*Proceedings of the Zoological Institute RAS*
*Vol. 321, No. 3, 2017, pp. 300–319*

*УДК 595.729*

# SYSTEMATICS OF THE AMERICAN KATYDIDS (ORTHOPTERA: TETTIGONIIDAE). COMMUNICATION 7

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**ABSTRACT**

The genera *Parascudderia* Brunner-Wattenwyl, 1891 and *Caroliniella* Cadena-Castañeda, 2015 from the tribe Scudderiini of the subfamily Phaneropterinae as well as *Championica* Saussure et Pictet, 1898 and *Diacanthodis* Walker, 1870 from the subfamily Pleminiinae are considered. The first genus is divided into two subgenera (*Parascudderia* s. str. and *Negativeria* subgen. nov.) on the base of differences in the colouration of hind wings and hind tibiae as well as in the shape of last abdominal tergite in male; *Parascudderia* s. str. contains *P. dohrni* Brunner-Wattenwyl, 1891 from Brazil, *P. setrina* Grant, 1960 from Ecuador, *P. strigilis* Grant, 1960 from Brazil, and *P. positiva* sp. nov. from Ecuador; *Negativeria* subgen. nov. includes *P. secula* Grant, 1960 from Peru, *P. astylata* sp. nov. from Peru, and *P. negativa* sp. nov. from Ecuador. Four smaller new taxa are additionally described from South America: *P. secula santacruzi* subsp. nov. from Bolivia; *C. pichincha* sp. nov. from Ecuador; *Ch. poeciloptera* sp. nov. from Peru; *D. cristulata* sp. nov. from Ecuador. These new taxa are distinguished from all the previously described species and subspecies of the same genera by the characters of general appearance as well as some features of the copulatory apparatus or pronotal tubercles. New data on some other species of these subfamilies are also given.

**Key words:** America, *Caroliniella*, *Championica*, *Diacanthodis*, new taxa, *Parascudderia*, Phaneropterinae, Pleminiinae, Tettigoniidae

# СИСТЕМАТИКА АМЕРИКАНСКИХ КУЗНЕЧИКОВ (ORTHOPTERA: TETTIGONIIDAE). СООБЩЕНИЕ 7

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**РЕЗЮМЕ**

Рассмотрены роды *Parascudderia* Brunner-Wattenwyl, 1891 и *Caroliniella* Cadena-Castañeda, 2015 из трибы Scudderiini подсемейства Phaneropterinae, а также *Championica* Saussure et Pictet, 1898 и *Diacanthodis* Walker, 1870 из подсемейства Pleminiinae. Первый род подразделен на два подрода (*Parascudderia* s. str. и *Negativeria* subgen. nov.) на основании различий в окраске задних крыльев и задних голеней, а также в форме последнего тергита брюшка у самца; *Parascudderia* s. str. содержит *P. dohrni* Brunner-Wattenwyl, 1891 из Бразилии, *P. setrina* Grant, 1960 из Эквадора, *P. strigilis* Grant, 1960 из Бразилии и *P. positiva* sp. nov. из Эквадора; *Negativeria* subgen. nov. включает *P. secula* Grant, 1960 из Перу, *P. astylata* sp. nov. из Перу, and *P. negativa* sp. nov. из Эквадора. Дополнительно из Южной Америки описаны четыре более мелких новых таксона: *P. secula santacruzi* subsp. nov. из Боливии; *C. pichincha* sp. nov. из Эквадора; *Ch. poeciloptera* sp. nov. из Перу; *D. cristulata* sp. nov. из Эквадора. Эти новые таксоны отличаются от всех ранее описанных видов и подвидов из тех же самых родов признаками внешнего облика, а также некоторыми особенностями копулятивного аппарата или бугорков переднеспинки. Приведены также новые сведения по некоторым другим видам изучаемых подсемейств.

**Ключевые слова:** Америка, *Caroliniella*, *Championica*, *Diacanthodis*, новые таксоны, *Parascudderia,* Phaneropterinae, Pleminiinae, Tettigoniidae

## INTRODUCTION

This paper is the seventh communication in the series of publications on the American Tettigoniidae. In the previous communications of this series (Gorochov 2012a, 2012b, 2014a, 2014b, 2015, 2016), many genera from the subfamilies Pleminiinae, Phaneropterinae, Meconematinae and Conocephalinae have been discussed; one tribe, one genus, three subgenera, 67 species and subspecies were described in these communications as taxa new to science. Several other American taxa of Tettigoniidae were considered by the same author in some additional papers (Gorochov 1995, 1998, 2006, 2013, 2014c; Cadena-Castañeda and Gorochov 2012, 2013; Cadena-Castañeda and Gorochov in Cadena-Castañeda 2013 as well as in Cadena-Castañeda and Garcia 2014; Gorochov and Cadena-Castañeda 2015); four genera, five subgenera, 51 species and subspecies were described by him in the latter papers as new to science. These investigations showed that tribal and subtribal classifications in Phaneropterinae are only in the initial stage of their elaboration, but in Pleminiinae, such classifications are in need of a serious revision. It is a reason that in the present paper, tribal position is indicated only for some genera of Phaneropterinae.

## MATERIAL AND METHODS

All the specimens studied were collected in tropical rainforests. Some of these specimens were collected at light, but others, on leaves and trunks 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 Scudderiini Brunner-Wattenwyl, 1878

### Genus *Parascudderia* Brunner-Wattenwyl, 1891

**Note.** This genus is similar in the general appearance to the type genus of Scudderiini (*Scudderia* Stål, 1873) and majority of the other genera of this tribe (including the shape of head and pronotum, the structure of wings, and the dark colour of tympanal membranes on the fore tibia). However, this genus is very characteristic in the colouration having large reddish brown areas on the tegmina and some other body parts as well as greenish or yellowish areas on the rest body and darkened or slightly darkened membranes in the hind wings (Figs 1–15, 19–23). The genus studied also lacks sclerotized structures in the male genitalia, but its male abdominal apex is morphologically diverse and allow one to divide this genus into two subgenera; this division is supported also by some peculiarities of the body colouration (see a key to subgenera of *Parascudderia* s. l. below).

1. Hind wings transparent but with brown to brownish rose venation, slightly darkened membranes in apical part and along distal half of costal edge, and rest membranes distinctly lighter (transparent but with greyish tinge; Figs 19, 20); hind tibiae distinctly spotted (Fig. 3). Male last abdominal tergite with a pair of distinct hooked, spine-like or tubercle-like processes in posterior part but without lobe-like inflations in anterior half (Figs 25, 27) . . . . . **subgenus *Parascudderia* s. str.** [Included species: *P. dohrni* Brunner-Wattenwyl, 1891, type species (Brazil); *P. setrina* Grant, 1960 (Ecuador); *P. strigilis* Grant, 1960 (Brazil); *P. positiva* sp. nov.]
– Hind wings comparatively dark, brownish grey with venation coloured more or less as in *Parascudderia* s. str., with membranes in apical part and along costal edge barely lighter than in this subgenus, but with membranes in most part of costal half clearly darker than all other membranes of this wing (i.e. colouration of hind wings almost negative in comparison with that of nominotypical subgenus; Figs 21–23); hind tibiae almost uniformly light (Fig. 6). Dorsum of male last abdominal tergite with a pair of wide but short lobe-like inlations in anterior part, and without processes in posterior part (Figs 30, 32, 33, 35) . . . . . **subgenus *Negativeria* subgen. nov.** [Included species: *P. secula* Grant, 1960 (Peru); *P. astylata* sp. nov., type species; *P. negativa* sp. nov. Etymology: from parts of Latin word "negativus" (negative), implying oppositely painted wings, and of generic name *Parascudderia*.]

Some authors include in this genus also the insufficiently described *Phylloptera tripunctata* Scudder, 1875 from Peru (Kirby 1906) and *Theudoria cinctipes* Piza, 1980 from Brazil (Cadena-Castañeda 2015). In the latter paper, its author logically believes that *Ph. tripunctata* does not belong to *Parascudderia*, and he also synonymizes *Th. cinctipes* with *P. strigilis*.

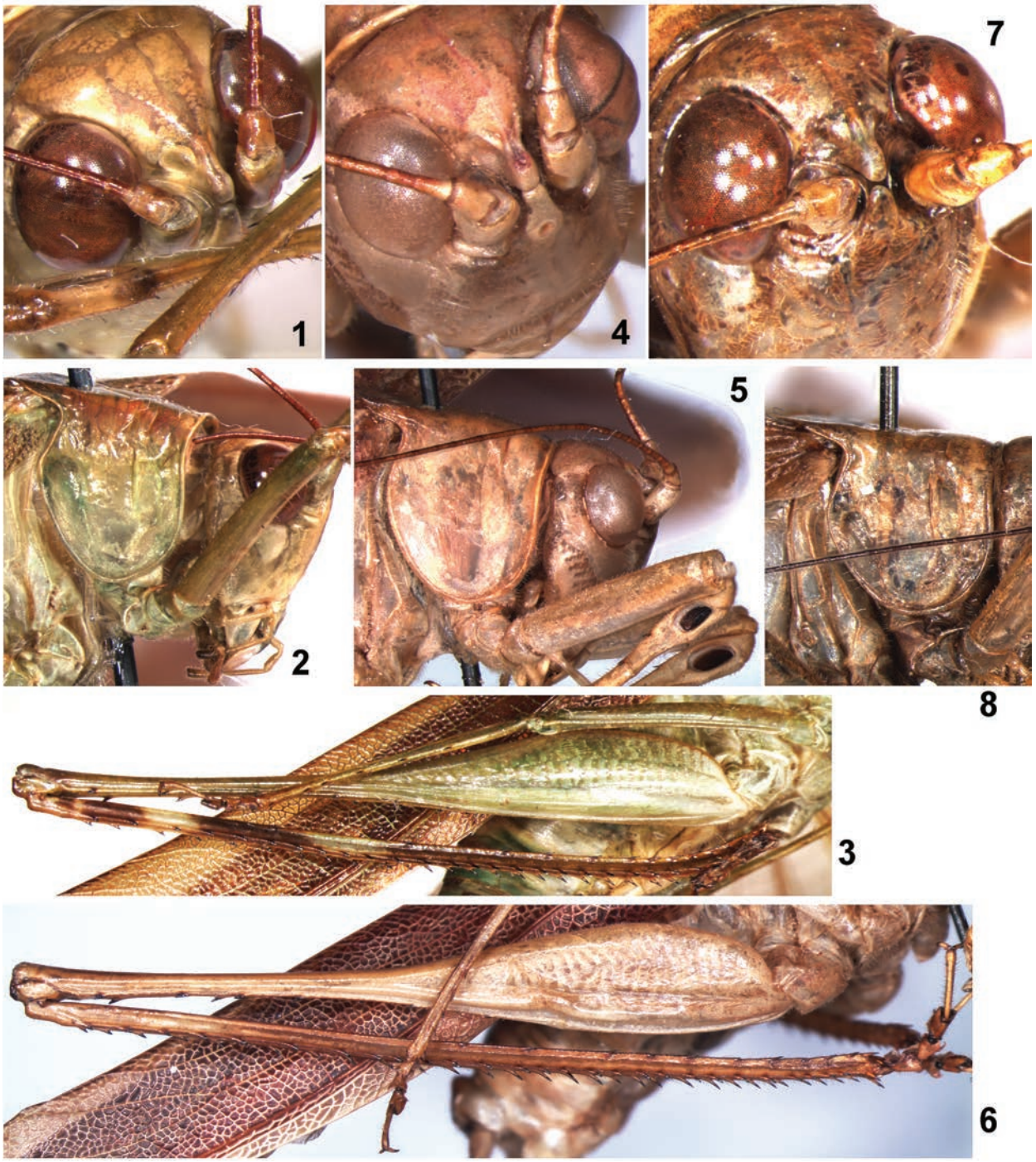
***Parascudderia* (*Parascudderia*) *positiva* sp. nov.**
(Figs 1–3, 9–11, 19, 25–29)

**Etymology.** This species name is the Latin word "positiva" (positive) given in connection with a more or less normal (usual) colouration of the hind wings.

**Type material.** *Holotype* – male, ECUADOR: eastern part, ~30 km EES of Tena Town, Chuva Urcu on Rio Cusano, December 2005, lowlying forest, A. Ovtshinnikov, D. Smolnikov. *Paratype* – 1 female, same part of Ecuador, 60–70 km E of Lago Agrio Town, environs of Lago Grande (lake) on Rio Cuyabeno, very lowlying primary forest, 2–9 November 2005, A. Gorochov, A. Ovtshinnikov.

**Description.** *Male*. Body greenish with following pattern: head dorsum very light brown (almost yellowish); pronotum with a pair of light brown stripes along lateral edges of disc; lateral field of tegmina reddish brown with light greenish venation (Figs 1, 2, 9–11); hind wings with transparent most part of membranes having greyish tinge, with yellowish rose to brownish rose venation, and with slightly darkened membranes in apical part and along distal half of costal edge (Fig. 19); fore tibia and distal part of middle tibia very light brown (almost yellowish); hind tibia with greyish brown distal half and two bands in proximal half (Fig. 3); all tarsi more or less light brown; anterior part of each dorsum of abdominal tergites yellowish rose to brownish rose, but dorsum of last tergite brownish rose with brown distal part and dark brown distal halves of posterior processes; genital plate yellowish with greenish tinge and somewhat darkened (brownish grey) marks on dorsal surface of distal parts; other structures of abdominal apex brownish rose with darker (brown to dark brown) distal halves of cerci (Figs 25–27). Head rather high, with short and straight rostral tubercles directed forwards (upper tubercle) and upwards (lower tubercle) and almost in contact with each other by their apices; these tubercles rather narrow but not lamellar and with rounded apices; lateral ocelli rather large and round, located on lateral sides of basal part of upper rostral tubercle; median ocellus similar to them and located at base of lower rostral tubercle (Fig. 1). Pronotum with flat disc slightly widened to posterior part, with almost straight anterior edge of disc and convex posterior edge of disc, with rounded bend between disc and lateral lobes, and with high and rather short latter lobes having distinct but not very narrow humeral notches (Fig. 2); metanotum with two distinct median tubercles in posterior half (posterior tubercle somewhat lower than subposterior one). Tegmina distinctly protruding beyond abdominal apex and hind femoral apices; its structure as in Figs 9–11; hind wings clearly longer, with thickened apical part as in Fig. 19. Legs moderately slender, with both tympana rather large and oval (their tympanal membranes opened and darkened, brown), with short widening of fore tibia in place of these tympana, with 1–2 small spinules on inner ventral keel of fore femur, with 0–1 such spinules on outer ventral keel of middle femur, with a pair of very small ventroapical denticles on these femora, with six outer and seven inner denticles on ventral keels of hind femur, with two pairs of apical denticles on this femur (one of these pairs ventroapical), with a few spinules on both outer and on ventral inner keels of fore tibia, with slightly more numerous spinules on both inner and on ventral outer keels of middle tibia, and with rather numerous denticles on both dorsal keels and on distal half of both ventral keels of hind tibia (no widened and flattened spines on legs). Last abdominal tergite with wide obtuse-angled posteromedian notch and a pair of rather long and almost hooked posterolateral processes (distal parts of these processes narrowly rounded and with numerous microscopical spinules), but anterior part of this tergite simple, lacking lobes and inflations (Figs 25, 27); epiproct rather small, triangular and directed backwards-downwards; paraprocts somewhat smaller, lobe-like but with roundly angular apices directed also backwards-downwards; cerci large but rather thin, with arcuate distal part in shape of long hook directed medially and backwards as well as having three longitudinal keels (dorsal and ventral keels sharp, and inner median keel almost square in cross section; Figs 25–27); genital plate with short widened basal part as well as with long and rather narrow rest part (latter part with very deep and narrow posteromedian notch and with rather long and thin styles; Figs 26, 27); genitalia completely membranous.

*Female*. General appearance similar to that of male, but body without traces of greenish colour and without stripes along lateral edges of pronotal disc (possibly after collecting in alcohol), dorsal tegminal field smaller and with cellular yellowish venation and darkish (brownish) membranes, last abdominal tergite without specializations (with smaller dorsal part lacking processes, lobes and inflations), and cerci also




**Figs 1–8.** *Parascudderia* Br.-W.: 1–3 – *P.* (*Parascudderia*) *positiva* sp. nov.; 4–6 – *P.* (*Negativeria*) *astylata* sp. nov.; 7, 8 – *P.* (*N.*) *negativa* sp. nov. Head rostrum, partly dorsal / partly anterolateral view (1, 4, 7); head with pronotum from side (2, 5); hind leg from side (3, 6); pronotum from side (8).

without specializations (much smaller, straighter and with almost spine-like distal parts). Genital plate somewhat laterally compressed, with widened basal part, rather narrow middle part, and somewhat wider distal part having deep angular posteromedian notch and a pair of narrow and long posterolateral lobules (these lobules gradually narrowing to almost spine-like apical parts as well as directed backwards-upwards and slightly aside; Figs 28, 29); ovipositor as in Fig. 29.

*Length* (mm). Body: male 25.0, female 23.0; body with wings: male 43.0, female 45.0; pronotum: male 4.7, female 4.9; tegmina: male 32.0, female 33.0; hind femora: male 23.0, female 25.0; ovipositor 6.5.

**Comparison.** The new species is most similar to *P. dohrni* and *P. setrina* in the rather simple (hooked) but not strongly bifurcated male cerci; however, it is distinguished from *P. dohrni* by the longer and distinctly narrower posteromedian notch of male genital plate as well as the thinner proximal half of male cerci lacking any medial tubercle or lobule near the base of distal cercal hook, and from *P. setrina*, by the almost hooked (not more or less straight) processes of male last abdominal tergite, the deeper posteromedian notch of male genital plate, and the much longer distal hook of male cerci. From these congeners, the new species differs also in the angular (not widely rounded) notch of female genital plate (from *P. dohrni*) or in the distinctly longer posterolateral lobules of this plate (from *P. setrina*).

**Remark.** It is necessary to note that the female from Colombia, determined by Cadena-Castañeda as *P. secula*, may belong to this new species, because the photograph of this specimen (Cadena-Castañeda 2015: fig. 44) clearly shows that it belongs to the subgenus *Parascudderia* s. str. (membranes in the costal field of hind wing are mainly transparent, and the hind tibiae are spotted), but *P. secula* belongs to the new subgenus described here (see the key to subgenera of *Parascudderia* s. l.).

### *Parascudderia* (*Parascudderia*) *setrina* Grant, 1960
(Fig. 20)

**Material studied.** 1 female, ECUADOR: eastern part, ~70 km SE of Lago Agrio Town, environs of S. Pablo de Kantesiya Vill. on Rio Aguarico, lowlying primary forest, on leaf of bush at night, 10–17 November 2005, A. Gorochov, A. Ovtshinnikov.

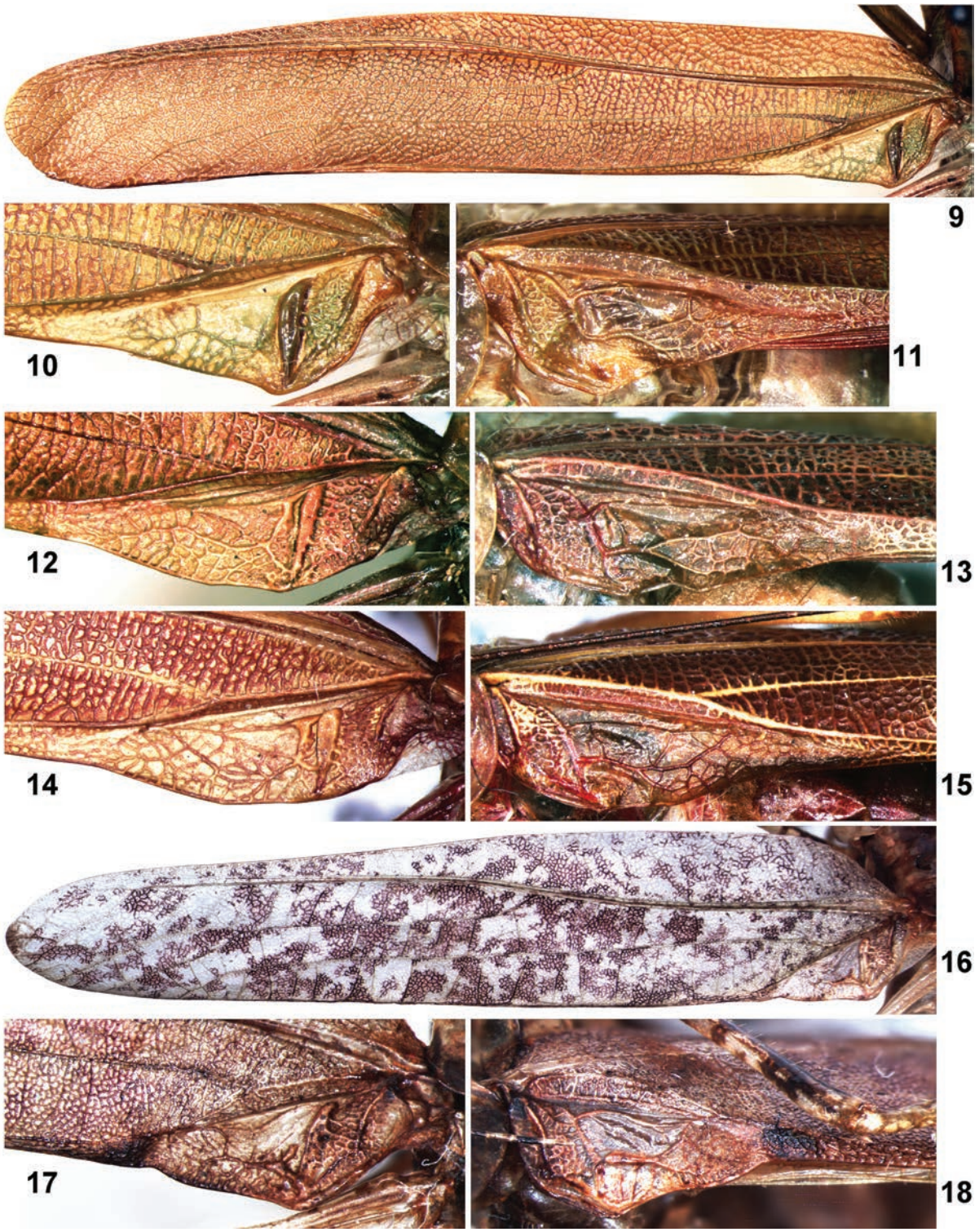
**Note.** This specimen is in accordance to its original description (Grant 1960) and was collected in the place situated not very far from its type locality ("Napo, Napo Pastaza").

### *Parascudderia* (*Negativeria*) *astylata* sp. nov.
(Figs 4–6, 12, 13, 22, 30–32)

**Etymology.** This species name consists of the Latinized Greek prefix "a-" (not, against) and word "stylata" (having styles); it is given due to the absence of styles in the male genital plate.

**Type material.** *Holotype* – male, PERU: Ucayali Department, Atalaya Prov., ~35 km NWW of Atalaya Town on Rio Ucayali, environs of Sapani Vill., ~300 m, primary / secondary forest, at light, 26–31 October 2008, A. Gorochov, M. Berezin, L. Anisyutkin, E. Tkatsheva, V. Izersky.

**Description.** *Male*. Body light brown (probably originally greenish but changed when collected in alcohol) with following marks: ocelli, labrum, palpi and three proximal segments of antennae yellowish; tympanal membranes as well as middle and dorsal parts of antennal flagellum brown; lateral tegminal field, base of dorsal tegminal field and distal two thirds of hind tibiae moderately light, reddish brown (Figs 4–6, 12, 13); colouration of hind wings typical of this subgenus (Fig. 22); dorsal part of last abdominal tergite as well as base and subapical part of cerci almost brown (Figs 30–32). Structure of body similar to that of *P. positiva* sp. nov. but with some differences: apical part of upper rostral tubercle with ventral surface pressed to apex of lower rostral tubercle; median ocellus somewhat smaller than lateral ocelli (Figs 4, 5); tegmina distinguished from those of this species by longer mirror, thinner stridulatory vein in left tegmen, and distinct (not invisible) vein along proximal edge of mirror in right tegmen (Figs 12, 13); femora with only a pair of very small ventroapical denticles in fore and middle legs as well as with 5–6 outer and 6–7 inner denticles on ventral keels in hind leg (apical denticles of latter femur as in *P. positiva* sp. nov.); last abdominal tergite with a pair of large (wide) but rather short (low) inflations at base of its dorsal part and with a pair of short lamellar lobes at apex (these lobes almost sharply curved downwards; Figs 30, 32); paraprocts more or less rounded; cerci somewhat wider than in above-mentioned congener but more dorsoventrally depressed in middle part, clearly curved upwards, and with apical part in shape of elongate fingernail some-




**Figs 9–18.** *Parascudderia* Br.-W. and *Caroliniella* Cadena-Castañeda, male: 9–11 – *P.* (*Parascudderia*) *positiva* sp. nov.; 12, 13 – *P.* (*Negativeria*) *astylata* sp. nov.; 14, 15 – *P.* (*N.*) *secula santacruzi* subsp. nov.; 16–18 – *C. pichincha* sp. nov. Left tegmen (9, 16); stridulatory apparatus of left (10, 12, 14, 17) and right (11, 13, 15, 18) tegmina.

what turned medially and having almost rounded apex (right cercus with slightly damaged apex; Figs 30–32); genital plate with much shorter (than in above-mentioned congener) narrow distal part as well as with deep and very narrow posteromedian notch reaching base of this part (i.e. latter part divided into a pair of processes which almost finger-like, with slightly thickened and rounded apical parts, and without traces of styles; Figs 31, 32).

*Female*. Unknown.

*Length* (mm). Body 27.0; body with wings 44.0; pronotum 4.7; tegmina 33.0; hind femora 25.0.

**Comparison.** The new speies differs from all the other congeners in the characterstic shape of male cerci (with fingernail-like apical parts but without additional processes) and in the absence of styles of male genital plate.

### *Parascudderia* (*Negativeria*) *secula santacruzi* subsp. nov.

(Figs 14, 15, 23, 33–35)

**Etymology.** This subspecies is named after the Santa Cruz Province of Bolivia where it has been collected.

**Type material.** *Holotype* – male, BOLIVIA: Santa Cruz Prov., ~23 km SW of Santa Cruz City, El Sol Natural Park, ~600 m, 14–16 February 2014, A. Gorochov.

**Description.** *Male*. General appearance similar to that of *P. astylata* sp. nov. but with following differences: antennal flagellum almost completely brown; pronotal disc, femora and abdominal dorsum with reddish tinge; tegmina with very light (yellowish) proximal halves of Sc and R, most part of RS and MP+CuA1, most part (in left tegmen) and proximal part (in right tegmen) of M, and thickened veins in left dorsal field; hind wings with light costal part (situated before light apical part) distinctly wider, and with reddish brown venation in rest part (Figs 14, 15, 23); last abdominal tergite with anterodorsal inflations slightly smaller, posterior lobes shorter and curved slightly (not sharply) upwards, and notch between these lobes clearly shallower (Figs 33, 35); cerci bifurcated, with outer branch strongly curved downwards and reaching apex of genital plate, and with inner branch spine-like (thinner than outer one) and directed backwards and medially (Figs 33–35); genital plate with narrow part distinctly longer, slightly arcuate in profile, and consisting of a pair of somewhat thicker processes having short and very thick styles at apices (notch between these processes very narrow and reaching base of narrow part of genital plate; Figs 34, 35).

*Female*. Unknown, but see comparison below.

*Length* (mm). Body 26.0; body with wings 42.0; pronotum 5.0; tegmina 31.0; hind femora 24.0.

**Comparison.** The new subspecies differs from the nominotypical subspecies (Peru) in the somewhat shorter male genital plate (in *P. s. secula*, outer cercal branch is clearly not reaching the apex of this plate) and slightly larger body [in male of the nominotypical subspecies, length of body with wings is from 35 to 35.4 mm, and length of pronotum is from 4.23 to 4.37 mm (Grant 1960)]. In this paper, containing the original description of *P. secula*, Grant also mentioned two groups of specimens having some differences in their body size but included by him in the same species: Peruvian group (including holotype); Bolivian group. His Bolivian specimens probably belong to *P. s. santacruzi* subsp. nov. described here.

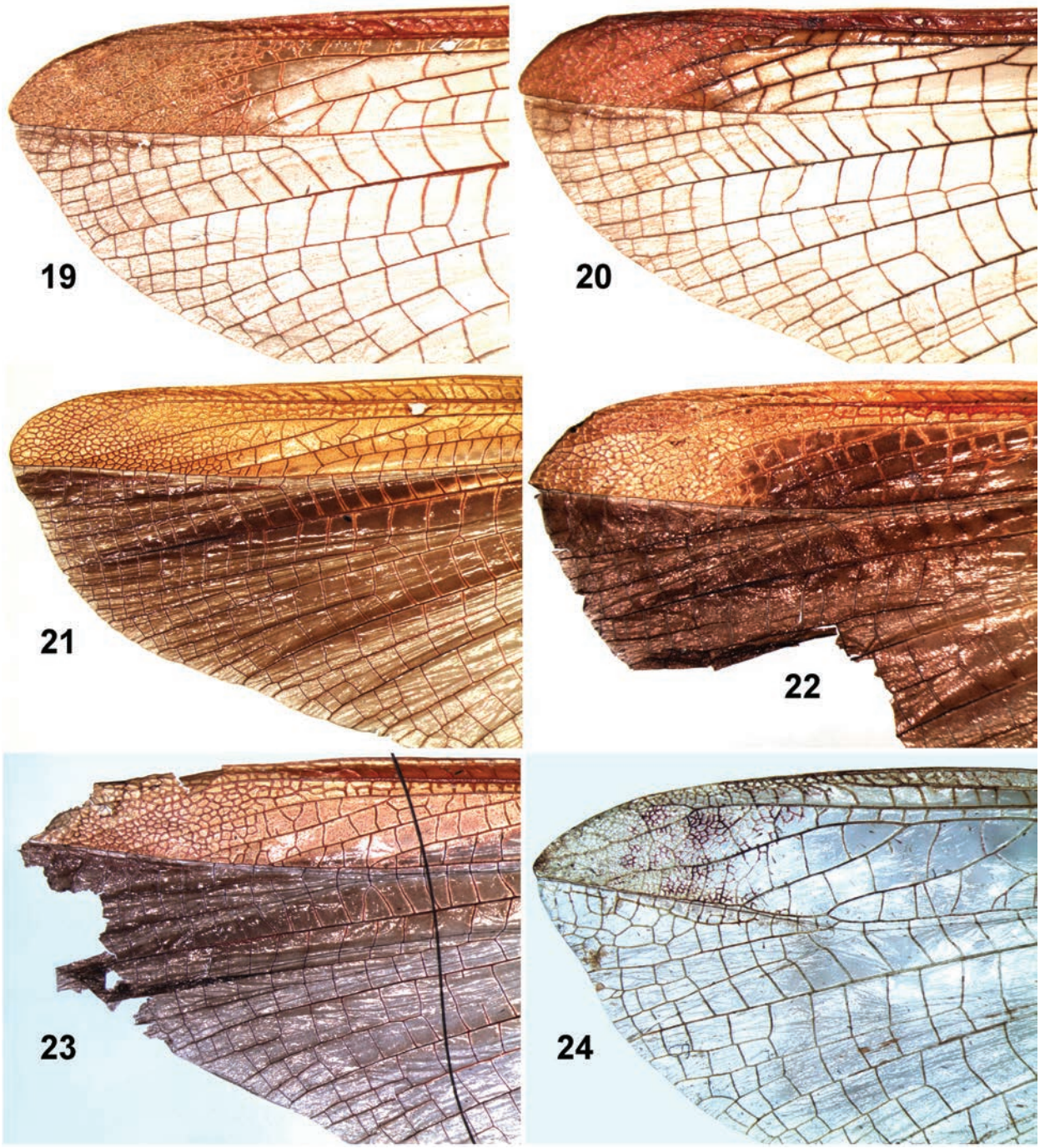
### *Parascudderia* (*Negativeria*) *negativa* sp. nov.

(Figs 7, 8, 21, 36, 37)

**Etymology.** The species name is the Latin word “negativa” (negative), because this species has the colouration of hind wings almost opposite to that of *Parascudderia* s. str.

**Type materal.** *Holotype* – female, ECUADOR: easterm plain, ~30 km EES of Tena City, Chuva Urcu on Rio Cusano, lowlying primary forest, December 2005, A. Ovtshinnikov, D. Smolnikov.

**Description.** *Female*. Body slightly smaller than in both holotypes of *Negativeria* previously described here. Colouration light greyish brown with greenish tinge, but palpi and three proximal antennal segments yellowish, rest part of antennae greyish brown, lateral field of tegmina yellowish with greenish grey longitudinal veins and reddish crossvenation, dorsal field of tegmina completely yellowish, hind wings coloured almost as in *P. secula santacruzi* subsp. nov. (Figs 7, 8, 21), tympanal membranes dark brown, rest parts of legs with light brown distal area on fore and middle tibiae as well as most part of hind tibia (but distal third of latter tibia with reddish tinge) and of tarsi, most part of abdomen brown with dark brown cerci and ovipositor (however, apical part of ovipositor less dark; Figs 36, 37). Structure of body similar to that of holotypes of *P. astylata* sp. nov. and *P. s. santacruzi*




**Figs 19–24.** *Parascudderia* Br.-W. and *Caroliniella* Cadena-Castañeda, distal half of left hind wing: 19 – *P.* (*Parascudderia*) *positiva* sp. nov.; 20 – *P.* (*P.*) *setrina* Grant; 21 – *P. (Negativeria*) *negativa* sp. nov.; 22 – *P.* (*N.*) *astylata* sp. nov.; 23 – *P.* (*N.*) *secula santacruzi* subsp. nov.; 24 – *C. pichincha* sp. nov.

subsp. nov. (dorsal tegminal field approximately as in females of *P. positiva* sp. nov. and *P. setrina*), but last abdominal tergite with much smaller and unspecialized dorsal part which almost indistinguishable from that of other abdominal tergites, epiproct also small (rounded apices of paraprocts barely protruding behind its apex) and triangular in shape, and cerci much smaller (almost twice as long as epiproct) and simple (fusiform with almost spine-like distal parts); genital plate rather large, elongate, with narrow distal third having moderately small angular notch at apex and angular lobules around it (these lobules directed upwards and partly backwards; Figs 36, 37); ovipositor as in Fig. 37.

*Male*. Unknown.

*Length* (mm). Body 20.5; body with wings 37.0; pronotum 4.6; tegmina 27.0; hind femora 23.0; ovipositor 6.0.

**Comparison.** The new species differs from *P. astylata* sp. nov. in the slightly smaller body and much wider light area in the hind wings along middle part of their costal edge (for comparison see Figs 21 and 22). From *P. secula*, the new species is distinguished by the much shorter posterior lobules of female genital plate, and from the other known congeners, by the characters listed in the subgeneric key for *Negativeria* subgen. nov. as well as by the different shape of female genital plate.

### Genus *Caroliniella* Cadena-Castañeda, 2015

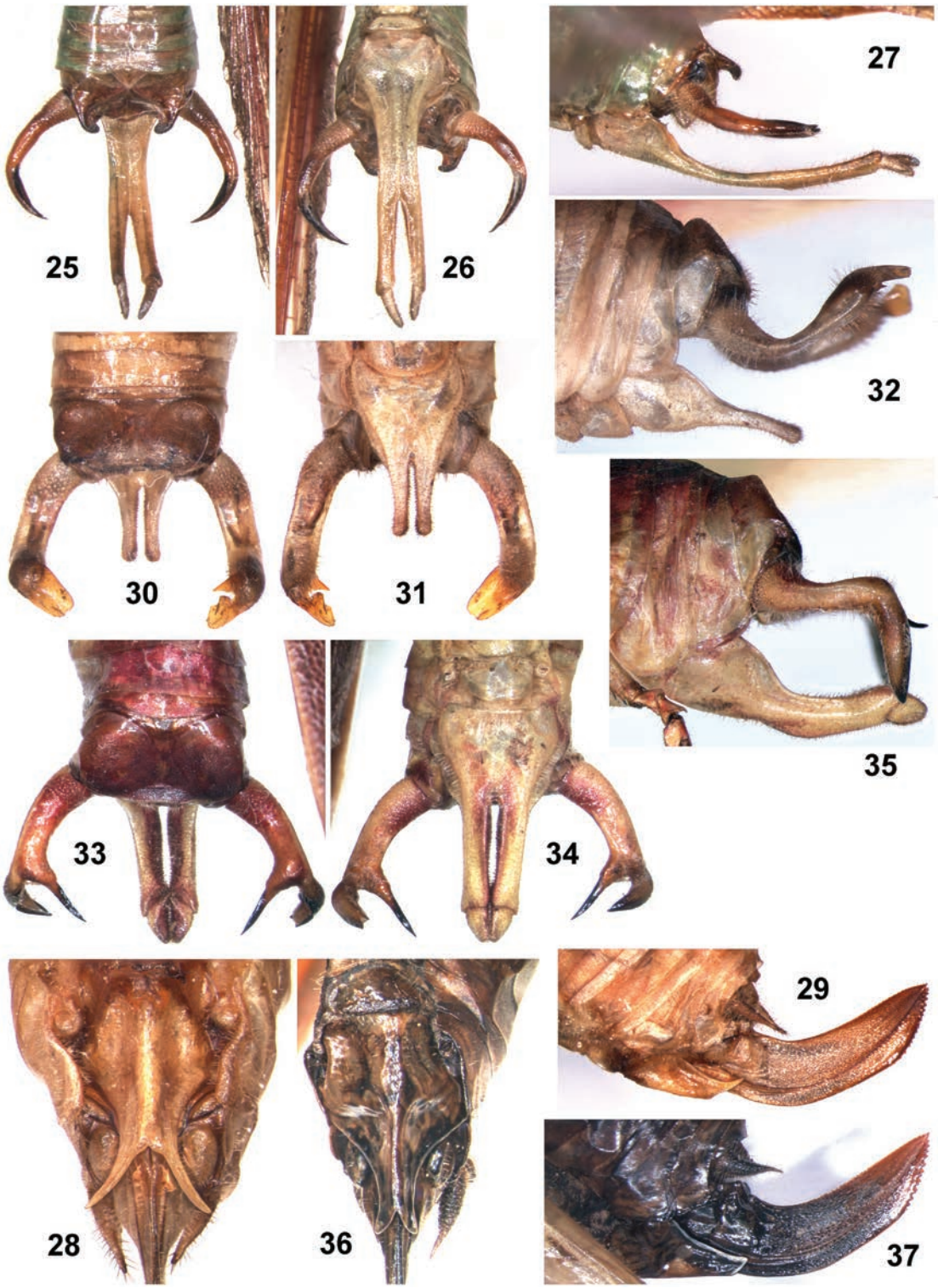
**Note.** This genus was recently established for a single species (*C. rosea* Cadena-Castañeda, 2015) from Colombia. It is characterized by the presence of a pair of rather large and not articulated posterolateral lobes in the dorsal part of male last abdominal tergite, rather long male genital plate almost lacking styles as well as without any posteromedian notch or with very small one, simple (not branched) and thin male cerci having the distal part curved and with the more or less acute apex (Figs 41–43), as well as completely membranous male genitalia. A second species most probably belonging to this genus is described below.

### *Caroliniella pichincha* sp. nov.
(Figs 16–18, 24, 38–43)

**Etymology.** The new species is named after the Pichincha Province of Ecuador.

**Type material.** *Holotype* – male, ECUADOR: Pichincha Prov., Rio Pachijal, Los Bancos, 0°04´06´´N, 78°54´17´´W, 928 m, 29 October 2011, V. Sinyaev, O. Romanov. *Paratype* – 1 male, same data as for holotype.

**Description.** *Male* (holotype). Body light greyish brown with following pattern: antennae with somewhat darkened marks on dorsal surface of scape and numerous brownish grey spots on antennal flagellum; maxillary palpi with slightly darkened distal part of apical segment; pronotum with brownish grey area in middle part of lateral lobes and somewhat darkened posterior part of disc; tegmina with several unclear darkish spots in lateral field and brown spot in distal corner of widened part of dorsal field (Figs 17, 18, 38–43); hind wings transparent with yellowish most part of venation and a few rather small areas in distal part having light brown to brown venation (Fig. 24); meso- and metanotum almost brownich grey; fore legs with barely darkened distal part of femur and greenish tibia having partly darkish tympanal membranes; middle legs with spotted (having rather numerous and small yellowish and brown marks) femur and proximal half of tibia, and with rest of tibia greenish; hind legs with similar colouration of proximal half of femur (but all spots larger), almost uniformly brownish grey rest of femur, and yellowish tibia having numerous small light brown marks in proximal half. Head clearly narrower than in *Parascudderia* but with more convex (almost globular) eyes; scape almost twice as wide as rostrum between antennal cavities; upper rostral tubercle short, triangular, with narrowly rounded apex and median groove on dorsum; lower rostral tubercle very short, somewhat not reaching upper rostral tubercle and with roundly conical apex (Figs 38, 39). Pronotum distinctly narrowed near anterior edge (this edge slightly concave in median part), with disc gradually widening to rounded (clearly convex) posterior edge, with lateral lobes rather high and barely corrugated, and with humeral notches moderately deep and comparatively wide as well as rounded in profile (Figs 38, 40). Tegmina long, with venation typical of Scudderiini and with stridulatory apparatus as in Figs 17, 18; hind wings significantly protruding beyond tegminal apices, with venation as in Fig. 24. Fore and middle legs slender, with barely thickened distal parts of femora, with a pair of apical spinules and three inner ventral spinules on fore femur as well as two pairs of spinules and one inner ventral spinule on middle femur, with




**Figs 25–37.** *Parascudderia* Br.-W.: 25–29 – *P.* (*Parascudderia*) *positiva* sp. nov.; 30–32 – *P.* (*Negativeria*) *astylata* sp. nov.; 33–35 – *P.* (*N.*) *secula santacruzi* subsp. nov.; 36, 37 – *P. (N.) negativa* sp. nov. Male abdominal apex from above (25, 30, 33), from below (26, 31, 34) and from side (27, 32, 35); female genital plate from below (28, 36); this plate and ovipositor from side (29, 37).

almost flattenly widened basal part of fore tibia having opened (oval) tympanum on each side, with three apical spinules on fore and middle tibiae as well as a few dorsal spinules and several ventral spinules on these tibiae; hind legs also slender but long, with femur having moderately thickened proximal part and two pairs of apical spinules as well as six outer and 7–8 inner ventral spines (most part of latter spines somewhat lamellarly widened at base), with tibia having numerous dorsal spines and less numerous ventral spinules as well as two pairs of apical spinules, and with rather small pulvillae on all tarsi. Abdomen with last tergite having a pair of elongate posterodorsal lobes directed backwards, barely downwards and slightly aside; these lobes with rather wide and rounded notch between them as well as with apical spines (Figs 41, 42); epiproct elongately triangular, directed downwards; paraprocts short, rounded, with very short tubercle at each apex; cerci with arcuately curved distal part (Figs 41–43); genital plate with comparatively narrow distal half, slightly widened at apex, and with two pairs of short apical lobules (medial lobules wider and rounded, but lateral lobules tubercle-like and probably originated from small styles partly fused with genital plate; Figs 41–43).

Variation. Paratype with uniformly light scapes and palpi, more densely and more distinctly spotted tegmina (Fig. 16) and fore femora, lighter hind femora (their proximal half with yellowish areas clearly larger than darkened ones), and barely smaller ventral spines of these femora; number of spines and spinules on legs slightly varied.

*Female*. Unknown.

*Length* (mm). Body 18.0–19.5; body with wings 39.0–41.0; pronotum 3.6–3.8; tegmina 30.0–31.0; hind femora 18.5–19.0.

**Comparison**. The new species clearly differs from *C. rosea* in the male genital plate with the narrower distal half having four short apical lobules (*vs.* such lobules are absent), and without large spines in the middle part (in *C. rosea*, this plate is with a pair of such spines directed upwards and almost reaching the posterodorsal lobes of last abdominal tergite).

## Subfamily Pleminiinae Brunner-Wattenwyl, 1895

## Genus *Championica* Saussure et Pictet, 1898

**Note.** This genus was divided into three subgenera by Beier (1954), but differences between two of them are unclear (Gorochov 2012a; Cadena-Castañeda et al. 2016). It is a reason that this genus is here undivided into subgenera up to a revision of their types.

### *Championica poeciloptera* sp. nov.

(Figs 44–51, 52–55)

**Etymology.** This species name consists of the Latinized Greek prefix “poecilo-” (mottledly) and word “ptera” (winged).

**Type material.** *Holotype* – male, PERU: Junin Department, Satipo Prov., ~25 km SE of Satipo Town, environs of Rio Venado Vill., ~1200 m, primary / secondary forest, at light, 20–23 October 2008, A. Gorochov, M. Berezin, L. Anisyutkin, E. Tkatsheva, V. Izersky.

**Description.** *Male*. Body medium-sized for this genus. Colouration spotted (Fig. 44): head whitish with yellowish tinge as well as with brown most part of dorsum between eyes (this brown area with dark brown anterior edge from base of upper rostral tubercle to eyes), brown longitudinal stripe on upper part of gena behind eye, small brown spot at middle of lower part of gena, grey anterior part of epicranium under lower rostral tubercle and antennal cavities, brown mark on ventromedial edge of each antennal cavity, light brown antennal flagellum having rather large yellowish spots, brownish apical part of labrum, and brown to dark brown anteromedial and lower parts of mandibles (Figs 44–46); pronotum also whitish with yellowish tinge, but it with greyish spot at middle of disc, a pair of brown to dark brown bands running from lateral edges of this spot to hind edge of disc (these bands narrow in anterior part and wide in posterior part), a few small dark brown marks along anterior edge of disc (one median mark, a pair of lateral marks, and 1–2 smaller marks between them), a pair of dark brown spots in posteroventral corner of each lateral lobe (this spot slightly not reaching posterior edge of this lobe), and a few dark brown marks along posterior edge of disc (Figs 46, 47); tegmina whitish with brown to light brown spots (Figs 44, 48, 49); hind wings with very light (yellowish) stripe along costal edge and spotted (i.e. having almost transparent and greyish brown spots) rest part (Fig. 44); legs whitish with two brown transverse bands on outer and dorsal surfaces of fore and middle femora, dark brown distal half of inner and ventral surfaces of these femora,

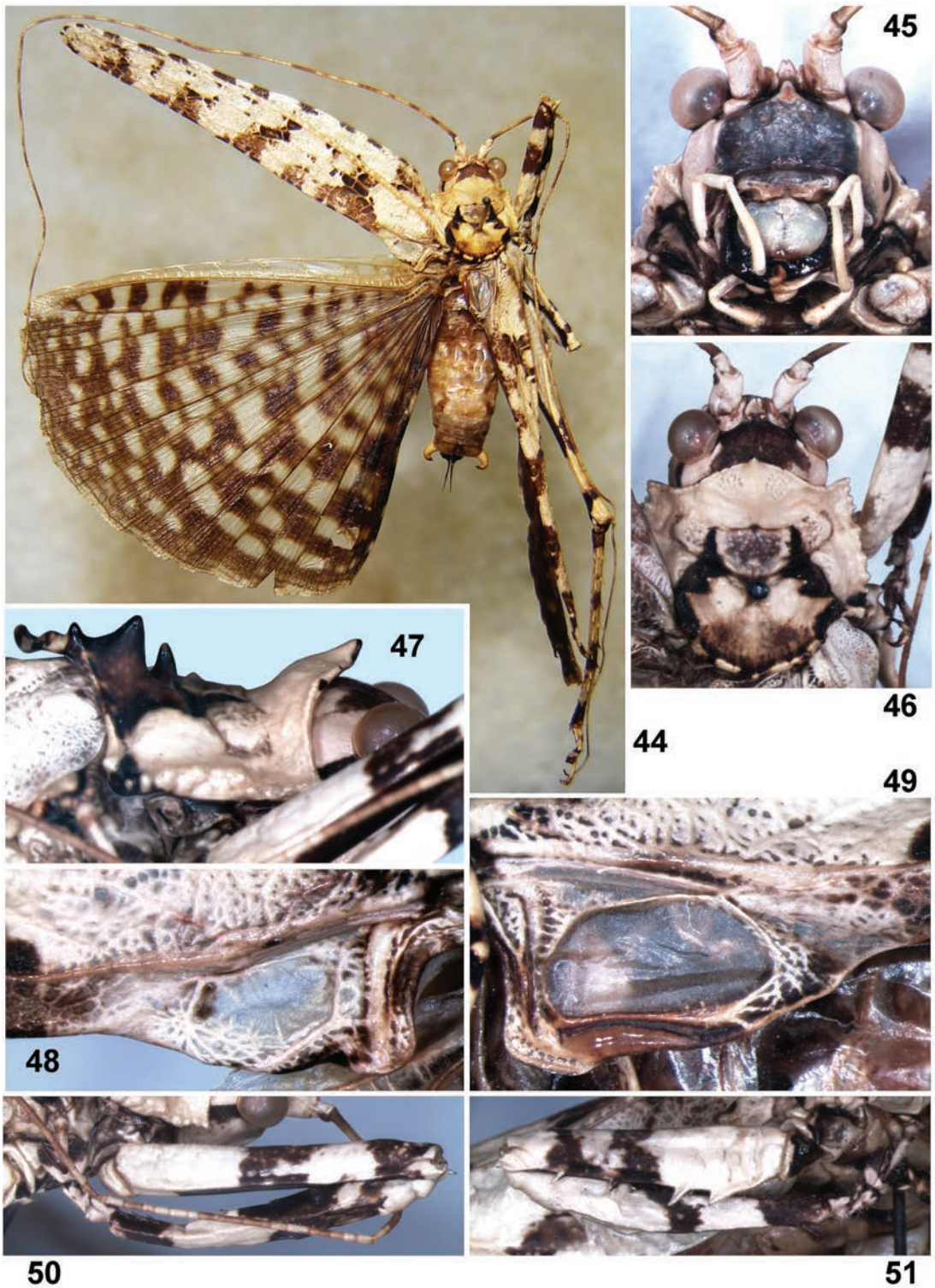

**Figs 38–43.** *Caroliniella pichincha* sp. nov., male: 38 – head with pronotum from above; 39 – rostrum of head, lateral and slightly posterodorsal view; 40 – pronotum from side; 41–43 – abdominal apex from side (41), from above (42) and from below (43).

three brown oblique bands on outer and partly dorsal surfaces of hind femur, dark brown lower part of inner surface as well as partly ventral surface of this femur, two brown to dark brown bands on fore and middle tibiae, four such bands on hind tibia, and small darkenings on all tarsi (Figs 50–52); rest of thorax as well as abdomen light (yellowish) with a few darkened spots on pleurites, light brown area on dorsum of abdomen near its apex, brown inner and dorsal parts of styles in genital plate, and dark brown apices of cerci (Figs 53–55). Head with slightly oblique anterior edge (under antennal cavities) in profile; upper rostral tubercle rather small, with distinct median concavity dorsally, with a pair of small dorsolateral tubercles at base, with apical part curved partly upwards and having small anteromedian notch; apical segment of maxillary palpi long and thin, much longer than subapical segment of these palpi and distinctly longer than third one (Fig. 45). Pronotum with anterior part of disc strongly convex forwards and having distinct anteromedian tubercle directed upwards / forwards; middle part of disc somewhat concave in profile and with a pair of distinct tubercles, but posterior part of disc with keel-like lateral sides having two pairs of anterior tubercles (most anterior tubercles largest), a pair of small rounded convexities near (behind) them, and one posteromedian tubercle directed mainly backwards (other tubercles of middle and posterior parts of disc directed more or less upwards); lateral lobes of pronotum moderately elongate, with almost straight ventral edges having rather numerous small and rounded denticles, and with more or less acute anteroventral corners (Figs 46, 47). Tegmina long, reaching distal part of hind tibiae, and with venation as in Figs 44, 48, 49; hind wings somewhat protruding beyond tegminal apices and with structure of costal part as in Fig. 44. Fore leg with a pair of spinules at femoral apex, without lobules on tibia but with two inflations on tibial dorsal surface near tympana (proximal inflation small and tubercle-like; distal one longer and wider but lower, i.e. rather slight), and with 6–7 very small spinules (including apical ones) on each ventral keel of tibia; middle leg with femur having apical spinules as in fore femur but also with four outer ventral spines which rather large and almost lamellar (more or less narrowly triangular in shape), and with tibia having one similar proximal spine on inner dorsal keel and 5–6 ventral spinules located almost as in fore tibia; hind leg with femur having widened (high) but not thick proximal part, a pair of apical spines and 10–11 rather large lamellar spines (similar to those of middle femur) on outer ventral keel, and with tibia having four distinct longitudinal keels and rather numerous spines on them (7–8 inner and 11 outer dorsal lamellar spines similar to femoral ones, six inner and ten outer ventral but not lamellar spines which distinctly smaller than previous ones, and two pairs of ventroapical and not lamellar spines) (Figs 50–52). Apical abdominal tegite simple, i.e. slightly longer than subapical ones and with almost straight posterior edge; epiproct small, roundly triangular, directed downwards; paraprocts simple (rather small and with short and roundly angular apex); cerci rather short, with distal part strongly curved medially and having very short and heavily sclerotized apical denticle (Figs 53–55); genital plate rather large, somewhat elongate, with distal part having very narrow and moderately deep posteromedian notch as well as characteristic posterior lobes provided with long and thin spine-like styles (bases of these styles slightly widened and located near each other, but apices of these styles very thin and acute; Figs 53–55); genitalia membranous.

*Female*. Unknown.

*Length* (mm). Body 28.0; body with wings 47.0; pronotum 7.5; tegmina 37.0; hind femora 28.0.

**Comparison.** The new species is most similar to *Ch. variegata* (Brunner-Wattenwyl, 1895) from Mexico in the general appearance (including colouration) but differs from the latter species in the much larger darkened area of epicranial dorsum, rather narrow posterior part of pronotal disc between its tuberculate keels, and not bifurcated posteromedian tubercle of this disc. From the other congeners, *Ch. poeciloptera* sp. nov. is distinguished by the distinctly spotted colouration in combination with the same characters of pronotal disc, rather short and/or not numerous tubercles on this disc (including the presence of only one tubercle on the anterior edge of disc), clearly longitudinal mirror in the male tegmina, absence of lobules on the fore tibia near its tympana, very narrow posteromedian notch of male genital plate, very long and spine-like styles of this plate, and presence of one apical denticle on the male cercus. It is necessary to note that *Acanthodis antennatus* Scudder, 1869 (Ecuador), judging by the photograph of its holotype in Orthoptera Species File, is erroneously included in *Championica* in this catalogue (Cigliano et al. 2017).




**Figs 44–51.** *Championica poeciloptera* sp. nov., male: 44 – body with left wings spread from above; 45 – head from below and slightly in front; 46, 47 – head with pronotum from above (46) and from side (47); stridulatory apparatus of left (48) and right (49) tegmina; 50, 51 – fore (50) and middle (51) legs from side.

The new species has also some features intermediate between *Championica* and the related genera *Acanthodis* Audinet-Serbille, 1831 and *Acanthorhinischia* Beier, 1954. Moreover, the male genital plate of *Ch. poeciloptera* sp. nov. is very similar to that ascribed by Beier (1954, 1962) to *Acanthodis aquilina* (Linnaeus, 1758) described from "Indiis" (Linnaeus 1758). However, the photographs of its possible types presented in the site of Linnean Society (2017) and in Orthoptera Species File (Cigliano et al. 2017) illustrates the species very similar to my females from French Guiana determined by Brunner-Wattenwyl as "*Brisilis aquilinus*" (= *A. aquilina*). The latter females as well as all the other congeners of *Acanthodis* clearly differs from *Ch. poeciloptera* sp. nov. in the distinctly larger body, absence of strong keels and large tubercles on the middle and posterior parts of pronotal disc, and significantly less spotted colouration. From *Acanthorhinistia coronata* Beier, 1954 (the only species of this genus), *Ch. poeciloptera* sp. nov. is distinguished by the more spotted colouration, different shape of keels and their tubercles on the pronotal disc, and less arcuate ventral lamellar spines on the middle and hind femora.

There are two other species somewhat similar to the new species but possibly not belonging to those genera where they are included now: *Tetragonomera fluminensis* Piza, 1979 (Brazil) differs from *Ch. poeciloptera* sp. nov. in the distinctly shorter (strongly curved upwards) posterior part of pronotum and somewhat different colouration (especially head pattern); *Haemodiasma pulchra* Beier, 1954 (Bolivia) is distinguished from the new species by the darker face of head and lateral lobes of pronotum as well as less developed tubercles on the middle and posterior parts of pronotal disc.

## Genus *Diacanthodis* Walker, 1870

**Note.** This genus was established for *Acanthodis formidabilis* Audinet-Serville, 1838 from Brazil (Walker 1870). Later, three additional new species were described in *Diacanthodis* by Brunner-Wattenwyl (1895): *D. aberrans* from Australia, *D. reflexa* from Brazil, *D. granosa* from French Guiana. Then, two of them were transferred to the new genera *Austracanthophora* and *Orpacanthocophora* by Beier (1954). However, the more recent catalogues (Otte 1997; Cigliano et al. 2017) contain a mistake in relation to *O. reflexa*: its authorship is ascribed to Beier, but this species was really described by Brunner-Wattenwyl in the book cited above; in all the main publications by Beier (1954, 1962, 1963), Brunner-Wattenwyl was correctly indicated as the author of *O. reflexa*.

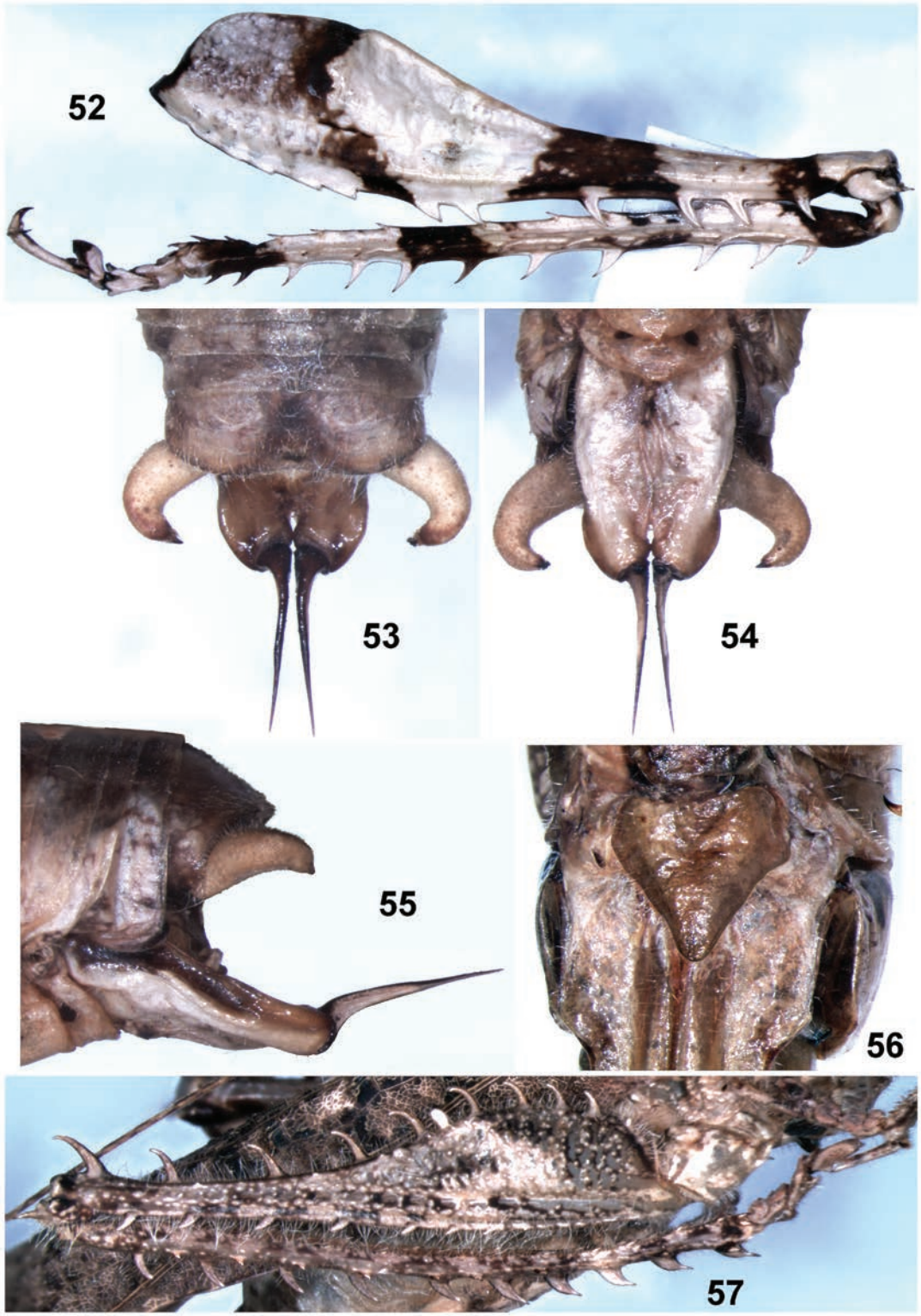
At present, *Diacanthodis* contains three species: *D. formidabilis*, *D. granosa* and new one. These species are characterized by the presence of an anteromedian spine or crest with several spines and spinules on the pronotal disc in the both sexes, as well as by the posterior pronotal part less erected upwards; the latter characters distinguish *Diacanthodis* from *Orpacanthocophora*, but these closely related genera may be synonyms of each other or two subgenera of the same genus.

### *Diacanthodis cristulata* sp. nov.
(Figs 56–65)

**Etymology.** This species name is the Latin word "cristulata" (with small crest).

**Type material.** *Holotype* – female, ECUADOR: ~95 km E of Quito City, environs of San Rafael Waterfall on Rio Coca, ~1300 m, primary forest, on branch of tree at night, 23–26 November 2005, A. Gorochov, A. Ovtshinnikov. *Paratype* – 1 female, ECUADOR: 80–85 km E of Lago Agrio Town, environs of Lago Grande (lake) on Rio Cuyabeno, very lowlying primary forest, on trunk of tree at night, 2–9 November 2005, A. Gorochov, A. Ovtshinnikov.

**Description.** *Female* (holotype). Body rather small for this genus. Colouration light brownish grey with following marks (Fig. 58): head with slightly lighter lower parts of genae as well as areas behind eyes and under eyes, with slightly darker (almost brownish grey) large dorsal area between eyes (this area barely not reaching antennal cavities and upper rostral tubercle, narrowing in posterior part), with very large blackish area under antennal cavities and traces of median ocellus (this area reaching clypeus and occupied upper part of clypeus), and with almost cream mouthparts and antennae (but antennal flagellum with numerous light brownish grey spots); pronotum with almost cream anteromedian crest on disc (Figs 59–61); tegmina with several brownish grey spots on lateral field and almost cream venation in dorsal field; hind wings light and semitransparent, i.e. with almost transparent membranes and yellowish venation (Fig. 58); legs with three darkish spots on fore femur, two such spots on middle femur and rather numerous and barely darker marks on




**Figs 52–57.** *Championica* Sauss. et Pict. and *Diacanthodis* Br.-W.: 52–55 – *Ch. poeciloptera* sp. nov.; 56, 57 – *D. cristulata* sp. nov. Hind leg from side (52, 57); male abdominal apex from above (53), from below (54) and from side (55); female genital plate from below (56).

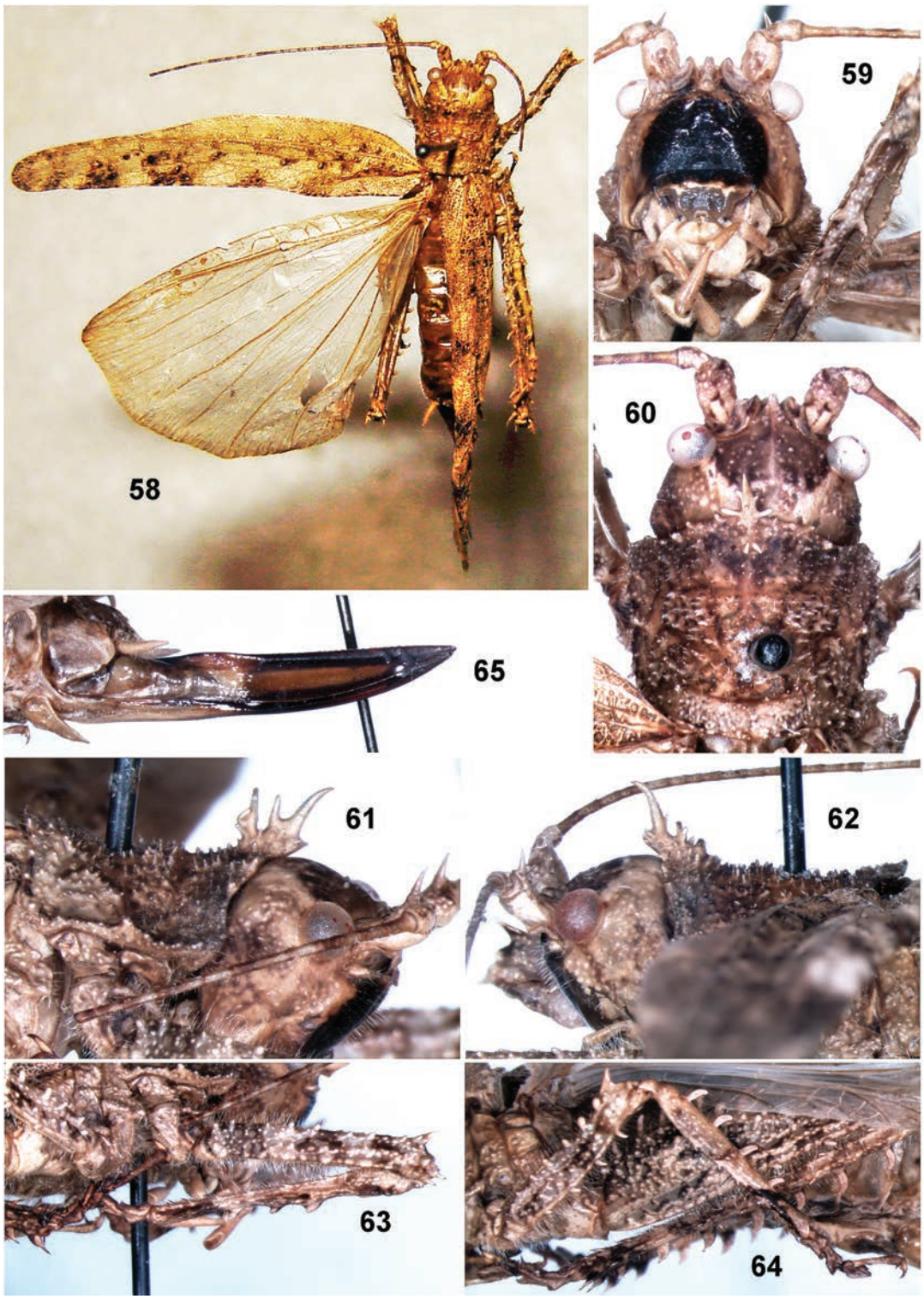
hind femur, with greyish brown subapical area on fore tibia, almost blackish subapical spot on middle tibia and darkened distal part of hind tibia, and with almost cream majority of spines and processes on middle femur and tibia and on hind femur (Figs 57, 63, 64); abdominal sternites almost brownish grey; ovipositor with brown distal half having dark brown bands along ventral and dorsal edges (Fig. 65). Head rostrum with rather small and elongately conical anterior half of upper tubercle (this tubercle barely notched at apex), with somewhat wider and higher posterior half having a pair of small rounded inflations on dorsal surface, and with small lower tubercle slightly not reaching upper tubercle and looking as somewhat larger inflation having traces of median ocellus on its anterior surface (lateral ocelli indistinct); lateral and dorsal surfaces of epicranium with sparse microscopical tubercles; antennal cavities with rounded medial lobules almost covered rostrum laterally; scape with acute dorsal spine at apex; maxillary palpi with apical segment rather thin and long, almost twice as long as subapical one (Figs 59, 60). Pronotum with numerous small tubercles (some of them almost spinule-like), with rather large anteromedian crest on disc (this crest having several spines; two of them long, others distinctly shorter), and without similar spines or crests on posterior part (shape of pronotum as in Figs 60, 61). Tegmina long, with slightly irregular longitudinal veins and several small and moderately small inflations marked by fused parts of crossvenation; hind wing reaching tegminal apex (Fig. 58). Femora with three large spines in distal part (one dorsal subapical spine, having more or less widened basal part, and a pair of apical spines), with eight other large dorsal spines on hind femur (all dorsal spines of hind femur distinctly arcuate), with three very small inner ventral spines on fore femur, with four somewhat larger outer ventral spines on middle femur, with 6–7 such spines on hind femur, and with numerous small tubercles on all femora; some of these tubercles larger than other ones (three tubercles especially large, almost process-like and with widely rounded apices: two of them located on middle femur near its dorsal edge, one such tubercle located strictly on dorsal edge of hind femur between its fourth and fifth dorsal spines). Tibiae with moderately numerous small spinules on both ventral keels, with three inner and one outer widened dorsal spines (lobules) on fore tibia distinctly behind tympana, with four longer and arcuate dorsal spines on middle tibia (these spines with rounded apices), and with 10–11 inner as well as nine outer dorsal spines on hind tibia (these spines flattened and arcuate; inner and distal outer spines large, but other outer spines more or less small) (Figs 57, 63, 64). Epiproct triangular, with narrowly rounded apex; paraprocts smaller than epiproct but with roundly angular apices visible behind epiproct; cerci simple, fusiform; genital plate with posterior two thirds triangular and having almost acute apex (Figs 56, 65); ovipositor as in Fig. 65.

Variation. Paratype slightly larger and with somewhat different shape of anteromedian crest on pronotal disc (however, this crest with two spines, located behind longest spine, probably broken off; Fig. 62).

*Male*. Unknown.

*Length* (mm). Body 25.0–28.0; body with wings 35.0–39.0; pronotum with crest 5.7–6.9; pronotum without crest 4.8–5.6; tegmina 28.0–31.0; hind femora 13.5–16.0; ovipositor 12.5–14.0.

**Comparison.** The new species is similar to *D. granosa* Brunner-Wattenwyl, 1895 from French Guiana in the absence of rather high spines and ridges on the posterior half of pronotal disc, but it is distinguished from the latter species by the presence of a crest with several spines or spinules, and by the middle tibia with only one row of spines on the dorsal surface; but *D. granosa* in accordance to Brunner-Wattenwyl (1895: 116) has the pronotal disc with one anteromedian spine ("margo anticus pronoti spinula mediana unica"). Also *D. cristulata* sp. nov. differs from the specimens, pictured by Beier (1954: fig. 211; 1962: fig. 215) and Morris et al. (1989: fig. 2A) as *D. granosa*, in the presence of a very distinct finger-like (widely rounded at the apex) process located strictly between the forth and fifth hook-like dorsal spines of hind femur; but in *D. granosa*, according these authors, this process is absent or much smaller and located more laterally [the specimens, pictured in the latter publication and photographed in the internet catalogue on Orthoptera (Cigliano et al. 2017), are additionally distinguished from the new species by a smaller and almost single anteromedian spine on the pronotal disc]. From *D. formidabilis* (Audinet-Serville 1839: Brazil), *D. cristulata* sp. nov. differs in the absence of rather high spines and ridges on the posterior half of pronotal dorsal part; according Audinet-Serville (1839), *D. formidabilis* has the posterior pronotal border with a group of large and irregular spines ("bord postérieur du prothorax armé




**Figs 58–65.** *Diacanthodis cristulata* sp. nov., female: 58 – body with left wings spread from above; 59 – head from below and slightly in front; 60–62 – head with pronotum from above (60) and from side (61, holotype; 62, paratype); 63, 64 – fore (63) and middle (64) legs from side; 65 – ovipositor with genital plate from side.

d'épines distinctes, au-dessus desquelles on en voit quelques autres plus grandes, irrégulières").

**ACKNOWLEDGEMENTS**

The author is thankful to the collectors of these interesting insects. This study was performed in the frames of the state research project No. AAAA-A17-117030310210-3 (Russian Federation) and is supported by the Russian Foundation for Basic Research (grant No. 16-04-01143).

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*Submitted June 7, 2017; accepted July 31, 2017.*