

Three new taxa of the genus *Paraphidnia* (Orthoptera: Tettigoniidae: Phaneropterinae) from French Guiana

Три новых таксона рода *Paraphidnia* (Orthoptera: Tettigoniidae: Phaneropterinae) из Французской Гвианы

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Paraphidnia (*Anaphidna*) *tarsalis* sp. nov., *P. (A.) fasciata* sp. nov. and *P. (A.) osae orientalis* subsp. nov. are described from the same locality in French Guiana. These taxa belong to a species group of the subgenus *Anaphidna* with reduced processes on the pronotal disc.

Из одной и той же местности во Французской Гвиане описаны *Paraphidnia* (*Anaphidna*) *tarsalis* sp. nov., *P. (A.) fasciata* sp. nov. и *P. (A.) osae orientalis* subsp. nov. Эти таксоны принадлежат к группе видов подрода *Anaphidna* с редуцированными выростами на диске переднеспинки.

Key words: katydids, taxonomy, French Guiana, Orthoptera, Tettigoniidae, Phaneropterinae, *Paraphidnia*, new taxa

Ключевые слова: кузнечики, таксономия, Французская Гвиана, Orthoptera, Tettigoniidae, Phaneropterinae, *Paraphidnia*, новые таксоны

INTRODUCTION

The genus *Paraphidnia* Giglio-Tos, 1898 was recently reviewed by Cadena-Castañeda & Gorochov (2012). In this paper, *Paraphidnia* was divided into two subgenera: nominotypical one and *Anaphidna* Gorochov et Cadena-Castañeda, 2012. Also twelve new species were described from Neotropical region (only three species of this genus were previously described from the same region: Brunner-Wattenwyl, 1878; Giglio-Tos, 1898; Rehn, 1918).

Some additional material studied by me shows that this genus is richer: three new taxa of the subgenus *Anaphidna* were found in the collection of the Zoological Institute, Russian Academy of Sciences, St Petersburg (type material on these taxa is deposited at the same institution).

DESCRIPTIONS OF NEW TAXA

Subfamily PHANEROPTERINAE

Tribe DYSONIINI

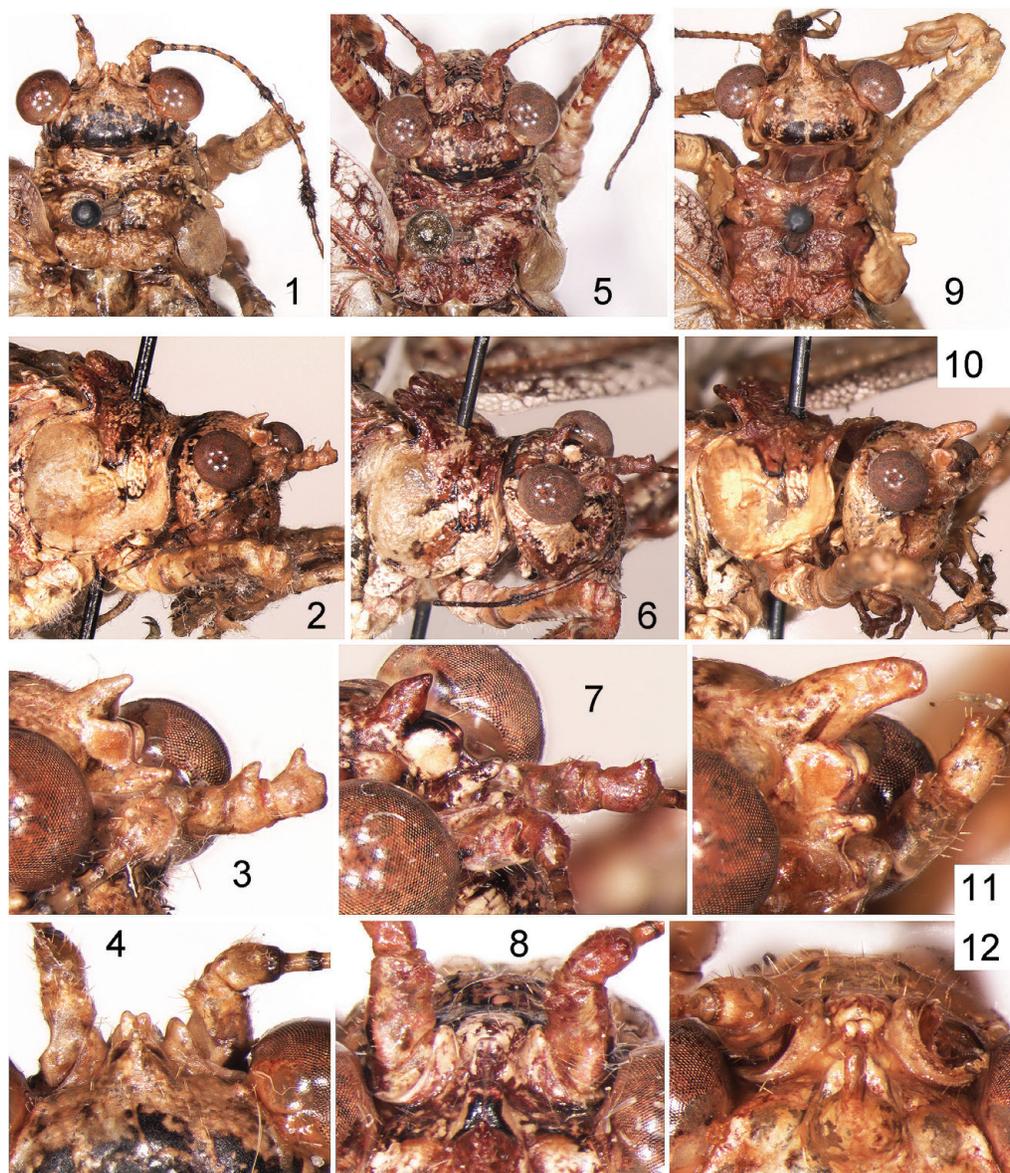
Paraphidnia (*Anaphidna*) *tarsalis* sp. nov.

(Figs 1–4, 13–16, 25–27, 34, 35)

Holotype. Male; **French Guiana**, “22 km NW Régina, pk 79 Route Nle 2, 4°25′N, 52°19′W, 100 m”, 28 June 1995, V. Gusarov (ZIN).

Paratypes. Three males, same data as for holotype but 28 June – 21 July 1995 (ZIN); male, same country, “Mt. de Kaw, 2 km SO Camp Caïmans, 300 m, 4°34′N, 52°12′W”, 10 July 1995, V. Gusarov (ZIN).

Description. Male (holotype). General appearance typical of *Anaphidna* (see Cadena-Castañeda & Gorochov, 2012) and most similar to *P. verrucosa* (Brunner-Wat-



Figs 1–12. *Paraphidnia*, male: 1–4, *P. tarsalis* sp. nov.; 5–8, *P. fasciata* sp. nov.; 9–12, *P. osae orientalis* subsp. nov. Head and pronotum from above (1, 5, 9) and more or less from side (2, 6, 10); rostrum of head more or less from side (3, 7, 11), from above (4), and from above and slightly in front (8, 12).

tenwyl, 1878), *P. bezverkhovi* Gorochov, 2012 and *P. polestshuki* Gorochov, 2012 in small posterior denticle of upper rostral tubercle and very weakly developed tubercles of pronotal disc. Body rather small, light greyish brown with numerous dark and darkish marks. Head and pronotum rugose

but with almost smooth distal half of pronotal lateral lobes; head rostrum with anterior and posterior denticles of upper tubercle short and almost equal in length, but these denticles somewhat longer than middle denticle of this tubercle and than lower tubercle (posterior denticle almost conical,

more or less acute; Figs 1–4); antennae with two proximal segments having short dorsal spine (Fig. 3) and small sparse inflations on flagellum (these inflations with numerous setae; Fig. 1); middle spine of pronotal lateral lobes short and directed partly backwards (Fig. 1); part of these lobes behind middle spine rather long, somewhat inflate, and with barely convex hind edge (Fig. 2). Wings and tegminal stridulatory apparatus as in Figs 13–16; fore femora with two small spines on inner ventral keel; fore tibiae with widened tympanal (proximal) part almost equal to their rest (distal) part in length and without any tubercle on dorsal half of this tympanal part; middle and hind femora with outer ventral keel having three spines in middle femora and four in hind femora as well as with inner ventral keel of hind femora having one distal spine (distal outer spine largest and clearly triangularly lobe-like but almost twice smaller than in *P. bezverkhovi* and *P. polestshuki*; Figs 34, 35); each apical lobule of hind femora with two short spinules; middle and hind tibiae with more numerous spines (largest spines slightly or significantly smaller than in above-mentioned congeners, respectively; Figs 34, 35); all tarsi with strongly inflated dorsal part of proximal segment and with very large second segment (its distal projections reaching apex of third segment; Fig. 25). Abdomen with concave hind tergite and widely angular epiproct partly directed downwards; cerci as in Fig. 26; genital plate with angular posteromedian notch (Fig. 27).

Variations. Sometimes fore femora with three spines on inner ventral keel, hind femora with three or five spines on outer ventral keel, and genital plate with almost rounded posteromedian notch.

Female unknown.

Length in mm. Body 14.5–16; body with wings 34–36; pronotum 2.8–3; tegmina 23–25; hind femora 10.5–11.5.

Comparison. From *P. verrucosa*, *P. bezverkhovi* and *P. polestshuki*, the new species is distinguished by a conical posterior den-

ticle of the upper rostral tubercle; from two the latter species, by smaller largest spines of legs as well as by the tarsi with a strongly inflated proximal segment and very large second segment; from *P. bezverkhovi*, by a longer and smooth distal part of the pronotal lateral lobe behind the middle spine; and from *P. polestshuki*, by a clearly thinner middle spine of the pronotal lateral lobes and by the inner dorsal side of tympanal part of fore tibiae lacking any distinct tubercle. From all the other representatives of *Anaphidna*, the new species differs in the above-mentioned characters of tarsi in combination with a short and acute (not bilobate and not truncate) posterior denticle of the upper rostral tubercle and with strongly reduced tubercles of the pronotal disc.

Etymology. Name of this new species originates from “tarsus”, a scientific term from Greek word meaning hand.

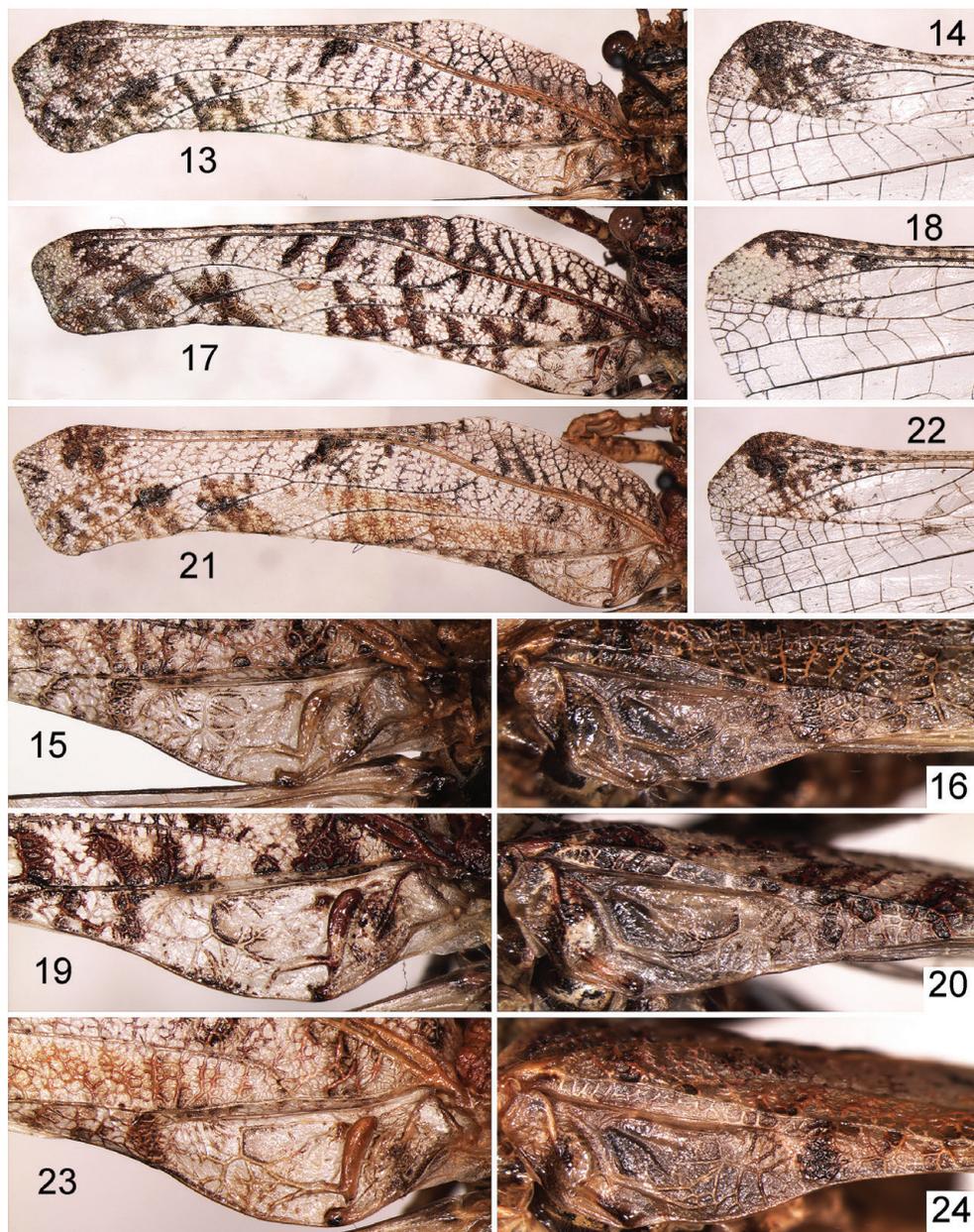
***Paraphidnia (Anaphidna) fasciata*
sp. nov.**

(Figs 5–8, 17–20, 28–30, 36, 37)

Holotype. Male; **French Guiana**, “22 km NW Régina, pk 79 Route Nle 2, 4°25'N, 52°19'W, 100 m”, 28 June 1995, V. Gusarov (ZIN).

Paratypes. Two males, same country, “Mt. de Kaw, 2 km SO Camp Caïmans, 300 m, 4°34'N, 52°12'W”, 10 July 1995, V. Gusarov (ZIN).

Description. Male (holotype). General appearance (including size of body and of posterior rostral denticle as well as structure of pronotal disc) similar to that of *P. bezverkhovi*, *P. polestshuki* and *P. tarsalis*. Colouration more or less resembling that of *P. tarsalis* but with numerous dark stripes on proximal half of tegmina (for comparison see Figs 13 and 17). Head and pronotum also similar to those of *P. tarsalis* but with barely rugose distal half of pronotal lateral lobes and almost without middle spine on these lobes (only small tubercle developed in middle part of these lobes; Fig. 5). Distal part of tegmina and of costal lobe of hind wings somewhat narrower than in *P. tarsalis* (see Figs 13, 14 and 17, 18); tegminal stridulatory apparatus as in Figs 19, 20; legs



Figs 13–24. *Paraphidnia*, male: 13–16, *P. tarsalis* sp. nov.; 17–20, *P. fasciata* sp. nov.; 21–24, *P. osae orientalis* subsp. nov. Left tegmen (13, 17, 21); distal part of hind wing (14, 18, 22); stridulatory apparatus of left (15, 19, 23) and right (16, 20, 24) tegmina.

distinguished from those of *P. tarsalis* by presence of very small (weakly distinct) tubercle on inner dorsal side of tympanal widening of fore tibia, somewhat smaller largest spines on middle and hind legs (Figs 36, 37),

and all tarsi typical of *Anaphidna* (proximal segment almost not inflate; second segment not large, with distal projections covering only basal part of third segment; Fig. 28). Cerci with somewhat narrower both (dor-

sal and ventral) apical lobules of inner lobe (Fig. 29); genital plate with rounded posteromedian notch (Fig. 30).

Variations. Sometimes dorsal apical lobule of inner cercal lobe slightly narrower than in holotype.

Female unknown.

Length in mm. Body 15–16.5; body with wings 34–36; pronotum 3–3.2; tegmina 23–24; hind femora 11–11.5.

Comparison. The new species is distinguished from *P. tarsalis* by less specialized tarsi (see the description above); from *P. bezverkhovi*, by an inflat and less rugose distal part of the pronotal lobe as well as the absence of middle spine on this lobe and smaller largest spines of legs; from *P. polestshuki*, by the same characters of leg spines and absence of middle spine on the pronotal lateral lobe; and from all the other species of *Anaphidna*, by a short and almost conical (not bilobate and not truncate) posterior denticle of the upper rostral tubercle in combination with strongly reduced tubercles of the pronotal disc and with the absence of middle spine on the lateral lobes of pronotum.

Etymology. Name of the new species originates from the Latin word “fascia” (band, ribbon, stripe).

***Paraphidnia (Anaphidna) osae orientalis* subsp. nov.**

(Figs 9–12, 21–24, 31–33, 38, 39)

Holotype. Male; **French Guiana**, “22 km NW Régina, pk 79 Route Nle 2, 4°25′N, 52°19′W, 100 m”, 28 June 1995, V. Gusarov (ZIN).

Description. Male (holotype). General appearance very similar to that of *P. osae osae* Cadeña-Castaneda, 2012, **stat. nov.** (Costa Rica), however posterior denticle of upper rostral tubercle slightly less arcuate (and also similar to that of *P. silvai* Cadeña-Castaneda, 2012 but slightly more arcuate; Figs 11, 12). This denticle also clearly longer than in *P. peruana* Gorochov, 2012, *P. verrucosa*, *P. bezverkhovi*, *P. polestshuki*, *P. tarsalis* and *P. fasciata*, rounded at apex (not with truncate or bilobate apex characteristic of *P.*

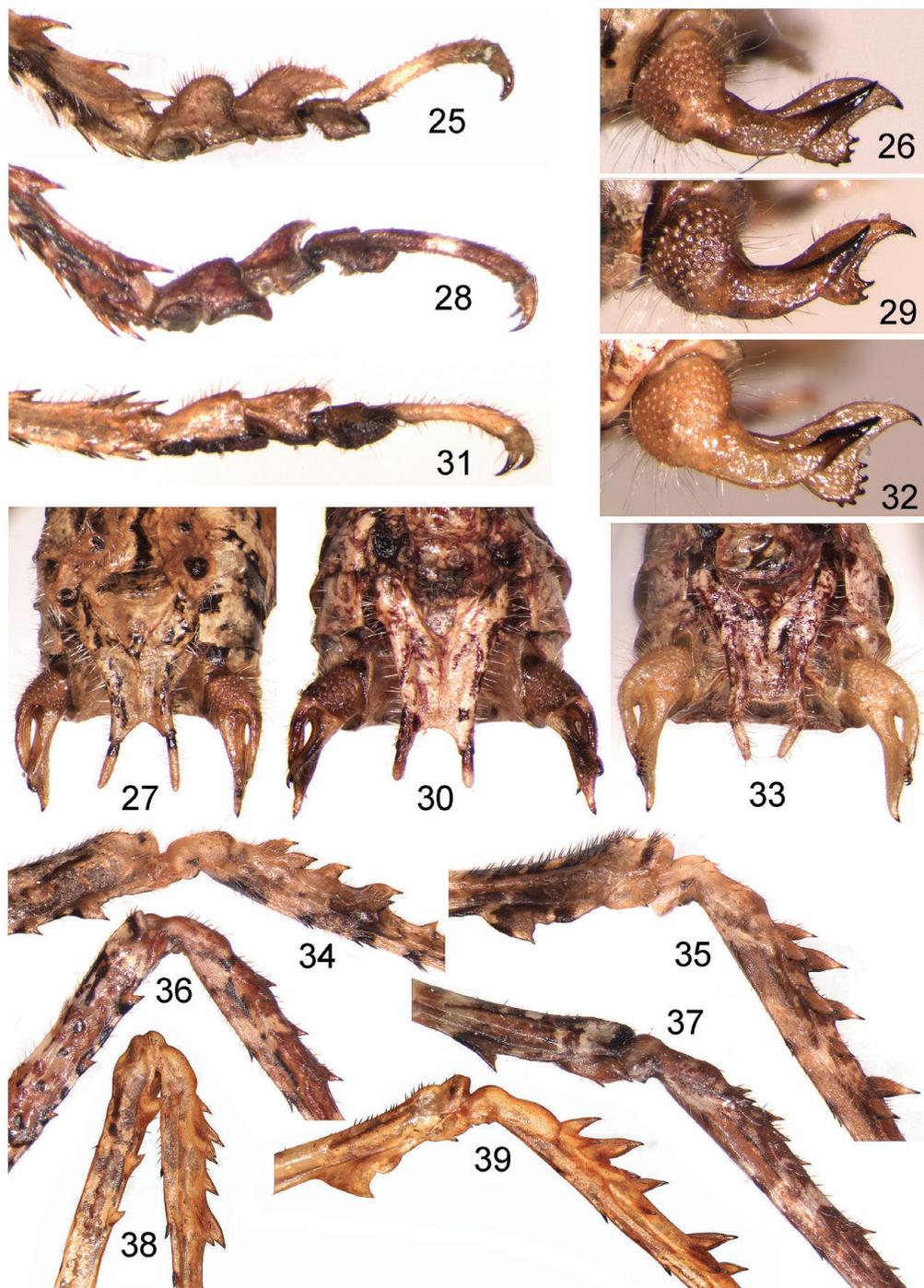
svetlanae Gorochov, 2012 and *P. hernandezi* Cadeña-Castaneda, 2012), less straight and/or shorter than in all other congeners; pronotum with strongly reduced tubercles on disc and with lateral lobes more or less similar to those of *P. tarsalis* but having somewhat longer middle spine directed laterally and distinctly shorter posterior part of these lobes (from middle spine to hind edge; Figs 9–12). Tegmina rather similar to those of *P. tarsalis* in shape as well as in colouration and structure of stridulatory apparatus (Figs 21, 23, 24), but thickened ventral part of stridulatory vein in left tegmen almost straight (somewhat less arcuate than in *P. o. osae*; see Cadeña-Castaneda & Gorochov, 2012: fig. 102); hind wings with distal part of costal lobe approximately intermediate between those of *P. tarsalis* and *P. fasciata* in width (Fig. 22); legs similar to those of *P. fasciata* but fore tibiae with larger (clearly distinct, not very small) tubercle on inner dorsal side of tympanal widening (near distal edge of tympanum), and largest spines of all legs somewhat larger (in middle and hind legs, they almost as in *P. tarsalis*; Figs 38, 39). Inner cercal lobe with dorsal apical lobule almost intermediate between those of *P. tarsalis* and *P. fasciatus* in width (height) and with ventral apical lobule wider than in both these species (Fig. 32); genital plate (Fig. 33) with distinctly convex posteromedian edge between posterolateral lobules having styles (this character known also in nominotypical subspecies of this species only).

Female unknown.

Length in mm. Body 18; body with wings 37; pronotum 3.5; tegmina 26; hind femora 11.5.

Comparison. The new subspecies differs from *P. o. osae* in a less arcuate posterior denticle of the upper rostral tubercle and almost straight thickened ventral part of stridulatory vein. From all the other species of this subgenus, *P. o. orientalis* is distinguished by the characters of head rostrum and of pronotum listed in its description.

Etymology. Name of the new subspecies is the Latin word “orientalis” (eastern).



Figs 25–39. *Paraphidnia*, male: 25–27, 34, 35, *P. tarsalis* sp. nov.; 28–30, 36, 37, *P. fasciata* sp. nov.; 31–33, 38, 39, *P. osae orientalis* subsp. nov. Hind tarsus from side (25, 28, 31); cercus from side (26, 29, 32); abdominal apex from below (27, 30, 33); distal part of femur and proximal part of tibia in middle (34, 36, 38) and hind (35, 37, 39) legs from side.

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REFERENCES

- Brunner-Wattenwyl C.** 1878. *Monographie der Phaneropteriden*. Wien: F.A. Brockhaus. 401 S., 8 Tab.
- Cadena-Castañeda O.J. & Gorochov A.V.** 2012. Review of the Neotropical genus *Paraphidnia* (Orthoptera: Tettigoniidae: Phaneropterinae). *Zoosystematica Rossica*, **21**(2): 204–233.
- Giglio-Tos E.** 1898. Viaggio del Dr. Enrico Festa nella Republica dell'Ecuador et regioni vicine. VI. Ortoteri. *Bollettino dei Musei di Zoologia et Anatomia Comparata della R. Università di Torino*, **13**(311): 1–108.
- Rehn J.A.G.** 1918. Description of one new genus and fifteen new species of tropical American Orthoptera. *Transactions of the American Entomological Society*, **44**: 321–372, pl. 18–20.

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