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SYSTEMATICS OF THE AMERICAN KATYDIDS (ORTHOPTERA: TETTIGONIIDAE). COMMUNICATION 6

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ABSTRACT

The genera *Topana* Walker, 1869, *Pelecynotum* Piza, 1967, *Grammadera* Brunner-Wattenwyl, 1878, *Ceraia* Brunner-Wattenwyl, 1891 and *Anisophya* Karabag, 1960 (Phaneropterinae) are considered. *Topana*, as a part of the subtribe Pycnopalpina Cadena-Castañeda, 2014, is tentatively included in the tribe Dysoniini. *Pelecynotum* is put in the subtribe Viadanina Cadena-Castañeda, 2012 (Phaneropterini) which is synonymized with the former subtribal name Pelecynotina Cadena-Castañeda, 2015, syn. nov. Eleven new taxa of this subfamily are described: *Protopana* subgen. nov., *T. primitiva* sp. nov., *T. angulata* sp. nov., *T. truncata* sp. nov.; *T. media convoluta* subsp. nov., *P. comicum* sp. nov., *G. tricaudata* sp. nov., *G. hastata peruana* subsp. nov., *C. legitima divulsa* subsp. nov.; *C. amboro* sp. nov., *A. bolivia* sp. nov. For *G. steinbachi* Bruner, 1915 and *A. melanochloris* (Rehn, 1911), some new data are given.

Key words: America, *Anisophya*, *Ceraia*, *Grammadera*, new taxa, *Pelecynotum*, Phaneropterinae, Tettigoniidae, *Topana*

СИСТЕМАТИКА АМЕРИКАНСКИХ КУЗНЕЧИКОВ (ОРТНОПТЕРА: ТЕТТИГОНИИДАЕ). СООБЩЕНИЕ 6

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РЕЗЮМЕ

Рассмотрены роды *Topana* Walker, 1869, *Pelecynotum* Piza, 1967, *Grammadera* Brunner-Wattenwyl, 1878, *Ceraia* Brunner-Wattenwyl, 1891 и *Anisophya* Karabag, 1960 (Phaneropterinae). *Topana*, как часть подтрибы Руснопальпина Cadena-Castañeda, 2014, условно включен в трибу Dysoniini. *Pelecynotum* помещен в подтрибу Viadanina Cadena-Castañeda, 2012 (Phaneropterini), которая синонимизирована с бывшим подтрибальным названием Pelecynotina Cadena-Castañeda, 2015, syn. nov. Описаны одиннадцать новых таксонов этого подсемейства: *Protopana* subgen. nov., *T. primitiva* sp. nov., *T. angulata* sp. nov., *T. truncata* sp. nov.; *T. media convoluta* subsp. nov., *P. comicum* sp. nov., *G. tricaudata* sp. nov., *G. hastata peruana* subsp. nov., *C. legitima divulsa* subsp. nov.; *C. amboro* sp. nov., *A. bolivia* sp. nov. Приведены некоторые новые данные для *G. steinbachi* Bruner, 1915 и *A. melanochloris* (Rehn, 1911).

Ключевые слова: Америка, *Anisophya*, *Ceraia*, *Grammadera*, новые таксоны, *Pelecynotum*, Phaneropterinae, Tettigoniidae, *Topana*

INTRODUCTION

This paper is the sixth communication in the series of publications on the American Tettigoniidae. The previous communications of this series (Gorochov 2012a, 2012b, 2014a, 2014b, 2015) were devoted to some genera from the subfamilies Plemiinae, Phaneropterinae, Meconematinae and Conocephalinae; one tribe, one genus, two subgenera, 56 species and subspecies were described in these communications as taxa new for science. In the special paper on the subtribe Viadanina (Phaneropterinae: Phaneropterini) recently published by Gorochov and Cadena-Castañeda (2015), the volume, position and diagnostic characters of this subtribe were considered, as well as one new subgenus and 41 new species and subspecies were described. The latter paper gave a start to understanding the systematic position of some groups of Neotropical Phaneropterinae related to the genera *Viadana* Walker, 1869 and *Anaulacomera* Stål, 1873. Here, one genus of Phaneropterinae tentatively included in the tribe Dysoniini, two genera belonging to the tribe Phaneropterini, one genus of Scudderiini (Phaneropterinae), and an additional genus with unclear tribal position within Phaneropterinae are considered.

MATERIAL AND METHODS

Most of the specimens studied were collected in tropical rainforests. Many of these specimens were collected at light, but some of them, on leaves of trees and bushes during the night work with a flashlight. This material (including types) is deposited at the Zoological Institute of the Russian Academy of Sciences, Saint Petersburg. The specimens are dry and pinned. The photographs of their morphological structures were made with a Leica M216 stereomicroscope.

SYSTEMATICS

Subfamily Phaneropterinae Burmeister, 1838

Tribe Dysoniini Rehn, 1950

Note. During long time, this tribe was considered as consisting of several American genera only (Rehn 1950; Cadena-Castañeda 2011, 2013a, b; Gorochov 2012a, b; Cadena-Castañeda and Gorochov 2012,

2013); *Markia* White, 1862 (*Lichenodraculus* Braun, 2011 is probably a synonym of *Markia* s. str.; it was separated from the latter in the absence of postero-medial pronotal process, but this process as well as anteromedial one are strongly varied in this genus: for example, the first process is large in *M. erinaceus* Cadena-Castañeda et Gorochov, 2013, medium-sized in *M. sarriai* Cadena-Castañeda, 2013, small in *L. holgeri* Cadena-Castañeda, 2013, and absent in *L. matti* Braun, 2011); *Machima* Brunner-Wattenwyl, 1878; *Machimoides* Rehn, 1950; *Apolinaria* Rehn, 1950 (all these genera may be subgenera of *Markia* s. l. and are united in “Grupo *Markia*”: Gorochov 2012a; Cadena-Castañeda 2013b); *Yungasacris* Rehn, 1950; *Quiva* Hebard, 1926; *Dysonia* White, 1862; *Paraphidnia* Giglio-Tos, 1898; *Lichenomorphus* Cadena-Castañeda, 2011 (*Lichenodentix* Cadena-Castañeda, 2011 is possibly only a subgenus of *Lichenomorphus*). These genera have a characteristic posteromedial denticle or spine on the dorsal part of upper rostral tubercle of head (this denticle or spine is located after the lateral ocelli or almost above them but sometimes strongly reduced and indistinct), the styles of male genital plate distinct or very small but not fused with this plate, and male cerci more or less bifurcated. Here, these genera are put in the subtribe Dysoniina. Subtribal position of the genus *Hammatofera* Brunner-Wattenwyl, 1878, considered as another member of Dysoniini in the Orthoptera Species File (Eades et al. 2015), is unclear.

The above-mentioned characteristic posteromedial denticle or spine on the upper rostral tubercle is also presented in some representatives of the subtribe Pycnopalpina Cadena-Castañeda, 2014 from the genera *Pycnopalpa* Audinet-Serville, 1838, *Topana* Walker, 1869 and *Theia* Brunner-Wattenwyl, 1891 (see Gorochov 2015). Thus, Pycnopalpina may be as a member of the tribe Phaneropterini Burmeister, 1838 (because its male genital plate is fused with styles but not articulated with them) as a member of Dysoniini. It is a reason that here, this subtribe is tentatively included in the latter tribe, because we are still rather far from understanding the tribal classification of Phaneropterinae, but we can group related genera in several small subtribes which will be able to help us in the elaboration of such tribal classification in the future.

Additional difficulties in the classification of Dysoniini come from the Old World phaneropterines, as some of them look very similar to Dysoniina in the

general appearance. One of such genera was included in the monotypic subtribe Trachyzulphina Gorochov, 2014 tentatively considered by me as a possible member of Dysoniini. However, this opinion has been criticized by H. Braun (Eades et al. 2015): he wrote that Trachyzulphina “should possibly be valid tribe or genus group under Phaneropterinae, but almost certainly unrelated to Neotropical Dysoniini with convergent lichen mimicry”, and he synonymized this subtribe with the generic group Eurypalpa Brunner-Wattenwyl, 1878. This criticism seems to me illogical for the following reasons: [1] I wrote that Trachyzulphina may be related to Dysoniini as well as to have a convergent similarity (Gorochov 2014c: p. 2); [2] if Braun considers that Trachyzulphina may be a valid tribe, what is a reason for its synonymization with Eurypalpa, containing one or two genera (*Zulpha* Walker, 1870 = *Eurypalpa* Brunner-Wattenwyl, 1878 and possibly *Ceratopompa* Karsch, 1890) very dissimilar to Trachyzulphina in some important taxonomical characters, but not for its preservation as a subtribe or generic group of unclear tribal position? Another problem is the presence of some African representatives (*Gelotopoa* Brunner-Wattenwyl, 1891) included now in a different tribe but also very similar to Dysoniina and Trachyzulphina.

Subtribe Pycnopalpina Cadena-Castañeda, 2014

Note. This subtribe includes the following genera: *Pycnopalpa* Audinet-Serville, 1838; *Hetaira* Brunner-Wattenwyl, 1891; *Topana* Walker, 1869; and probably *Theia* Brunner-Wattenwyl, 1891. The latter genus is considered as a separate subtribe related to Pycnopalpina and divided into a few genera by Cadena-Castañeda (2014); however, I think that it may be more reasonable to tract them as subgenera of the same genus and to include this genus in Pycnopalpina (Gorochov 2015). Position of the genus *Montezumina* Hebard, 1925 also included in Pycnopalpina by Cadena-Castañeda (2015) seems to me unclear and requests additional study.

Genus *Topana* Walker, 1869

Note. The genus (Figs 1–44) is similar to *Hetaira* but distinguished from it by the pronotal disc lacking low and narrow keels along the lateral and posterior edges. Male abdominal apex of *Topana* is rather

diverse and presents two variants which allow us to divide it into two subgenera (see the key to *Topana* subgenera below).

1. Face of epicranium lacking distinct punctures (Fig. 1). Last abdominal tergite of male simple, with almost truncate or barely sinuate posterodorsal edge and without any posteromedian lobe; male epiproct completely exposed, not partly covered by lobe of last tergite in caudal view (Figs 22, 24) subgenus ***Protopana* subgen. nov.** [Included species: *Topana primitiva* sp. nov. (type species); possibly *T. aquilari* Piza, 1972.]
- Face of epicranium having numerous, distinct and darkened punctures (Figs 4, 7, 10). Last abdominal tergite of male with rather long posteromedian lobe strongly curved downwards in its basal part and partly covering epiproct in caudal view (Figs 27, 29, 32, 34, 37, 39) subgenus ***Topana* s. str.** (= *Plagioptera* Stål, 1873) [Included species: *T. media* Walker, 1869 (type species of *Topana*); *Plagioptera cincticornis* Stål, 1873 (type species of *Plagioptera*); *T. angulata* sp. nov.; *T. truncata* sp. nov.]

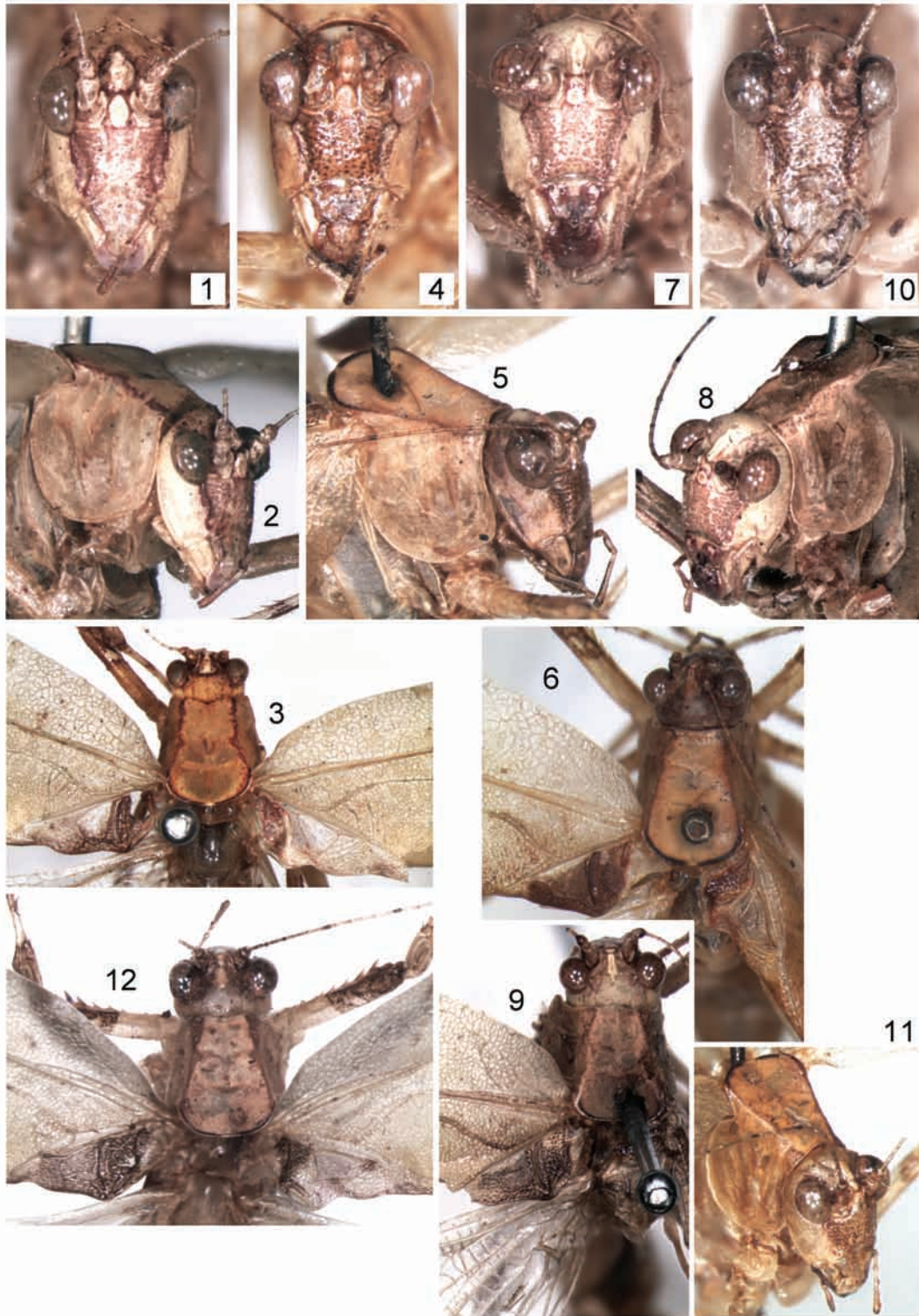
Two species probably belonging to the genus *Topana* (*T. tuberculata* Brunner-Wattenwyl, 1878; *T. dentata* Vignon, 1930) were described from females only, and their subgeneric position is unclear; *T. postica* Walker, 1869 and *Pycnopalpa rubiginosa* Bruner, 1915 questionably synonymized with *T. postica* by Vignon (1931) are members of the genus *Hetaira* Brunner-Wattenwyl, 1891 (Gorochov 2014a), but they continue to be considered as two separate species of the genus *Topana* in the Orthoptera Species File (Eades et al. 2015).

***Topana (Protopana) primitiva* sp. nov.** (Figs 1–3, 13, 14, 21–25)

Etymology. This species name is the Latin word “primitiva” (primitive) given in connection with a simple (primitive) structure of the male last abdominal tergite.

Type material. *Holotype* – male, BRAZIL: Rio Grande do Sul State, “*Plagioptera cincticornis* Stål”, “Brunner v. W. det.”

Description. *Male.* Body medium-sized for this genus. Colouration yellowish with following marks: upper rostral tubercle and lateral ocelli as well as lower rostral tubercle and median ocellus whitish; wide median band on face, running from antennal cavities to labrum and embracing also both above-mentioned whitish areas above these cavities, red-



Figs 1–12. *Topana* Walk., male: 1–3 – *T. (Protopana) primitiva* sp. nov.; 4–6 – *T. (Topana) angulata* sp. nov.; 7–9 – *T. (T.) truncata* sp. nov.; 10–12 – *T. (T.) media convoluta* subsp. nov. Head in front (1, 4, 7, 10); head with pronotum from side and slightly anterodorsally (2, 5, 8, 11); head with pronotum and tegminal bases from above (3, 6, 9, 12).

dish (this band also fused with a pair of short reddish stripes along medial edges of eyes); antenna with very small brownish spots on two proximal segments as well as with sparse and rather small brown spots on flagellum; most part of maxillary palpus rose (Figs 1, 2); pronotal disc with narrow and indistinctly interrupted reddish stripe along each lateral edge, and with narrow darker (brown) stripe along posterior edge (latter stripe interrupted in median part; Figs 2, 3); tegmen and distal part of costal lobe of hind wing greenish with light brown and semitransparent areas on tegminal stridulatory apparatus as well as with rather short row of small brown spots in both wings along distal third of costal edge (but apical part of tegmen without darkenings, and most part of hind wing transparent; Figs 3, 13, 14); fore femur with light brown distal half of inner surface having also two whitish spots; middle and hind femora with reddish apical part of outer surface and ventral spines; tibiae with reddish spots (fore tibia with these spots small and located in both distal and proximal halves; in middle tibia, these spots situated similarly but proximal ones rather large; in hind tibia, they medium-sized, located in distal half only, and rather dark on inner surface). Head with upper and lower rostral tubercles short, narrow and separated from each other by short (narrow) but rather deep transverse fold; apical parts of these tubercles narrowly rounded; dorsum of upper rostral tubercle with slight (barely visible) median groove; dorsal edge of this tubercle barely sinuate in profile but with very small and weakly distinct median denticle behind whitish area (Figs 1, 2). Pronotal disc flat, having short angular notch in anterior part as well as somewhat widened and widely rounded hind lobe, and without any carina along each lateral edge (i. e. between disc and lateral lobes of pronotum; Figs 2, 3). Tegmen rather wide, with costal and anal edges most convex in distal half, with rounded apex, with not widened area between two distal branches of MA, with very narrow most part of dorsal field, and with widened proximal part of this field having stridulatory apparatus as in Figs 3, 13; hind wing with greenish distal part rather short and wide (Fig. 14). Last abdominal tergite with almost straight (barely notched) posterodorsal edge (Figs 21, 22, 24); epiproct rather small, semimembranous, almost angular in distal half and situated in vertical plane (Figs 22, 24); cercus rather thick, medially curved, with barely widened but flattened subapical part, and with angular api-

cal part having acute denticle at apex (Figs 21–23); genital plate gradually narrowing to widely truncate apex having a pair of small lateral lobules (Figs 23, 25); genitalia membranous.

Female. Unknown.

Length (mm). Body 13; body with wings 26; pronotum 3.3; tegmina 20; hind femora 13.3.

Comparison. The new species collected in the most southern state of Brazil is similar to *T. aquilari* described from São Paulo State of this country, but it differs from the latter species in the upper rostral tubercle with a less distinct (less deep) median groove on its dorsum, exposed (greenish) part of hind wings slightly shorter and narrower, dark spots along the costal edge of tegmina and of hind wings less numerous, and row from these spots on the tegmina shorter. I cannot exclude that these taxa may be only two subspecies of the same species. From *T. dentata* (Brazil, Espírito Santo State) and *T. tuberculata* (Brazil, Bahia State), the new species is distinguished by a smaller posteromedian denticle of the upper rostral tubercle, almost uniform (not weakly spotted) coloration of the tegminal lateral field and (from *T. tuberculata* only) the presence of darker stripes on the pronotal disc along its lateral and posterior edges.

Remark. Also, it is necessary to note that the male from unknown locality determined as *T. aquilari* by H. Braun and illustrated in the Orthoptera Species File (Eades et al. 2015) does not belong to this species and probably to this subgenus, because it has distinct dark punctures on the face of epicranium. I do not recommend for the authors of this catalogue to include such poorly determined photographs in its articles about species or subspecies.

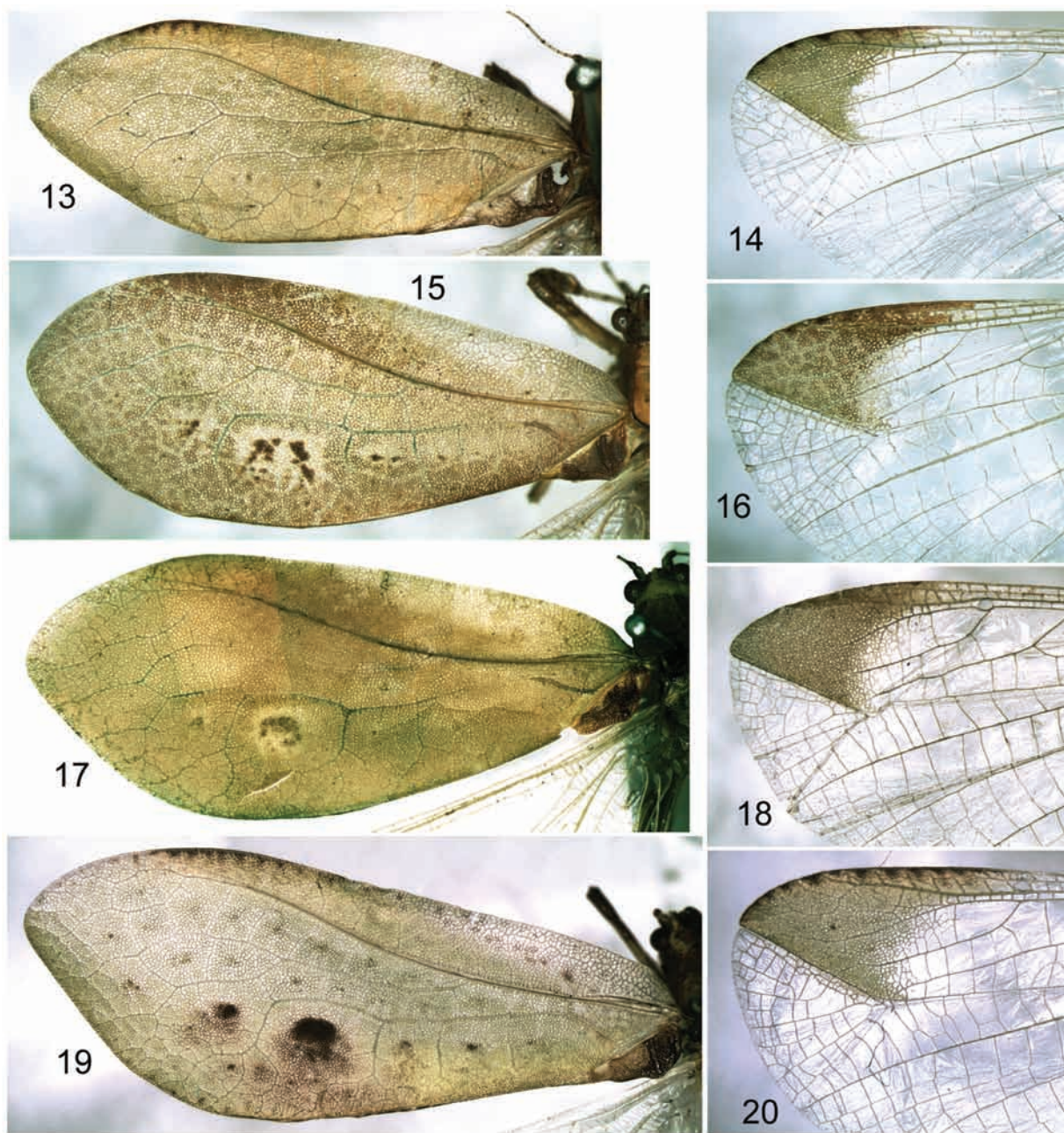
***Topana (Topana) angulata* sp. nov.**

(Figs 4–6, 15, 16, 26–30)

Etymology. This species name is the Latin word “angulata” (angulate) given due to the shape of the male last tergite posteromedian lobe.

Type material. *Holotype* – male, BRAZIL: Minas Gerais State, “Minas Geraes Brasil 1897 ex coll Fruhstorfer”, “104–98”.

Description. *Male.* General appearance more or less similar to that of *T. primitiva*. However, coloration with following differences: region of rostral tubercles yellowish to light brown; dorsum of head and wide median band on face light brown to brown as well as with numerous distinct dark brown punctures on this



Figs 13–20. *Topana* Walk., male: 13, 14 – *T. (Protopana) primitiva* sp. nov.; 15, 16 – *T. (Topana) angulata* sp. nov.; 17, 18 – *T. (T.) truncata* sp. nov.; 19, 20 – *T. (T.) media convoluta* subsp. nov. Left tegmen (13, 15, 17, 19); distal part of hind wing (14, 16, 18, 20).

band; several proximal segments of antenna and most part of maxillary palpus light brown; pronotal disc with almost indistinct brownish lines along lateral edges and with very distinct blackish stripe along posterior edge (this stripe also interrupted in median part and with a pair of short additional dark stripes

along posterolateral edges of disc; Figs 4–6); tegmina with almost completely darkened (brown) stridulatory apparatus of left tegmen, with two slightly darkened (light brown) areas (along most part of distal half of costal edge, and along proximal part of anal edge after stridulatory apparatus), and with a few

small brown spots between distal branches of MA and between distal parts of RS and MA (Figs 6, 15); distal part of costal lobe of hind wings with numerous small and almost light brown spots situated on all areas of this part (Fig. 16); darkenings on legs as in *T. primitiva* but light brown to brown, consisting of groups of dots on fore and middle femora, and without whitish marks on fore femur; cercus with brown subapical part and almost dark brown more proximal area located on ventral surface (Figs 26–28). Structure of body parts distinguished from that of *T. primitiva* by the following characters: upper rostral tubercle of head slightly longer (with barely projecting apex insignificantly curved upwards) and without any denticle behind this tubercle (Figs 4, 5); hind lobe of pronotum slightly longer and less widened (Figs 5, 6); tegmina with area between two distal branches of MA much wider and with stridulatory apparatus as in Figs 6, 15 (somewhat widened area of dorsal field near distal edge of mirror clearly smaller); greenish area of hind wings somewhat longer (Fig. 16); last abdominal tergite with wide and rather long angular lobe directed downwards (Figs 27, 29); cercus elongately conical but distinctly curved medially and almost gradually narrowing to spine-like apex (Figs 26–28); genital plate with clearly shorter posterolateral lobules (Figs 28, 30).

Female. Unknown.

Length (mm). Body 13; body with wings 29; pronotum 3.5; tegmina 21; hind femora 13.7.

Comparison. The new species is distinguished from *T. cincticornis* (type locality: Brazil without more exact data) by more spotted wings, a darker stridulatory apparatus in the left tegmen, longer stridulatory vein and wider mirror in this tegmen, narrower and almost straight distal part of the male cercus, and less angular notch of the male genital plate; from *T. media* (also Brazil without more exact data), by the presence of several small dark spots (instead one large dark spot) between the distal branches of tegminal MA, an angular shape of the posteromedian lobe of last tergite in male, and somewhat thinner distal part of the male cercus; from *T. dentata* and *T. tuberculata*, by the absence of any posteromedian denticle on the upper rostral tubercle, presence of small darkened spots between the branches of tegminal MA and between the tegminal RS and MA, as well as (from *T. tuberculata* only) by the presence of distinct blackish stripes along the posterior edge of pronotal disc.

***Topana (Topana) truncata* sp. nov.**
(Figs 7–9, 17, 18, 31–35)

Etymology. This species name is the Latin word “truncata” (truncate) given due to the shape of the male last tergite posteromedian lobe.

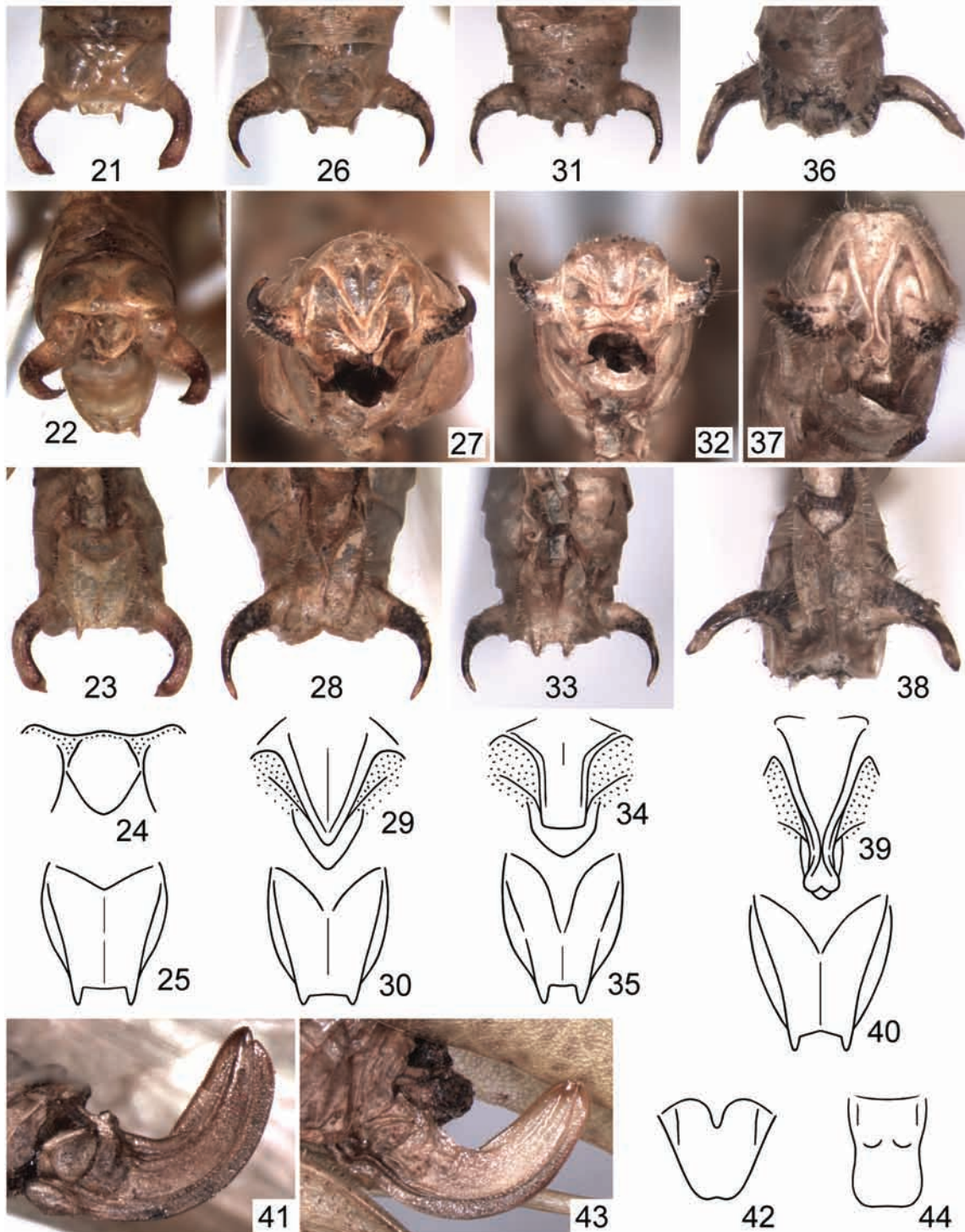
Type material. *Holotype* – male, BRAZIL: Rio de Janeiro State, “R. Janeiro Mr. H. de Sauss.,” “№ 131–97,” “*Plagioptera cincticornis* Stål,” “Saussure det.”

Description. *Male.* General appearance similar to that of *T. angulata* but distinguished by following features: dorsum of head yellowish with a pair of reddish stripes running along medial edges of eyes from medial parts of antennal cavities to hind part of vertex; region of rostral tubercles yellowish-whitish (but median ocellus outlined by red ring); wide median band on face reddish with numerous brown punctures; clypeus and labrum almost completely dark red; proximal antennal segments yellowish with reddish marks (Figs 7, 8); pronotum with thinner and less distinct dark (brown) stripes along posterior edge of disc (Figs 8, 9); tegmina with stridulatory apparatus on left tegmen having yellowish areas at base and in distal part, and with lateral field having two light brownish grey darkenings only (larger darkening located between two distal branches of MA, and smaller one situated between distal parts of RS and MA; Figs 9, 17); hind wings with almost uniformly greenish distal part of costal lobe (Fig. 18); upper rostral tubercle with more distinct (deeper) median groove on dorsum; hind lobe of pronotum intermediate between those of *T. primitiva* and *T. angulata* in shape (Figs 7–9); tegmina with barely narrower apical part and somewhat shorter stridulatory vein of left tegmen (Figs 9, 17); hind wings with slightly less convex subapical part of costal edge (Fig. 18); last abdominal tergite with posteromedian lobe narrower at base and having rather widely truncate apex (Figs 32, 34); cercus almost indistinguishable from that of *T. angulata* in shape and colouration but with barely thinner middle part (for comparison see Figs 26, 28 and 31, 33); genital plate with somewhat narrower apical notch and longer (almost as in *T. primitiva*) posterolateral lobules (Figs 33, 35).

Female. Unknown.

Length (mm). Body 13.5; body with wings 28; pronotum 3; tegmina 22; hind femora 13.

Comparison. The new species differs from *T. angulata* in a shorter stridulatory vein of the left tegmen, narrower base of the male last tergite postero-



Figs 21–44. *Topana* Walk.: 21–25 – *T. (Protopana) primitiva* sp. nov.; 26–30 – *T. (Topana) angulata* sp. nov.; 31–35 – *T. (T.) truncata* sp. nov.; 36–40 – *T. (T.) media convoluta* subsp. nov.; 41, 42 – *T.* sp. from Brazil without more exact data; 43, 44 – *T.* sp. from Espírito Santo State in Brazil. Male abdominal apex from above (21, 26, 31, 36), from behind (22, 27, 32, 37) and from below (23, 28, 33, 38); scheme of posteromedian part of last tergite with epiproct in male, posterior view (24, 29, 34, 39); male genital plate from below, schematically (25, 30, 35, 40); ovipositor from side (41, 43); female genital plate from below, schematically (42, 44).

median lobe, truncate (not angular) apex of this lobe, barely thinner middle part of the male cercus, and the above-mentioned (in the description) characters of male genital plate; from *T. media* and *T. cincticornis*, in the same characters of male last tergite and a thinner distal part of the male cercus; from *T. dentata* and *T. tuberculata*, in the absence of any posteromedian denticle on the upper rostral tubercle, presence of a single darkish spot between the distal branches of tegminal RA and (from *T. tuberculata* only) presence of a darkened stripes along the posterior edge of pronotal disc.

***Topana (Topana) media convoluta* subsp. nov.**

(Figs 10–12, 19, 20, 36–40)

Etymology. This subspecies name is the Latin word “convoluta” (convoluted).

Type material. *Holotype* – male, BRAZIL: Espírito Santo State, “Espírito-Santo Brasil ex coll. Fruhstorfer”, “104–98”, “*Plagioptera cincticornis* (N. 58)”. *Paratype* – male, same data as for holotype but without numbers.

Description. *Male* (holotype). General appearance similar to that of *T. angulata* and *T. truncata* but with followings features: colouration of head more similar to that of *T. angulata*; pronotum with distinct brown stripes along anterior halves of lateral edges of disc and with intermediate dark stripe along hind edge of disc (almost blackish as in *T. angulata*, and narrow approximately as in *T. truncata*); tegmina somewhat longer than in these species and with darker (brown) spots situated as in *T. truncata* but having also small additional darkened spots between other branches of MA and along costal edge (latter costal spots more or less similar to those of *T. primitiva*; Figs 10–12, 19); hind wings with greenish distal area similar to that of *T. angulata* in shape but having small darkened spots along costal edge only (Fig. 20); last abdominal tergite with posteromedian lobe very long and slightly bilobate at apex; proximal half of this lobe narrower than in *T. angulata* and wider than in *T. truncata* as well as strongly concave posteriorly (dorsally); distal half of this lobe convoluted (semitubular, almost tubular) but with wider and almost not convoluted apical part (Figs 37, 39); cercus with distal half thicker than in *T. angulata* and *T. truncata* but narrower than in *T. primitiva*; this cercal half almost straight and with conical apical part having short small hook at apex (Figs 36, 38); genital plate as in *T. primitiva* but with

slightly angular posteromedian notch (Figs 38, 40).

Variation. Paratype with dorsum of head lighter, approximately as in *T. truncata* in colouration; its cercus lacking any darkening on dorsal surface.

Female. Unknown.

Length (mm). Body 12–14; body with wings 30–31; pronotum 3.1–3.2; tegmina 23–23.5; hind femora 13.2.

Comparison. The new subspecies differs from *T. m. media* in the presence of small dark spots along the costal edge in tegmina and in hind wings, a clearly narrower and more concave proximal part of the male last tergite posteromedian lobe, and more angularly curved (less arcuate) male cerci; from *T. cincticornis*, *T. angulata* and *T. truncata*, in a convoluted structure of the male last tergite posteromedian lobe and bilobated apical part of this lobe; and from *T. dentata* and *T. tuberculata*, in the absence of any posteromedian denticle on the upper rostral tubercle or near (behind) it.

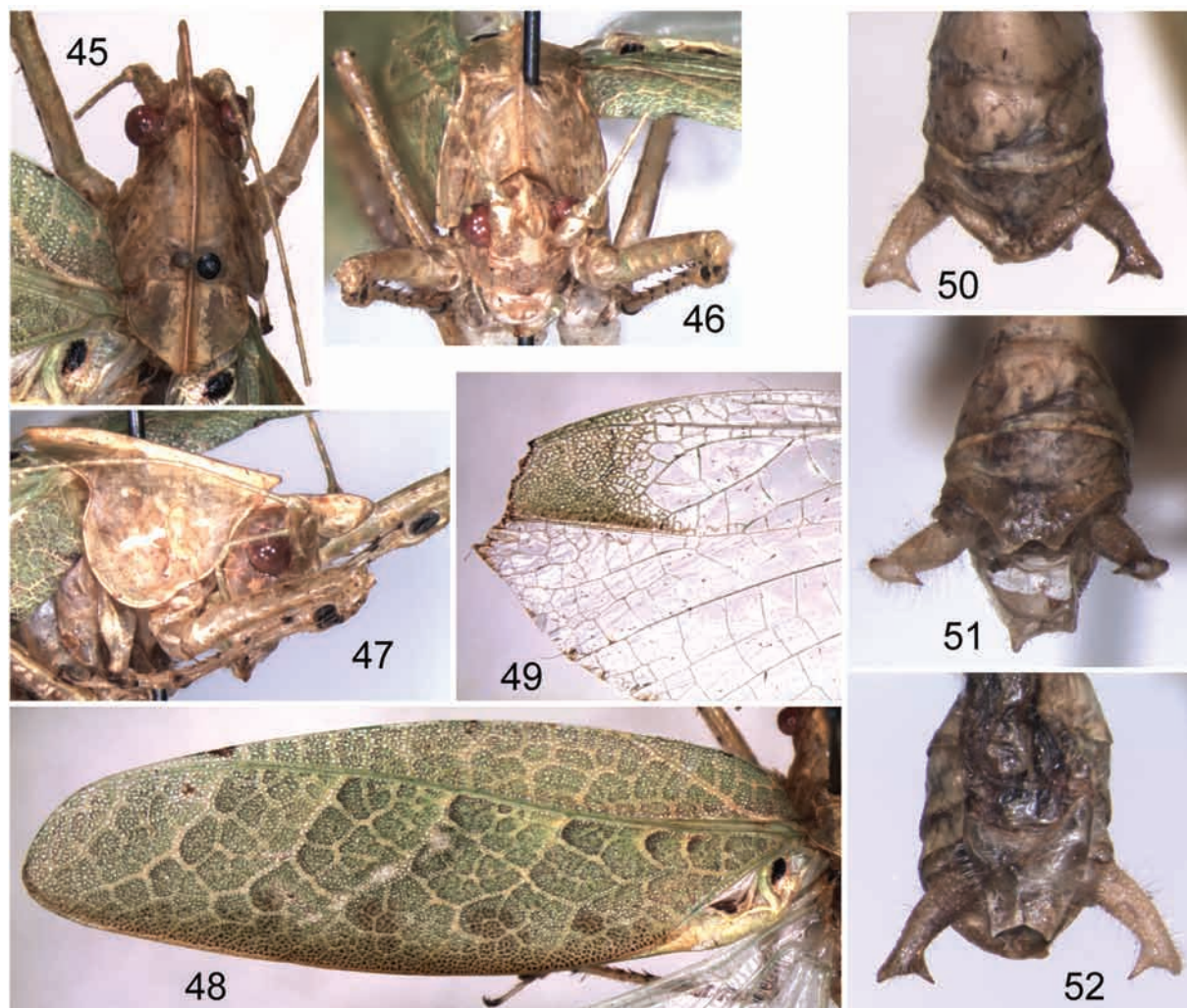
Tribe Phaneropterini Burmeister, 1838

Subtribe Viadanina Cadena-Castañeda, 2012

= *Pelecynotina* Cadena-Castaneda, 2015, syn. nov.

Genus *Pelecynotum* Piza, 1967

Note. This genus was described for a single species (*P. cristatum* Piza, 1967) with unclear systematic position inside Phaneropterinae (Piza 1967; Eades et al. 2015). Gorochov and Cadena-Castañeda (2015) did not include *Pelecynotum* in the subtribe Viadanina; moreover, Cadena-Castañeda (2015) created the monotypical subtribe *Pelecynotina* for this genus. However, *Pelecynotum* almost undoubtedly belongs to Viadanina, because it has the upper rostral tubercle of head very narrow (with a vertically lamellar anterior half; Figs 45, 47), tegmina with all the RS branches starting from RA (not from their general base; Fig. 48), and male abdominal apex low-specialized but with the styles of genital plate fused with this plate and looking as more or less angular projections or lobules (Figs 51, 52). From all the other genera of this subtribe, *Pelecynotum* is distinguished by a rather high median keel on the head dorsum as well as on the pronotal disc, and almost angular (triangular) transverse section of the anterior half of pronotum (Figs 45–47); from *Viadana* Walker,



Figs 45–52. *Pelecynotum comicum* sp. nov., male: 45–47 – head with pronotum from above (45), in front (46), and from side (47); 48 – left tegmen; 49 – distal part of hind wing; 50–52 – abdominal apex from above (50), from above/behind (51), and from below (52).

1869 and *Bolivariola* Uvarov, 1939, also by a long and high upper rostral tubercle significantly projecting before the antennal scapes (Figs 45, 47); and from *Tomeophera* Brunner-Wattenwyl, 1979 and *Agennis* Brunner-Wattenwyl, 1891, by obliquely transverse (not almost parallel to anal edge of tegmen) branches of tegminal RS (Fig. 48).

***Pelecynotum comicum* sp. nov.**
(Figs 45–52)

Etymology. This species name is the Latin word “comicum” (comical) originating from a Greek root.

Type material. *Holotype* – male, PERU: Cusco Department, “7 km NE Mandor”, 13°18.7′S, 70°49.5′W, 890 m, 1–3 December 2010, V. Sinyaev, S. Sinyaeva, Yu. Bezverkhov.

Description. *Male.* Body medium-sized for Viadanina. Colouration yellowish with: green tegminal lateral field having yellowish veins and some veinlets as well as brownish grey numerous dots near anal edge and many veinlets in rest part of this field; light green tergminal dorsal field having dark brown spot on basal part of stridulatory apparatus, almost transparent sound-producing membranes of this apparatus, and brown marks on these membranes in only left

(upper) tegmen; transparent hind wings having green apical part of costal lobe and greenish venation; light green antennal pedicel and proximal part of flagellum (but with yellowish apical part of each segment) as well as most part of all palpi; dark brown to brown tympanal membranes and rather numerous small spots on fore and middle tibiae as well as on femur and tibia of hind leg; darkened posterolateral parts of third segment and distal part of fourth segment in all tarsi; and slight greenish-brownish tinge on rest of body parts (Figs 45–52). Head with rather high median keel on dorsum fused with high and vertically lamellar upper rostral tubercle; this tubercle very long, distinctly projecting before antennal scapes, with roundly angular (in profile) apical part, and with strongly convex ventral edge situated before antennal cavities (short part of this tubercle near these cavities narrowed in profile; Figs 45, 47); fore part of epicranium under this tubercle most convex near ventral edges of antennal cavities; lower rostral tubercle undeveloped (it practically changed into sloping median convexity between upper halves of antennal cavities; this convexity somewhat narrowing to upper rostral tubercle and almost straight in profile; Figs 46, 47). Pronotum with rather high median keel on disc, inclined lateral parts of anterior pronotal half, more or less horizontally flattened posterior third of disc, and with lateral lobes and humeral notches as in Figs 45–47. Tegmina weakly widened (more or less oblong-oval), with short and strongly curved MA, with 4–5 obliquely transverse RS branches, cellular rest venation of lateral field (except stems of Sc and R as well as additional pseudocostal vein), and stridulatory apparatus as in Fig. 48; hind wings distinctly protruding behind tegminal apices and with apical part similar to that of *Viadana* (Fig. 49). Abdominal apex with large (but not long) angular posteromedian lobe of last tergite having shallow and roundly angular notch at apex; each cercus short, straight, cylindrical but slightly thinner in subapical part, and with somewhat inflate apical part having two angular spinules (one medial and almost conical; one lateral, barely hooked and directed backwards-upwards); genital plate short, slightly narrowing to widely notched apex (this notch shallow and almost angular), and with distinct and almost angular posterolateral lobules (Figs 50–52); genitalia membranous.

Female. Unknown.

Length (mm). Body 16; body with wings 34; pronotum 6; tegmina 25; hind femora 14.8.

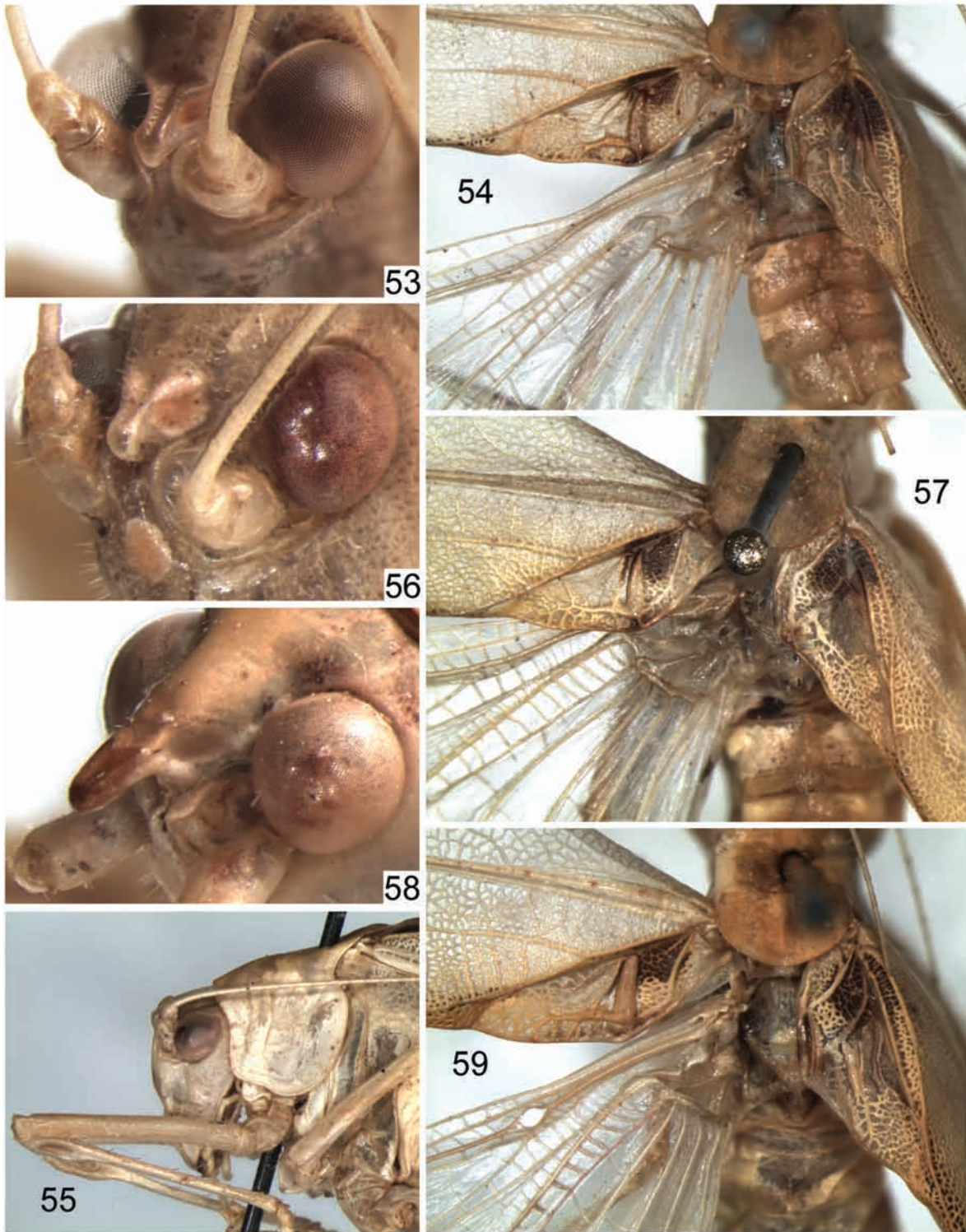
Comparison. The new species is strongly distinguished from the second congener, distributed in Southeast Brazil, by a clearly longer upper rostral tubercle on the head, distinctly narrower tegmina with a less arcuate anal edge and less uniformly greenish colouration of the lateral field, much shorter and strongly curved tegminal MA (*vs.* MA is reaching the distal tegminal part and almost straight), more transverse (less oblique, not sloping) branches of tegminal RS, and the male cercus with two short apical spinules (instead one strongly curved hook formed from a long, rather thin and acute apical part of the cercus in *P. cristatum*).

Subtribe Anaulacomerina Brunner-Wattenwyl, 1878

Genus *Grammadera* Brunner-Wattenwyl, 1878

Note. This genus is related to the genus *Anaulacomera* Stål, 1873 in the structure of pronotum having the lateral lobes with characteristic (almost angular) humeral notches and lobe-like posteroventral parts situated under these notches (Fig. 55), in the tegminal RS having 2 proximal branches starting from the general stem and 1 or 2 more distal branches starting from RA, and in a characteristic tegminal stridulatory apparatus in male (this apparatus is with a more or less falcated mirror, because its lateral vein is rather strongly curved; Figs 54, 57, 59). However, these genera are distinguished from each other by the following features: in *Grammadera*, male epiproct is specialized (large, elongate, distinctly sclerotized, and directed more or less downwards), and male cerci are simple, i. e. approximately stick-like and with an apical or subapical denticle on each cercus (Figs 60–71); but in *Anaulacomera*, this epiproct is distinctly smaller and more simple in the shape, and these cerci are usually more complicated in the structure (with diverse processes and/or lobes).

The genus under consideration is divided into two subgenera: *Grammadera* s. str. and *Deragramma* Ebner, 1953. Differences between them are not very clear, because in these subgenera, several insufficiently studied and illustrated species were included (Eades et al. 2015). Moreover, some species were included in *Grammadera* s. l. tentatively: *G. forcipata* Rehn, 1907 is probably a member of the genus *Viadana* Walker, 1869 (Gorochov and Cadena-Castañeda 2015); *G. rosea* Giglio-Tos, 1898 and *G. pellucida* Giglio-Tos,



Figs 53–59. *Grammadera* Br.-W., male: 53–55 – *G. (Deragramma) tricaudata* sp. nov.; 56, 57 – *G. (Deragramma) steinbachi* Bruner; 58, 59 – *Grammadera (Grammadera) hastata peruana* subsp. nov. Head rostrum from side and partly in front (53, 56, 58); stridulatory apparatus of tegmina from above (54, 57, 59); anterior part of body from side (55).

1898 are reasonably transferred by Cadena-Castañeda (2015) in the genus *Anaulacomera*. At present, I can briefly indicate only a few characters separating the group of species related to type species of *Grammadera* (*G. clara* Brunner-Wattenwyl, 1878 – type species; *G. hastata* Brunner-Wattenwyl, 1891) from the group of species related to type species of *Deragramma* (*G. albida* Brunner-Wattenwyl, 1878 – type species; *G. chapadensis* Bruner, 1915; *G. steinbachi* Bruner, 1915; *G. tricaudata* sp. nov.): *Deragramma* differs from *Grammadera* s. str. in a distinctly shorter upper rostral tubercle (for comparison see Figs 53, 56 and 58), laterally compressed distal half of the male epiproct, the development of a dorsal denticle or spinule on the middle part of this epiproct (see Figs 60–67 and 68–71), and presence of lobule-like or tubercle-like traces of styles on the concave part of posterior edge of male genital plate (in *Grammadera* s. str., most part of the male epiproct is wide, middle part of this epiproct lacks any dorsal denticle or spinule, and male genital plate has the traces of styles located on the most convex parts of posterior edge; see Figs 61–63, 65–67 and 69–71). Subgeneric position of the other representatives included in this genus (*G. rostrata* Rehn, 1907 and *G. janeirensis* Bruner, 1915) is unclear.

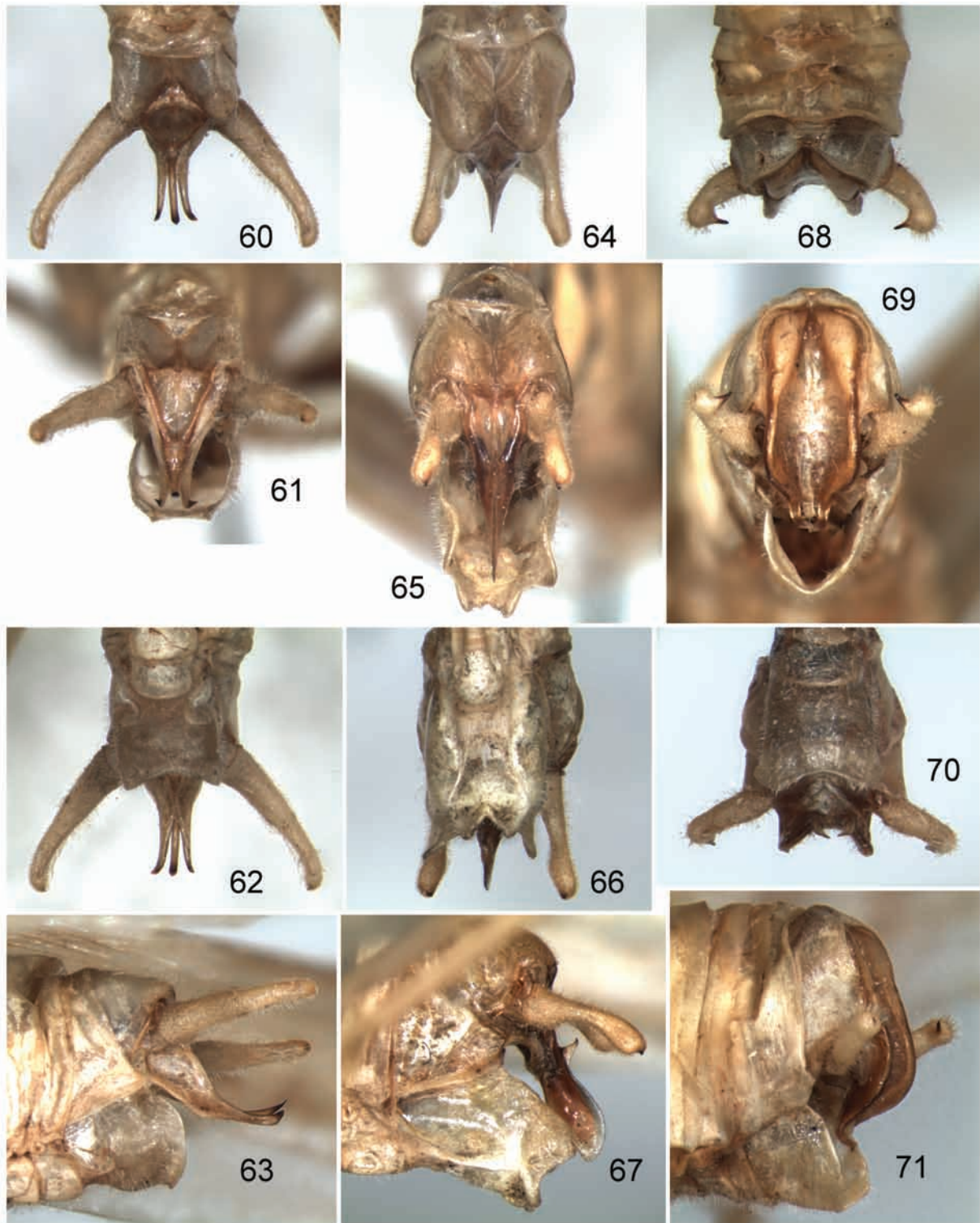
***Grammadera (Deragramma) tricaudata* sp. nov.**
(Figs 53–55, 60–63, 72)

Etymology. The species name is the Latin word “tricaudata” (with three tails).

Type material. *Holotype* – male, PERU: Ucayali Department, Atalaya Prov., ~35 km NWW of Atalaya Town on Ucayali River, environs of Sapani Vill., ~300 m, partly primary / partly secondary forest, at light, 26–31 October 2008, A. Gorochoy, M. Berezin, L. Anisyutkin, E. Tkatsheva, V. Izersky. *Paratypes*: 6 males, same data as for holotype.

Description. *Male* (holotype). Body rather large for Phaneropterini and medium-sized for *Grammadera* (somewhat larger than in majority of *Anaulacomera* representatives). Colouration yellowish with greyish tinge (greenish in living specimen) and with following marks: eyes, ocelli, and dorsal surface of head and of pronotum almost light brown; antennae uniformly light; tegmina with semitransparent membranes in cells of lateral field and in some cells of dorsal field, with distinct brown spot on lateroproximal part of dorsal field, with small brown spot near

medial (anal) end of stridulatory vein in left tegmen, and with numerous very small brown spots along anal edge in both tegmina behind proximal (widened) part of dorsal field (Figs 53–55); hind wings transparent with yellowish veins and semitransparent (with greenish tinge) distal part of costal lobe; inner tympanic membranes and distal parts of spines and spurs on legs light brown to brown; apical parts of epiproct and of paraprocts also brown (Figs 60–63). Head with upper rostral tubercle short, almost not projecting before anterior borders of antennal cavities; this tubercle with rather narrow and low anterior half having roundly truncate (in dorsal view) and almost disc-like (in frontal view) apex, with rather deep median groove on dorsal surface of this tubercle, and with slight inflation on each dorsolateral part of this tubercle situated near (above) lateral ocellus (Fig. 53); lateral ocelli elongately oval, moderately large, distinctly larger than median ocellus (latter ocellus vertically oval). Pronotum as in Fig. 55; tegmina long (strongly protruding behind as abdominal apex as apices of hind femora), typical of this genus in structure (RS with two branches running from common stem and with one distal branch running from RA; all these branches located in distal part of tegmen) including stridulatory apparatus (Fig. 54); hind wings distinctly protruding behind tegminal apices. Each of three anterior abdominal tergites with characteristic inflated tubercle in posteromedian half; last tergite with moderately deep anteromedian notch (occupied by membrane), a pair of large (high) longitudinal convexities on dorsum, rather deep median concavity between them, and comparatively shallow posteromedian notch; epiproct long, triangular, with wider proximal half weakly concave and directed downwards/backwards, with thin (spine-like) distal half arcuately curved upwards and having acute but dorsoventrally flattened apical part, and with short spinule directed more or less upwards and located in middle part of epiproct (Figs 61, 63); paraprocts also long and spine-like in distal half (this half acute at apex and somewhat arcuately curved upwards but with laterally flattened apical part; Figs 60–63); cercus rather long, almost straight, cylindrical but weakly and gradually narrowing to subapical part, and with barely thickened and somewhat medially curved apical part having very small denticle at apex (Figs 60–63); genital plate approximately as long as wide, with very wide and moderately deep posteromedian notch (this notch rounded in shape, and edge



Figs 60–71. *Grammadera* Br.-W., male: 60–63 – *G. (Deragramma) tricaudata* sp. nov.; 64–67 – *G. (Deragramma) steinbachi* Bruner; 68–71 – *Grammadera (Grammadera) hastata peruana* subsp. nov. Abdominal apex from above (60, 64, 68), from behind (61, 65, 69), from below (62, 66, 70), and from side (63, 67, 71).

of this notch with a pair of small tubercles located on lateral parts of this edge; Fig. 62, 63); genitalia with semisclerotized parts as in Fig. 72.

Variation. Size of inflated tubercles on proximal abdominal tergites somewhat varied; spinule in middle part of epiproct in some paratypes slightly or distinctly longer.

Female. Unknown.

Length (mm). Body 17–22; body with wings 36–40; pronotum 4.2–4.5; tegmina 27–30; hind femora 17–19.

Comparison. From all the other species of *Deragramma*, the new species differs in a long and spine-like distal part of the male epiproct as well as of the male paraprocts. From the most similar *G. steinbachi*, it is additionally distinguished by the characters listed below, in the note about the above-mentioned species; from *G. janeirensis* possibly belonging to this genus, by the male cerci not curved and male genital plate shorter; and from *G. rostrata* described from a female only, by the upper rostral tubercle of head shorter.

Grammadera (Deragramma) steinbachi

Bruner, 1915

(Figs 56, 57, 64–67, 73–76)

Material studied. Male and 2 females, BOLIVIA: southern part of Santa Cruz Prov. (near Brazil), environs of Puerto Suarez Town on Paraguay River (Parana Basin), ~200 m, secondary forest, on leaf of bush at night, 4–5 February 2014, A. Gorochov.

Note. This species was described from the same locality (Bruner 1915: “Puerto Suarez, Bolivia”) but without illustrations. In the Orthoptera Species File (Eades et al. 2015), there are two photographs of general view of its types; structure of the abdominal apex in holotype (male) is not very clearly visible, but it seems to me that this structure is similar to that of my male. Thus, it is here reasonable to briefly list and illustrate some important characters of this species.

General appearance of *G. steinbachi* is most similar to that of *G. tricaudata*, but the first species differs from the latter species in the following characters: upper rostral tubercle slightly longer (insignificantly projecting before anterior borders of antennal cavities) and with less deep median groove on dorsal surface (Fig. 56); three anterior tergites of abdomen with somewhat larger posteromedian inflations (Fig. 57); last abdominal tergite in male with distinctly

deeper anteromedian notch, somewhat larger longitudinal convexities on dorsum, and clearly narrower median concavity between them (Fig. 64); male epiproct with proximal half having clearly thicker lateral edges and distinctly deeper part of median concavity located near middle dorsal spinule, with this spinule hook-like (not almost straight) and having apical part curved upwards, with elongate and vertically lamellar (but not very high and not spine-like) distal half of epiproct having narrowly rounded (in profile) apex and ventral spine-like process not far from it (Figs 64, 65, 67, 73); each paraproct in male elongate and almost finger-like behind its base, with apex reaching middle part of epiproct (Fig. 73); male cerci somewhat shorter, with rather thick proximal part, much thinner middle part, and slightly inflate distal part (cercus behind its proximal part barely curved downwards but not medially, and apical cercal part with small posteromedial hook directed downwards and slightly laterally; Figs 64–67, 73); male genital plate with deeper and angular posteromedian notch as well as somewhat larger paired tubercles (traces of styles) on posterior edge situated more near each other (Figs 66, 67, 73); female genital plate transverse, almost triangular but with somewhat sinuate posterolateral edges and small and narrow posteromedian notch (Fig. 75); male genitalia and ovipositor as in Figs 74, 76.

Length (mm). Body: male 23, female 21–22; body with wings: male 35, female 37–39; pronotum: male 3.9, female 4–4.2; tegmina: male 29, female 30–32; hind femora: male 17, female 17.5–18.5; ovipositor 13–13.5.

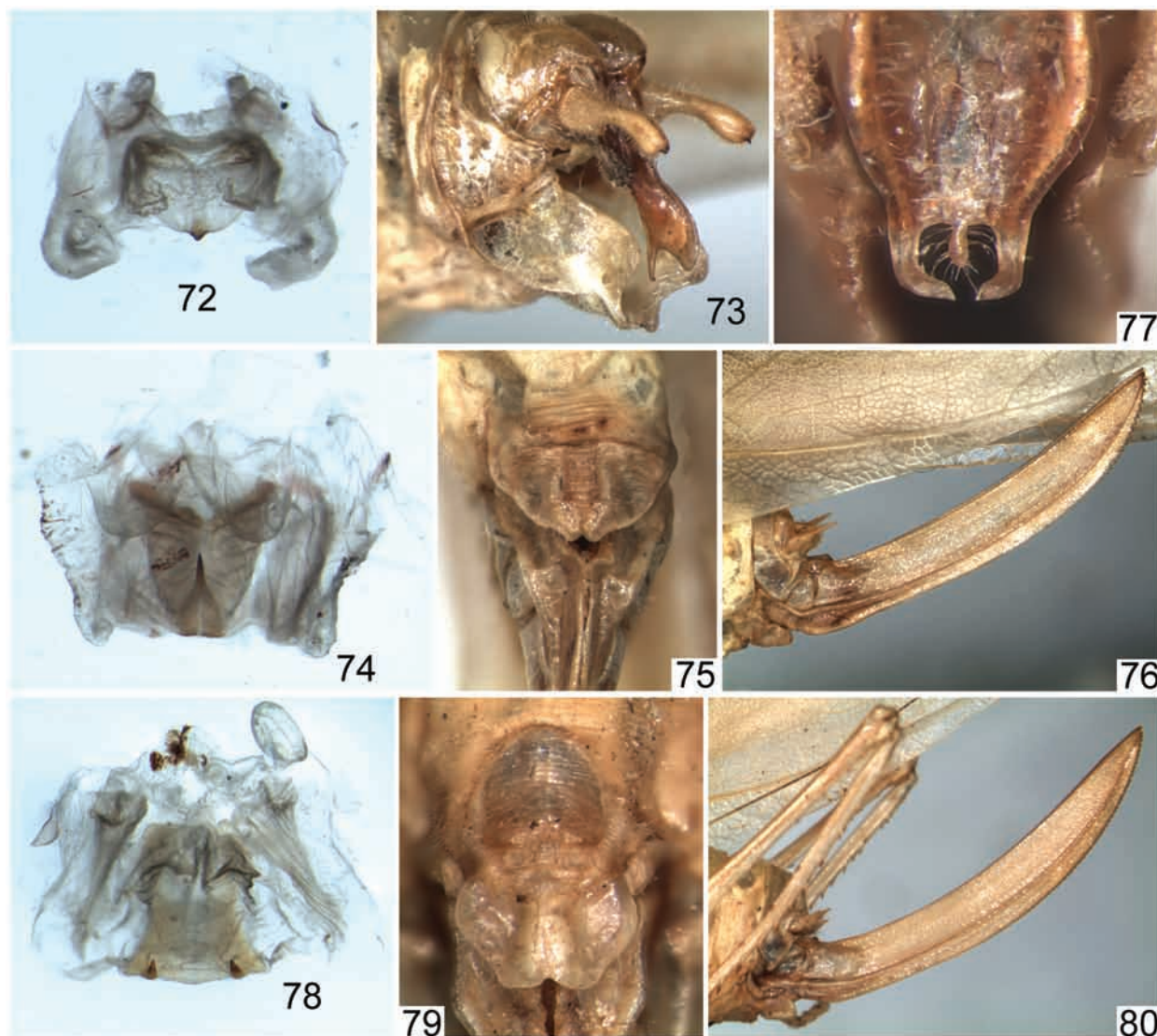
Grammadera (Grammadera) hastata peruana

subsp. nov.

(Figs 58, 59, 68–71, 77–80)

Etymology. This name is given after Peru where this subspecies was discovered.

Type material. *Holotype* – male, PERU: Junin Department, Satipo Prov., ~25 km SE of Satipo Town, environs of Rio Venado Vill., ~1200 m, partly primary / partly secondary forest, on leaf of bush at night, 20–23 October 2008, A. Gorochov, M. Berezin, L. Anisyutkin, E. Tkatsheva, V. Izersky. *Paratypes*: 4 males, 3 females, same data as for holotype; 6 males, 3 females, same country, Ucayali Department, Atalaya Prov., ~35 km NWW of Atalaya Town on Ucayali River, environs of Sapani Vill., ~300 m, partly pri-



Figs 72–80. *Grammadera* Br.-W.: 72 – *G. (Deragramma) tricaudata* sp. nov.; 73–76 – *G. (Deragramma) steinbachi* Bruner; 77–80 – *Grammadera (Grammadera) hastata peruana* subsp. nov. Male genitalia from above (72, 74, 78); male abdominal apex from side and somewhat from behind (73); female genital plate from below (75, 79); ovipositor from side (76, 80); distal half of male epiproct from behind (77).

mary / partly secondary forest, at light, 26–31 October 2008, A. Gorochov, M. Berezin, L. Anisyutkin, E. Tkatsheva, V. Izersky.

Description. *Male* (holotype). General appearance similar to that of both previously considered species of this genus but with following differences: head with upper rostral tubercle distinctly longer (significantly projecting before anterior borders of antennal cavities) and almost without median groove on its dorsal surface (Fig. 58); pronotum with

numerous very small reddish dots on lateral lobes and anterior half of disc; left tegmen with stridulatory vein almost straight and with marginal proximal (proximedial) vein of mirror distinct (Fig. 59); abdominal tergites without median inflations; last tergite distinctly shorter, with shallow anteromedian notch and deeper posteromedian notch (median part of this tergite, located between these notches, narrow; Fig. 68); epiproct more or less light brown, elongate, roundly rectangular but strongly narrowing in

distal part and with narrow apical part consisting of 3 lobules (a pair of longer and medially curved lateral lobules; and shorter, almost finger-like and semimembranous median one; Figs 69, 71, 77); this epiproct lacking vertically lamellar parts, having sloping median groove on its proximal half (this groove gradually widening to middle part of epiproct) and rather deep concavity occupying most part of distal half of epiproct (lateral edges of this half not inflate; Figs 68, 69), and with strongly S-shaped distal third in profile (Fig. 71); cercus short, somewhat curved medially, slightly narrowing to subapical part, and with clearly inflate (almost globular) apical part having rather long medial spinule (Figs 68–71); genital plate with rather wide but not deep posteromedian notch, weakly visible small tubercles (traces of styles) on apices of posterolateral projections, and barely sinuate posterolateral edges between them (Figs 70, 71). Genitalia as in Fig. 78.

Variation. Some males with dorsal surface of head and of pronotum almost uniformly yellowish; genital plate sometimes with posteromedian notch having posterolateral edges between traces of styles not sinuate.

Female. Colouration and structure of body very similar to those of male; however, body size slightly larger, tegmina with numerous small dark dots in proximal half of widened part of dorsal field and without larger darkened spots, this part of dorsal field with one distinct longitudinal vein near anal edge and with rest venation fine-cellular, abdominal apex as in females of previously described congener but with genital plate and ovipositor as in Figs 79, 80.

Length (mm). Body: male 16–20, female 18–22; body with wings: male 37–39, female 43–45; pronotum: male 4.7–4.9, female 5–5.3; tegmina: male 28–30, female 31.5–33; hind femora: male 16–18, female 18–19; ovipositor 13.5–14.

Comparison. The new subspecies is distinguished from *G. h. hastata* Brunner-Wattenwyl, 1891 (French Guiana) by an almost straight stridulatory vein in the left tegmen (in the nominotypical subspecies, this vein is somewhat curved near the chord), distinct vein forming the proximal (proximedial) edge of mirror in this tegmen (*vs.* this vein of mirror is indistinct), and the distal part of male epiproct strongly (not moderately) narrowing to a narrow apical part (widest place of distal half of this epiproct is 2–2.5 times as wide as the above-mentioned apical part, and width of posteromedian notch of male genital

plate is almost 1.5 times as wide as this apical part; but in *G. h. hastata*, these ratios are approximately 1.5 and 1, respectively). From *G. clara*, it differs in not thickened lateral edges of the distal half of male epiproct; from *G. janeirensis* and *G. rostrata*, in a longer ovipositor; and from *G. pellucida*, in much shorter male cerci.

Tribe Scudderiini Brunner-Wattenwyl, 1878

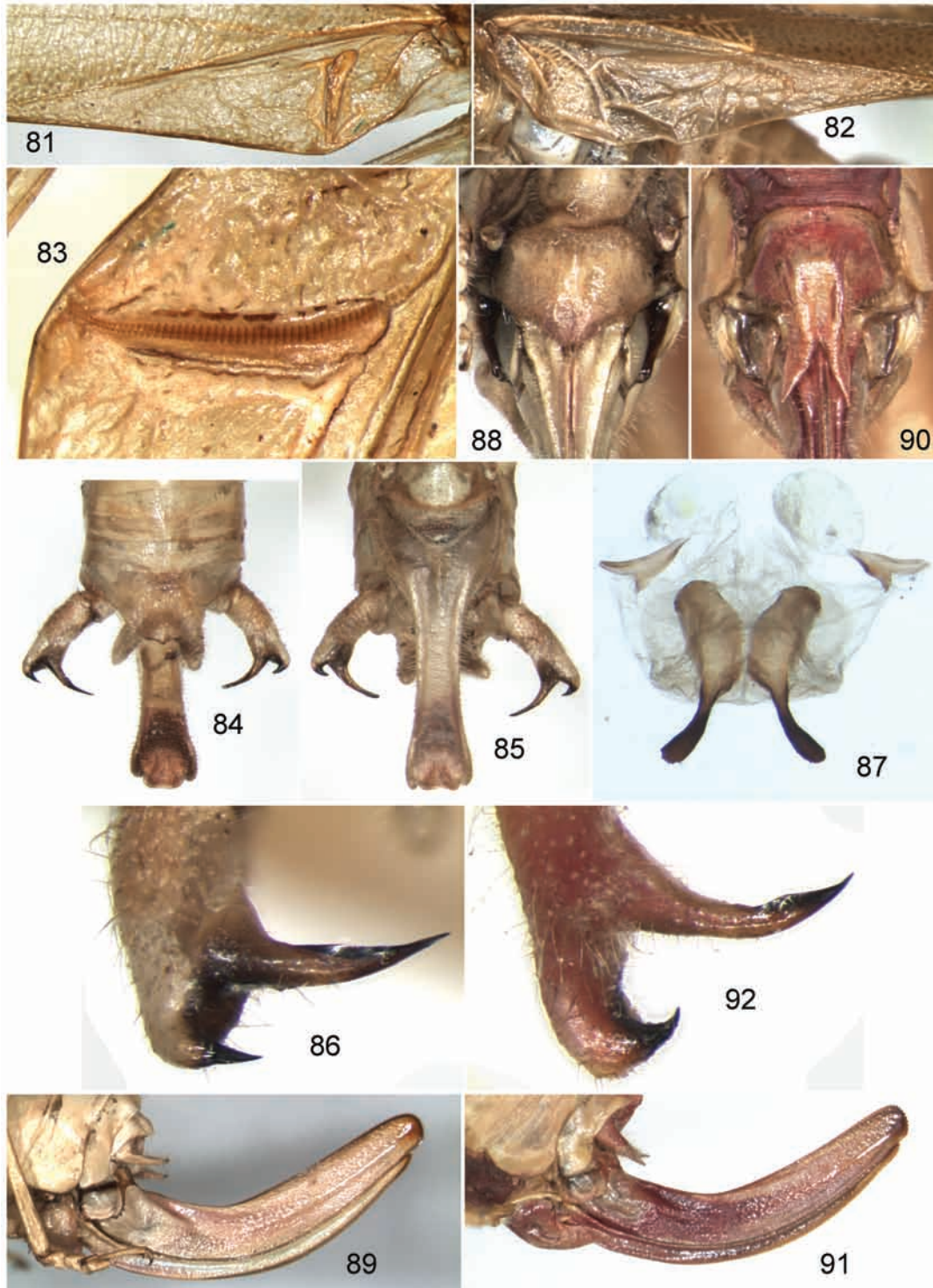
Ceraia legitima divulsa subsp. nov.

(Figs 81–89)

Etymology. This subspecies name is the Latin word “divulsa” (separated), because the new subspecies is distinctly separated from the other congeners by the shape of its male cerci.

Type material. *Holotype* – female, PERU: bank of Rio Morona near its mouth (not far from Puerto America Town), ~200 m, primary forest, at light, 23 January 2010, A. Gorochov. *Paratype* – female, same data as for holotype.

Description. *Male.* General appearance very similar to that of *C. l. legitima* Gorochov, 2014 from different locality on bank of same river and *C. l. angulata* Gorochov, 2014 from Ucayali and Cusco Departments of Peru. Colouration yellowish (greenish in living condition) with narrow brown distal ringe on each segment in proximal part of antenna (except completely yellowish scape), brown to dark brown rest of antenna, dark brown both tympanal membranes, transparent membranes of most part of hind wing, and darkened areas on distal part of both cercus and genital plate (Figs 81–86). Structure of body also most similar to that of above-mentioned congeners (Figs 81–85) but with following differences: last abdominal tergite with straight (not slightly angular) apical edge in caudal view (as in *C. l. legitima* but not as in *C. l. angulata*) and median denticle on this edge almost spinule-like (as in *C. l. angulata* but not as in *C. l. legitima* having this denticle clearly shorter); cercus with outer hook distinctly smaller or shorter (for comparison see Figs 86 and 92) and with acute dorsal carina on inner process clearly longer (see Figs 86 and 92); genitalia with proximal sclerotized plates distinctly longer than in both other subspecies of this species and with distal sclerotized processes almost as in *C. l. angulata* in shape (i. e. clearly wider than in *C. l. legitima*) (Fig. 87).



Figs 81–92. *Ceraia* Br.-W.: 81–89 – *C. legitima divulsa* subsp. nov.; 90, 91 – *C. amboro* sp. nov.; 92 – *C. l. legitima* Gor. Stridulatory apparatus of left (81) and right (82) tegmina in male; stridulatory vein of left male tegmen from below (83); male abdominal apex from above (84) and from below (85); distal half of male left cercus from above (86, 92); male genitalia from above (87); female genital plate from below (88, 90); ovipositor from side (89, 91).

Female. Colouration and structure of body similar to those of male and almost indistinguishable from those of female of *C. l. legitima* (for its description see Gorochov 2014b): genital plate and ovipositor as in Figs 88, 89 (female of *C. l. angulata* unknown).

Length (mm). Body: male 22, female 23; body with wings: male 42, female 49; pronotum: male 4.9, female 5.6; tegmina: male 32.5, female 37.5; hind femora: male 24, female 27; ovipositor 10.5.

Comparison. Differences between the new subspecies and both other subspecies of this species are given above, in the description (it is necessary to note that I cannot exclude that they are different species). From all the other species of the Dentata group, *C. l. divulsa* differs in stick-like sclerotized processes of the male genitalia (they are not strongly widened in the distal part, not S-shaped, and not shortened or partly reduced).

***Ceraia amboro* sp. nov.**

(Figs 90, 91)

Etymology. This species is named after the Amboro National Park.

Type material. *Holotype* – female, BOLIVIA: Santa Cruz Prov., ~70 km NWW of Santa Cruz City, Amboro National Park, Mataraku Camp, ~800 m, primary forest, on leaf of bush at night, 8–13 February 2014, A. Gorochov.

Description. *Female.* General appearance as in congener previously described here but with following characteristic features: body size clearly larger; colouration with reddish tinge on median part of dorsum of upper rostral tubercle and on most part of both genital plate and ovipositor; genital plate S-shaped in profile, with rather wide proximal half, with much narrower distal half having a pair of low and keel-like longitudinal convexities on ventral surface (these convexities starting from distal part of proximal half) as well as a pair of rather narrow and long angular lobes in distal part (these lobes almost vertical, slightly curved laterally, and forming deep and narrow median notch between them; Figs 90, 91); ovipositor barely more curved upwards and with gonangulum lacking dark marks (Fig. 91).

Male. Unknown.

Length (mm). Body 29; body with wings 57; pronotum 6.4; tegmina 43; hind femora 31; ovipositor 11.

Comparison. The new species most probably belongs to the Capra group, because it has a similar

female genital plate (with a deep posteromedian notch); this species is distinguished from the both other species of this group by the tegmina lacking darkened marks on the lateral field and from *C. capra* Rehn, 1918 by the absence of any dark area on the ovipositor gonangulum. The Intermedia group is also with a deep posteromedian notch of the female genital plate; however, this plate in *C. intermedia* (Marquez, 1957), a single species of this group with known female, has the proximal and distal halves almost equal to each other in the width (i. e. not as in *C. amboro* and *C. capra*).

Phaneropterinae incertae sedis

Genus *Anisophya* Karabag, 1960

Note. This Neotropical genus is considered in the Orthoptera Species File (Eades et al. 2015) as a member of the African-European tribe Odonturini Brunner-Wattenwyl, 1878. Such systematic position of *Anisophya* as well as the other American genera, included in this tribe in this catalogue, is very doubtful: *Anisophya* has small but important differences from *Odontura* Rambur, 1838 (type genus of Odonturini) in the structure of head rostrum and of male tegminal stridulatory apparatus; and these American genera are also with numerous differences as from *Odontura* as often from each other. It seems to me that majority of American “Odonturini” acquired a more or less similar general appearance as a result of the convergency connected with a similar mode of life including a significant shortening of wings (one of representatives of *Anisophya* has a macropterous form; Nickle 2011). It is a reason that I do not include *Anisophya* in any tribe.

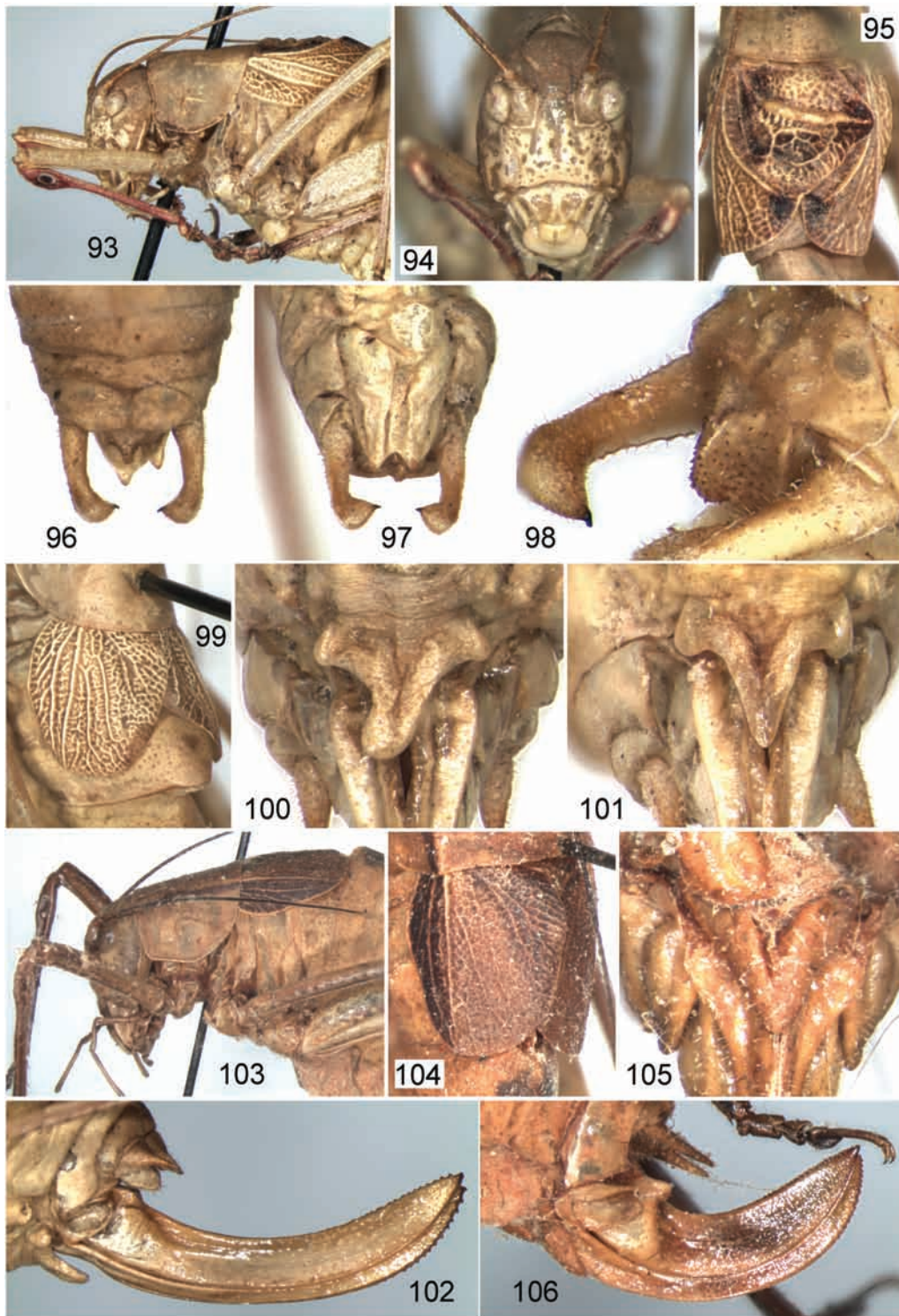
***Anisophya bolivia* sp. nov.**

(Figs 93–102)

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

Type material. *Holotype* – male, BOLIVIA: southern part of Santa Cruz Prov. (near Brazil), environs of Puerto Suares Town on Paraguay River (Parana Basin), ~200 m, secondary forest, on leaf of bush at night, 4–5 February 2014, A. Gorochov. *Paratypes*: 2 females, same data as for holotype.

Description. *Male.* Body rather small. Colouration yellowish with reddish tinge on tibiae and tarsi,



Figs 93–106. *Anisophya* Karabag: 93–102 – *A. bolivia* sp. nov.; 103–106 – *A. melanochloris* (Rehn). Anterior part of body from side (93, male; 103, female); head in front (94); dorsal field of male left tegmen (95); male abdominal apex from above (96) and from below (97); male epiproct from side and somewhat above-behind (98); female left tegmen (99, 104); female genital plate from below (100, 101, 105); ovipositor from side (102, 106).

greyish tinge on rest of body (excepting largest longitudinal veins in tegminal lateral field), large brown spot on each tympanal membrane, light brown to brown marks on stridulatory apparatus of left tegmen, brown spot on lateral field of each tegmen in corner between its anal edge and distal edge of dorsal field (Figs 93–95), darkened distal part of hind tibia, a pair of dark spots on inner and outer surfaces of basal part of this tibia, and small darkish marks on third tarsal segments. Head with both rostral tubercles rather wide (distance between antennal cavities slightly wider than scape), almost not projected forwards and pressed to each other (rostrum widely rounded in profile and with slight transverse groove between upper and lower rostral tubercles located near dorsal edge of antennal cavities; Figs 93, 94); eyes rather small, rounded; ocelli indistinct (Figs 93, 94). Pronotum comparatively short and high, without distinct longitudinal carina between disc and each lateral lobe; disc indistinctly narrowed after its anterior quarter, with very low (almost indistinct) median keel on anterior part, gradually expanding to posterior part (anterior edge of disc barely concave, but posterior one convex); lateral lobes with almost vertical anterior edge, angularly rounded anteroventral corner, and arcuate ventroposterior edge consisting of ventral and posterior edges (humeral notch absent; Fig. 93). Tegmina strongly shortened, reaching posterior edge of 2nd abdominal tergite, almost round but with medial angular projection and almost straight costal edge; stridulatory vein long, rather thick and transversally situated; mirror of left tegmen small, transverse, situated not far from anal edge of this tegmen, and with reticular venation; similar venation developed on basal and distal areas of dorsal field of left tegmen and between largest longitudinal veins on lateral field of both tegmina (this field with 2 such veins; one of them divided into 2 branches in proximal half of tegmen (Fig. 95)); hind wings invisible. Legs with coxae and femora lacking spines and denticles, and with tibiae having rather sparse or very sparse spinules on dorsal and ventral edges. Last abdominal tergite with wide and very short posterior lobe having barely concave posterior edge and obtuse posterolateral corners; epiproct somewhat elongate, with angularly rounded apex, with rather long and high median keel in middle part (this keel widely rounded in profile and covered with numerous very short setae which developed also on distal and lateral parts of epiproct; Figs 96, 98); cerci not long, almost

cylindrical but slightly and gradually thickening to base, with inflate and almost globular apical part curved somewhat medially, and with denticle-like spinule on medial surface of this apical part (Figs 96–98); genital plate rather short, narrowing to apex having a pair of roundly angular lateral lobules (evidently fused with styles) and moderately wide and not very deep notch between them (Fig. 97).

Female. General appearance as in male, but tegmina slightly shorter (reaching middle part of 2nd abdominal tergite) and with venation as in Fig. 99, last tergite practically without posterior lobe (i. e. with almost straight hind edge), epiproct shorter and almost triangular as well as lacking median keel and distinct setae, and cerci small and elongately conical in shape. Genital plate trilobate, with very short and wide proximal part, with moderately short and posterolaterally directed lateral lobes, and with longer and rather narrow posteromedian lobe (Figs 100, 101); ovipositor rather long for this genus, moderately curved upwards, and with distinctly denticulate dorsal and ventral edges of distal part (Fig. 102).

Length (mm). Body: male 13, female 15–16; pronotum: male 3.1, female 3.2–3.4; tegmina: male 3.5, female 3.6–3.8; hind femora: male 12, female 13.4–13.7; ovipositor 7–7.2.

Comparison. The new species is most similar to *A. hamata* (Giglio-Tos, 1894) from the Paraguay Country, but it differs from the latter in a more uniform colouration of the pronotum, slightly thicker stridulatory vein in the male left tegmen, shorter part of the dorsal field of this tegmen located after the stridulatory vein, longer part of the lateral field located after the dorsal field in the male tegmina, more angular medial projection of the left male tegmen (near stridulatory vein), shorter mirror of this tegmen, and narrower distal part of the area situated between the costal edge and R in the female tegmina. From the Paraguayan male tentatively determined by Karabag (1960) as *A. hamata*, the new species is distinguished by a longer (higher) median keel on the male epiproct, almost globular (not almost angular) apical part of the male cercus, distinctly smaller medial spinule of this apical part, and the presence of distinct lateral lobes on the female genital plate; from *A. borelli* (Giglio-Tos, 1894) (Paraguay), by an almost uniform (not spotted) colouration of body, possibly also by transverse (not round) mirror of the left male tegmen located less far from its anal edge and by a more curved and higher distal half of the ovipositor;

from *A. melanochloris* (Rehn, 1911) (Paraguay), by light lateral part of the tegmina and dorsal part of the abdomen, and a different shape of the male cerci as well as of the female genital plate and ovipositor (for comparison see Figs 102 and 106); from *A. brasiliensis* (Brunner-Wattenwyl, 1878), by a thicker stridulatory vein and shorter mirror in the male left tegmen, trilobate (not triangular) female genital plate, and more curved ovipositor; and from *A. punctinervis* (Stål, 1861) (Argentina) as well as from the Chilean congeners, by a much longer ovipositor and/or distinctly shorter mirror in the male left tegmen.

***Anisophya melanochloris* (Rehn, 1911)**
(Figs 103–106)

Material studied. Female, PARAGUAY: Puerto Bertoni, “P-to Bertoni Alto Paraná Paraguay 11.XI. 1914”, I. Strelnikov, N. Tanasijtshuk.

Description. *Female* (nov.). General appearance similar to female of *A. bolivia* but with following differences: body larger; colouration light brown with dark brown antennal flagellum (except its short proximal part), narrow brown stripe on each lateral lobe of pronotum along its dorsal edge, dark brown lateral and brown medial parts of each tegmen (its median part light brown), brown longitudinal stripe on ventral surface of all femora and on inner surface of fore tibia, almost completely brown middle and hind tibiae as well as all tarsi, and dark brown median band on abdominal dorsum (this band with somewhat lighter median stripe; Figs 103, 104); distance between antennal cavities almost 1.5 times as wide as scape; shape of pronotum and tegmina as in Figs 103, 104; legs somewhat longer; last abdominal tergite with clearly convex posteromedian edge; epiproct rounded at apex; genital plate shorter and triangular in shape (Fig. 105); ovipositor also distinctly shorter (Fig. 106).

Length (mm). Body 19; pronotum 4.5; tegmina 4.5; hind femora 18.5; ovipositor 6.5.

Remark. Holotype (male) of this species was collected also in the same locality in Paraguay (Rehn 1911: “Puerto Bertoni”).

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