600–700 m, forest, at light, 19–21.II.2024, A. Gorochov, M. Omelko (ZIN).

DESCRIPTION. Male (holotype). Coloration and structure of body very similar to those of *V.* (*C.*) *robusta robusta* from Sulawesi I. but with following small differences: head light greyish brown with almost dark brown area between ocelli, greyish brown dorsum behind lateral ocelli and area on each gena behind eye as well as smaller spots on maxillary palpi and on epicranium between each eye and clypeus (Fig. 89); pronotum greyish brown with a pair of rather large light brown spots on middle part of disc as well as with poorly distinct lightish band along each lateral edge of disc and small areas on lateral lobes (Fig. 89); each tegmen with brownish grey marks on dorsal field, light yellowish humeral stripe and spot near (behind) mirror (Fig. 90), and light grey membranes of lateral field having rather dark parts between bases of Sc branches and proximal portion of Sc-R area as well as small spots in distal portion of this area; legs with sparse darkish dots and small greyish brown spots (latter spots more distinct in apical part of fore tibia and of hind femur as well as along ventral edges of middle and hind femora); anal plate also partly darkened, similar to that of nominotypical subspecies (see Gorochov & Tan [2014: fig. 25]); genital plate as in Fig. 91; genitalia distinguished from those of nominotypical subspecies only by ectoparameres slightly shorter and somewhat wider in profile as well as with apical parts less angularly curved, by formula insignificantly narrower and having somewhat longer posterolateral tongues, and by posterior parts of rami significantly thinner (Figs 96–98).

Female. General appearance as in male, but: body somewhat larger; dorsal tegminal field almost entirely brownish grey with small light spot at base; humeral stripe of tegmen barely less light, consisting of light yellowish longitudinal veins (Sc stem, R and M) and light grey membranes between them having dense whitish crossveins in proximal half of this stripe; rest of lateral tegminal field also with light grey membranes, barely darker Sc branches, as well as very small and sparse darker (greyish brown) spots and dots between proximal halves of these branches; anal plate light brown, lacking distinct semimembranous area; venation of tegmina similar to that of all females of this genus previously considered here. Genital plate as in Fig. 99; ovipositor very long (almost 1.4 times as long as hind femur), with drilling apex typical of *Varitrella* s.l.

Length in mm. Body: ♂ 18.3, ♀ 27; body with wings: ♂ 25.7, ♀ 33; pronotum: ♂ 3.5, ♀ 4.4; tegmina: ♂ 18.5; ♀ 23; hind femora: ♂ 13.5, ♀ 17; ovipositor 24.

COMPARISON. The new subspecies differs from the nominotypical one in more spotted coloration of head, pronotum, tegmina and legs (*vs* head with two pairs of darkened spots near lateral ocelli and on upper parts of antennal cavities only, pronotum and legs almost uniformly coloured, tegminal lateral field with only Sc-R area darkened), as well as in the above-mentioned small characters of the male genitalia.



Figs 85–95. *Varitrella*, male: 85–88 — *V.* (*Cantotrella*) *paraiso* **sp.n.**; 89–91 — *V.* (*C.*) *robusta luzoni* **subsp.n.**; 92–95 — *V.* (*C.*) *exculta* **sp.n.** Head with pronotum, fore leg and parts of spread tegmina from above (85); fore part of body from above/side and slightly in front (89, 92); anal plate (86) and its partial reconstruction (94) from above and slightly behind; genital plate from below (87, 91, 95); right tegmen (88, 93) and its dorsal field (90).

Рис. 85–95. *Varitrella*, самец: 85–88 — *V.* (*Cantotrella*) *paraiso* **sp.n.**; 89–91 — *V.* (*C.*) *robusta luzoni* **subsp.n.**; 92–95 — *V.* (*C.*) *exculta* **sp.n.** Голова с переднеспинкой, передней ногой и частями расправленных надкрылий сверху (85); передняя часть тела сверху/сбоку и слегка спереди (89, 92); анальная пластинка (86) и ее частичная реконструкция (94) сверху и слегка сзади; генитальная пластинка снизу (87, 91, 95); правое надкрылье (88, 93) и его дорсальная плоскость (90).

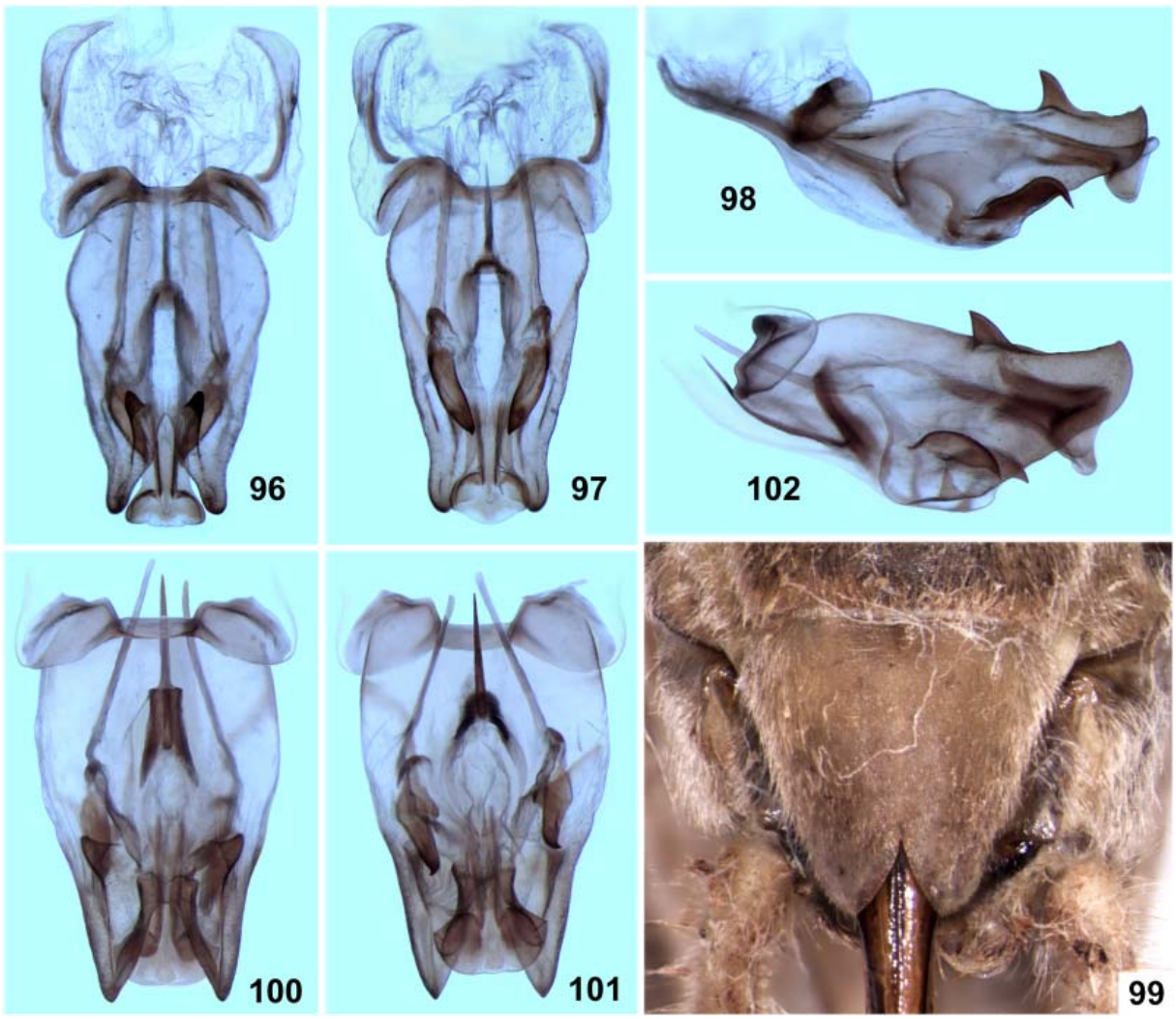
From *V.* (*C.*) *variabilis*, known only in Palawan I. and most similar to *V.* (*C.*) *robusta*, the new subspecies is distinguished by almost the same characters of body coloration and by the male genitalia with the following features: a somewhat longer posteromedian epiphallic notch, a wider anterior part of this notch, intermediate (between *V. r. robusta* and *V. variabilis*) in length and wider (in profile) ectoparameres, a distinctly wider and longer formula, a somewhat shorter anterior ribbon of this formula, and clearly thinner proximal parts of the rami.

ETYMOLOGY. The new subspecies is named after the Luzon Island where it was collected.

Varitrella (*Cantotrella*) *exculta* Gorochov, **sp.n.**
Figs 92–95, 100–102.

MATERIAL EXAMINED. Holotype ♂, **Philippines**, Mindanao I., ~150 km NNW of Dabaw City, environs of Dahilayan Adventure Park (8º11′38″ N, 124º51′39″ E), 1000–1500 m, forest, on leaf of bush at night, 2–9.II.2024 (collected as old nymph, imago 3.III.2024), A. Gorochov, M. Omelko, I. Naumenko (ZIN).

DESCRIPTION. Male (holotype). General appearance more or less similar to that of *V.* (*C.*) *robusta* and *V.* (*C.*) *variabilis*, but: coloration of head and pronotum slightly different, light greyish brown with greyish brown dorsum of head (except for rostral apical part before median ocellus, but this light part with darker narrow spot contacting with this ocellus) and upper half of pronotum having a pair of slightly lighter areas in middle part of disc and a pair of poorly distinct lightish stripes along lateral edges of disc (each lateral pronotal lobe with darker upper half and lighter lower one; Fig. 92); coloration of other body parts also more or less light greyish brown with barely darker majority of vens as well as a few spots on basal area of dorsal tegminal field and near plectrum, yellowish to whitish humeral stripe and spot near (behind) mirror, greyish brown stripe along Sc-R area in lateral tegminal field, sparse darkened spots on femora (including few rather small spots along ventral edge of hind femur), partly darkened fore and hind tibiae as well as fore tarsus (middle legs missing), and dark



Figs 96–102. *Varitrella*: 96–99 — *V.* (*C.*) *robusta luzoni* **subsp.n.**; 100–102 — *V.* (*C.*) *exculta* **sp.n.** Male genitalia from above (96, 100), from below (97, 101) and from side (98, 102); female genital plate from below (99).
Рис. 96–102. *Varitrella*: 96–99 — *V.* (*C.*) *robusta luzoni* **subsp.n.**; 100–102 — *V.* (*C.*) *exculta* **sp.n.** Гениталии самца сверху (96, 100), снизу (97, 101) и сбоку (98, 102); генитальная пластинка самки снизу (99).

grey anal plate having somewhat lighter as well as rather large and transverse (but partly interrupted in median part) semimembranous area (Fig. 93–95); anal and genital plates more or less as in Figs 94, 95 (these structures deformed and partly reconstructed). Genitalia with following features: epiphallus short, having dorsoapical processes moderately large and widely spaced, and posteromedian notch less deep than in *V. robusta* and *V. variabilis* (apical part of this notch narrowly rounded but not very narrow; Fig. 100); each ectoparamere very short and rather thick, having acute spine-like apical projection slightly curved downwards (Figs 101, 102); rachis short and thick, having strongly widened cup-like distal part and somewhat projected downwards ventrolateral lobules (Figs 101, 102); formula rather long and narrow, having truncately convex anterior part and rather narrow (but deep) posteromedian notch as well as very long and well sclerotized anterior ribbon (Fig. 101); endoparameral apodemes long but very thin (probably these apodemes and absent rami partially formed and not formed, respectively, in specimen that died almost during moult to imago).

Female unknown.

Length in mm. Body 15; body with wings 20; pronotum 3.2; tegmina 17; hind femora 12.

COMPARISON. The new species is similar to *V.* (*C.*) *sukau* from Borneo I. in very short ectoparameres, but it differs from the latter species in a slightly concave (not convex) dorsal edge of each apical lobe of the epiphallus and in acute apical parts of the ectoparameres. From all other similar congeners, the new species is distinguished by the ectoparameres entirely sclerotized as well as shorter and/or with distinctly less curved apical parts.

ETYMOLOGY. This species name is the Latin word "exculta" (raised, grown), because the holotype of this species was raised under artificial conditions.

Varitrella? *ocellata* Gorochov, **sp.n.**
Figs 69–71.

MATERIAL EXAMINED. Holotype ♀, **Philippines**, Luzon I., ~60 km NWW of Manila City, environs of Bataan National Park on Natibi Mt (14º44′37″ N, 120º25′08″ E), 600–700 m, forest, on leaf of bush at night, 19–21.II.2024, A. Gorochov, M. Omelko (ZIN).

DESCRIPTION. Female (holotype). Body medium-sized, similar in structure to other representatives of *Varitrella* s.l., but general coloration rather dark: head light brown with dark brown dorsum and a pair of small spots on anterolateral corners of clypeus, whitish ocelli, brown upper parts of genae (after eyes) and most part of each antennal flagellum (pedicel also brown, but flagellum with sparse and small light brown to yellowish spots) as well as fuzzy marks on scapes; pronotum dark brown with a pair of brown spots on middle part of disc and small marks on middle and posterior parts of lateral lobes (Fig. 69, 70); tegmina dark greyish brown with small yellowish basal spot on each humeral part, light brown venation of lateral fields and light greyish to whitish crossveins in these fields (Fig. 70); legs brown with almost dark brown most part of all tibiae and apical part of hind femur; abdomen (including anal and genital plates) as well as venter of pterothorax light greyish brown; ovipositor brown with dark brown apical part. Ocelli clearly larger than in other congeners; median ocellus distinctly smaller than lateral ones but almost twice as wide as space between this ocellus and lateral one; rostrum between antennal cavities almost as wide as scape (Fig. 69); pronotum slightly wider than long and somewhat narrowing to head; tegmina with longitudinal branches in dorsal field almost as in females of other congeners previously considered here, but crossveins in this field clearly irregular and rather dense, lateral field with Sc-R area having also irregular crossveins, Sc branches very numerous and oblique as well as with rather numerous and regular crossveins (Fig. 70); genital plate with moderately deep posteromedian notch having rounded apex (Fig. 71); ovipositor typical of *Varitrella* s.l. and approximately as long as hind femur.

Male unknown.

Length in mm. Body 21.6; body with wings 36; pronotum 3.8; tegmina 22.5; hind femora 16; ovipositor 15.5.

COMPARISON. The new species differs from all other congeners in the following combination of characters: a darker general coloration, larger ocelli (especially lateral ones; compare Figs 63 and 69), the genital plate with a rounded apex of its posteromedian notch, and the hind femur almost as long as ovipositor.

ETYMOLOGY. This species name is the Latin word "ocellata" (big-eyes, with big ocelli) due to a large size of the ocelli in the new species.

Acknowledgements. This study was performed in the frames of the state research project No. 125012901042-9 (Russian Federation).

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