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con il contributo di
FONDAZIONE CARITRO
CASSA DI RISPARMIO DI TRENTO E ROVERETO

PAOLO FONTANA & FILIPPO MARIA BUZZETTI

NEW OR LITTLE KNOWN MEXICAN MELANOPLINAE (Orthoptera Acrididae)

ABSTRACT - FONTANA P. & BUZZETTI F. M., 2007 - New or little known Mexican Melanoplinae (Orthoptera Acrididae).

Atti Acc. Rov. Agiati, a. 257, 2007, ser. VIII, vol. VII, B: 73-130.

On the basis of recently collected material, 19 species belonging to 7 genera of Melanoplinae are treated and illustrated. Ten new species and one new genus are described: *M. chichimecus* n. sp., *Melanoplus cimatario* n. sp., *Phaedrotettix gualagüises* n. sp., *P. toltecus* n. sp., *P. violai* n. sp., *Philocleon luceroae* n. sp., *P. ottei* n. sp., *Huastecacris* n. gen., *Huastecacris zenoni* n. gen. and n. sp., *Paraidemona cohni* n. sp. and *Pedies cerropotosí* n. sp. New data and redescriptions are given for *Melanoplus reflexus* Scudder, 1897, *Melanoplus meridionalis* Scudder, 1897 and *Melanoplus bakeri* Hebard, 1932. The *Melanoplus* species here threated are grouped in the «*Melanoplus reflexus* species group». *Conalcaea truncatipennis* Scudder, 1897 is assigned to *Huastecacris* n. gen. New data on the distribution of *Phaulotettix compressus* Scudder, 1897, *Phaulotettix eurycercus* Hebrad, 1918, *Phaedrotettix litus* Hebard, 1917, *Phaedrotettix valgus* Scudder, 1897 and *Philocleon scudderi* (Hebard, 1932) are given. Main morphological features of all treated species and the living habitus of many of them are illustrated.

KEY WORDS - *Melanoplus* Stål, 1873, *Phaedrotettix* Scudder, 1897, *Phaulotettix* Scudder, 1897, *Philocleon* Scudder, 1897, *Huastecacris* n. gen., *Paraidemona* Brunner von Wattenwyl, 1893, *Pedies* Saussure, 1861, Distribution, taxonomy.

RIASSUNTO - FONTANA P. & BUZZETTI F. M., 2007 - Melanoplini messicani nuovi o poco noti (Orthoptera Acrididae).

Sulla base di materiale raccolto in Messico dagli autori negli ultimi tre anni, vengono trattate e illustrate 19 specie appartenenti a 7 generi di Melanoplinae per la maggior parte endemici del Messico. Sono descritte 10 nuove specie e un nuovo genere: *M. chichimecus* n. sp., *Melanoplus cimatario* n. sp., *Phaedrotettix gualagüises* n. sp., *P. toltecus* n. sp., *P. violai* n. sp., *Philocleon luceroae* n. sp., *P. ottei* n. sp., *Huastecacris* n. gen., *Huastecacris zenoni* n. gen. e n. sp., *Paraidemona cohni* n. sp. e *Pedies cerropotosí* n. sp. Vengono inoltre forniti nuovi dati e una ridescrizione di tre altre specie del genere *Melanoplus* Stål, 1873, endemiche del Messico: *Melanoplus reflexus* Scudder,

1897, *Melanoplus meridionalis* Scudder, 1897 e *Melanoplus bakeri* Hebard, 1932. Le specie del genere *Melanoplus* trattate in questo lavoro vengono riunite in un unico gruppo qui denominato gruppo *reflexus*. *Conalcaea truncatipennis* Scudder, 1897 viene assegnata a *Huastecacris* n. gen. Vengono forniti nuovi dati sulla distribuzione di *Phaulotettix compressus* Scudder, 1897, *Phaulotettix eurycercus* Hebrad, 1918, *Phaedrotettix litus* Hebard, 1917, *Phaedrotettix valgus* Scudder, 1897 e *Philocleon scudderi* (Hebard, 1932). Di tutte le specie trattate vengono illustrati fotograficamente i principali caratteri tassonomici e della maggior parte di esse anche l'habitus in vivo.

PAROLE CHIAVE - *Melanoplus* Stål, 1873, *Phaedrotettix* Scudder, 1897, *Phaulotettix* Scudder, 1897, *Philocleon* Scudder, 1897, *Huastecacris* n. gen., *Paraidemona* Brunner von Wattenwyl, 1893, *Pedies* Saussure, 1861, Distribuzione, tassonomia.

INTRODUCTION

Mexican Orthoptera-fauna is only partially known and a modern wide overview on these insects is only outlined by Barrientos Lozano (2004) and by Fontana *et al.* (2007). The checklist arranged by Barrientos Lozano (2004) lists 274 genera and 920 species while that proposed by Fontana *et al.* (2007) groups only the species having in Mexico their type locality or having synonyms with the same type locality. This last list numbers 651 species representative of 250 genera, 19 families and 9 superfamilies. Among the Caelifera, the subfamily Melanopline is represented by 122 specific and subspecific taxa grouped in 23 genera in Barrientos Lozano (2004) and by 102 taxa and 25 genera by Fontana *et al.* (2007). Only few genera number more than 5 taxa and the genus *Melanoplus* Stål, 1873 is the richest in species. An interesting aspect of Mexican Melanoplinae fauna is the richness in genera and the presence of many endemisms. Actual knowledge on this subfamily is for Mexico, as well in other central and south American countries, far to be sufficient. In fact in our collecting expeditions we found many new taxa and even more lie undescribed in some public collection, especially in U.S.A. scientific institutions. The number of new taxa we are discovering in our studies is becoming a serious problem in order to use our data for ecological researches and habitat conservation aims. We therefore decided to describe the new taxa widely illustrating their main morphological characters and to report the little known taxa. In our opinion taxonomy is a science that produce many benefits for general knowledge on evolution and biogeography but is also the only way to make universal the discussion on living or extinct organisms: a indispensable tool for other studies like ecology and biodiversity conservation. Describing the following taxa we hope to give a small contribu-

tion to the scientific community reducing the use of uncertain and temporary nomenclature, and focusing the interest on the problem of undescribed taxa.

In our collecting expeditions since 2004 we gathered more than 200 taxa of Mexican Orthoptera but many of these are new for science. In this article we decided to describe the new Melanoplinae species extending our work to their related taxa in order to base our taxonomical decisions on solid data.

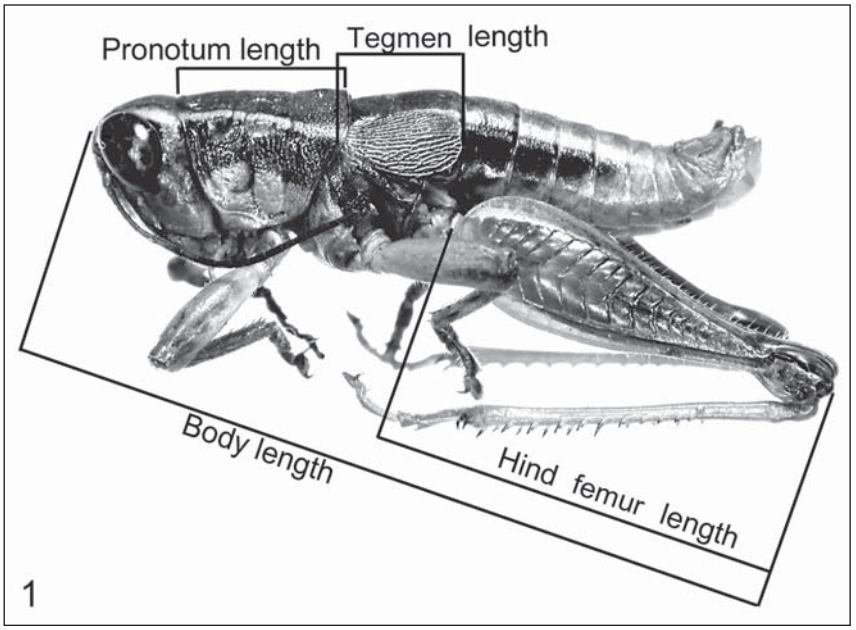


Fig. 1. Morphological measurements.

METHODS

All the specimens of the taxa here described or redescribed are preserved dry mounted (following Fontana et al., 2002) in the private collection of the first author (Isola Vicentina, Italy). All pictures of living specimens were taken with a Nikon D70 digital camera with Sigma micro lens 105 mm and stereoscope pictures of mounted specimens were taken with a Nikon Coolpix 4500 on a Stereomicroscope Optech EMX-210-2. All measurements were taken with a micrometric ocular on the same stereomicroscope. All geographical coordinates of collect-

ing localities were taken using a Garmin eTrex (Palm Size 12 Channel) GPS. Body length is taken from the tip of hind femora to head vertex, in order to reduce the variability given by abdomen dilatation. Structures are measured on the left side of the body (Fig. 1) or, if lacking, on the right side. The nomenclature adopted for the tribes of Mexican Melanoplinae is that used in *Orthoptera Species File Online*, version 2.7, (http://osf2x.orthoptera.org/O/entry/HomePage.aspx).

Results

Tribe **Melanoplini** Scudder, 1897

Genus ***Melanoplus*** Stål, 1873

The genus *Melanoplus* Stål, 1873 is among Orthoptera worldwide one of the richest genera in number of species and according the OSF online it numbers 285 taxa. Up to date the only generic revision available is the monograph of Scudder (1897) while after this unique masterpiece a huge number of publications contain description of new taxa, often assembled in organic group of species. The genus is almost exclusively present in North and Central America, having one Holoarctic species widely distributed along Eurosibiric region: *Melanoplus frigidus* (Boheman, 1846). *Melanoplus* of Mexico are quite common in Northern and Central states, while in the South are represented by few taxa. Only 37 (with the two new ones described below) described specific and subspecific taxa are known from Mexico and many of them are endemic of this country (Tab. I).

Species	Type locality
Melanoplus aridus (Scudder, 1879)	U.S.A., Arizona
Melanoplus arizonae Scudder, 1878	U.S.A., Arizona
Melanoplus bakeri Hebard, 1932	Mexico, Distrito Federal
Melanoplus bispinosus (Scudder, 1879)	U.S.A., Texas
Melanoplus bivittatus (Say, 1825)	U.S.A., Arkansas
Melanoplus bowditchi bowditchi (Scudder, 1879)	U.S.A., Colorado
Melanoplus cancri Scudder, 1897	Mexico, Baja California
Melanoplus chichimecus n. sp.	Mexico, Queretaro
Melanoplus chiricahuae (Hebard, 1922)	U.S.A., Arizona
Melanoplus complanatipes complanatipes Scudder, 1897	Mexico, Baja California
Melanoplus cimatario n. sp.	Mexico, Queretaro

Melanoplus cinereus cyanipes Scudder, 1897	U.S.A., California
Melanoplus desultorius insignis Hebard, 1917	Mexico, Sonora
Melanoplus devastator conspicuus (Scudder, 1879)	U.S.A., California
Melanoplus differentialis nigricans Cockerell, 1917	U.S.A., Colorado
Melanoplus discolor (Scudder, 1878)	U.S.A., Texas
Melanoplus femurrubrum (De Geer, 1773)	U.S.A.
Melanoplus flavidus Scudder, 1878	U.S.A., Colorado
Melanoplus geniculatus Scudder, 1897	Mexico
Melanoplus gladstoni Scudder, 1897	Canada, Alberta
Melanoplus glaucipes (Scudder, 1875)	U.S.A., Texas
Melanoplus herbaceous (Bruner, 1893)	U.S.A., Texas
Melanoplus lakinus (Scudder, 1878)	U.S.A., Colorado
Melanoplus littoralis Roberts, 1942	Mexico, Veracruz
Melanoplus meridae Roberts, 1942	Mexico, Yucatan
Melanoplus meridionalis Scudder, 1897	Mexico, San Luis Potosí
Melanoplus mexicanus (Saussure, 1861)	Mexico, Sonora
Melanoplus nitidus Scudder, 1897	Mexico, Jalisco
Melanoplus occidentalis (Thomas, 1872)	U.S.A., Wyoming
Melanoplus plebejus (Stål, 1878)	U.S.A., Texas
Melanoplus reflexus Scudder, 1897	Mexico, San Luis Potosí
Melanoplus regalis (Dodge, 1876)	U.S.A., Nebraska
Melanoplus scitulus Scudder, 1897	Mexico, San Luis Potosí
Melanoplus sumichrasti sumichrasti (Saussure, 1861)	Mexico
Melanoplus sumichrasti vicinulus Roberts, 1942	Mexico, Hidalgo
Melanoplus thomasi Scudder, 1897	Mexico, Durango
Melanoplus torridus Roberts, 1947	Mexico, Tamaulipas

Tab. I. Species of the genus *Melanoplus* known from Mexico with respective type localities.

Melanoplus reflexus group

Recognition: Small species, short winged, with wide oval tegmina often emarginated posteriorly. Pronotum with a marked black and whitish pattern laterally (Figs. 2-5). Hind femora concolour and hind tibiae bluish. Male cerci (Fig. 6) and male genitalia highly differentiated in shape, but the different taxa can be usually ordered in a more or less continuous series of forms. The difference observed is much more marked than in other groups of *Melanoplus* species, e.g. the *M. viridipes* species group (Otte, 2002). In this group of species, distributed in North-Eastern U.S.A, male cerci and phallic complex are distinct for the different taxa nevertheless showing a common pattern. The only exception is represented by *M. gracilis* Bruner, 1876, this species be-

longing to an uncertain distinct group mostly for its peculiar phallic complex (Otte 2002).

The *Melanoplus reflexus* species group is known only from Mexico and probably other new species can be found in future. At present the species belonging to the group are: *Melanoplus reflexus* Scudder, 1897, *M. meridionalis* Scudder, 1897, *M. bakeri* Hebard, 1932, *M. scitulus* Scudder, 1897, *M. cimatario* n. sp. and *M. chichimecus* n. sp.

Melanoplus reflexus Scudder, 1897

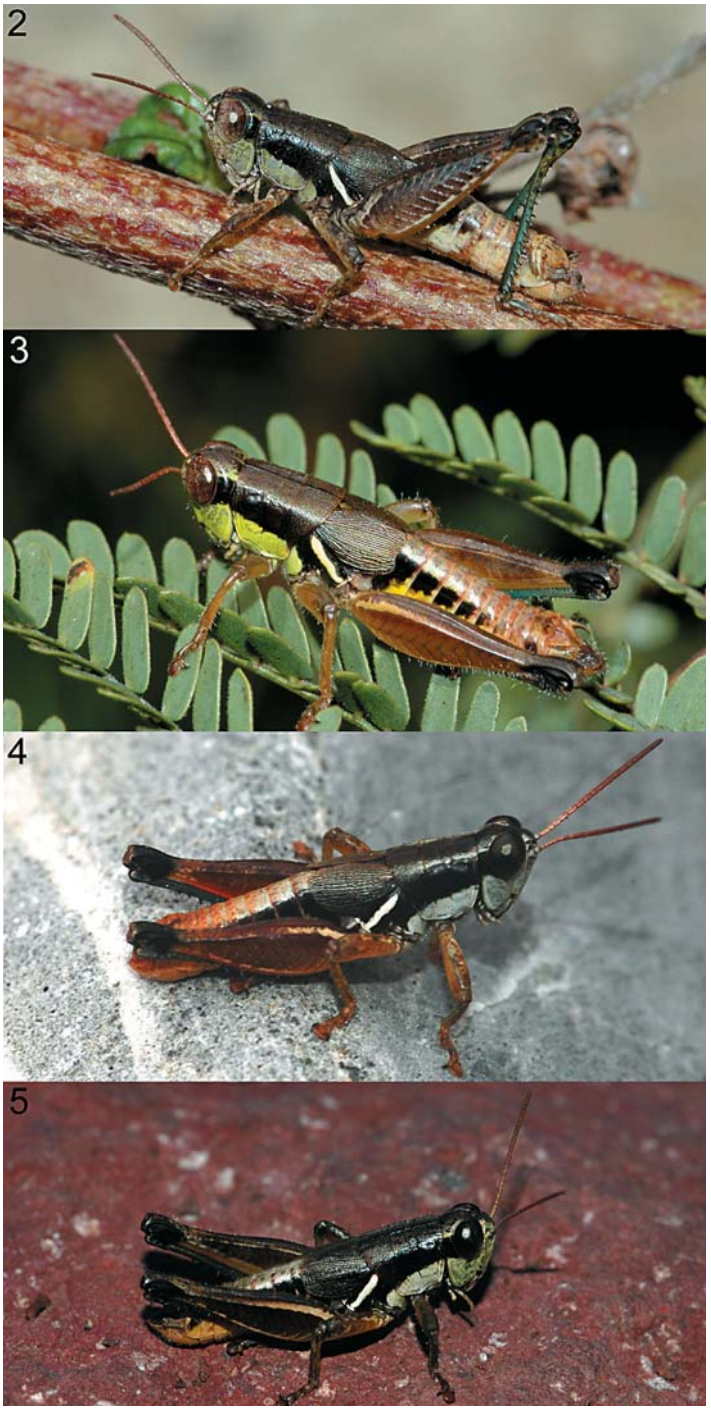
Melanoplus reflexus Scudder, 1897: 221.
Melanoplus reflexus, Rehn & Hebard, 1912: 81.

Type locality: Mexico, San Luis Potosí, Ciudad del Maiz.
Type material: male lectotype, ANSP Philadelphia.

Examined material: **San Luis Potosí**, rd. to S.L. Potosí-Río Verde, cross S. Martín de Abajo #19, m 1381, N 22°5'46,6" W100°39'32,7", 27/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 4 males, 2 females, coll. P. Fontana; 1km E Ciudad del Maíz #23, m 1305, N 22°24'58,6" W99°35'39,9", 29/9/2004, leg.Fontana P., Battiston R., Agabiti B. and García G.P.L., 1female, coll. P. Fontana; **Nuevo Leon**, rd. 31, S. Roberto to Linares, E. of Tokio #32, m 1896, N 24°41'36,7" W100°5'29,5", 1/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 6 males, 1 female, coll. P. Fontana.

Recognition: Species well characterized (Figs. 2, 7-11, 29) by broad oval tegmina and male cerci subtrapezoidal in lateral view and curved inside in dorsal view. The basal portion of male cerci is subconical while the apical is concave and expanded. The concave portion of apex is subtriangular in a posterior view. Furcula represented by short, subtriangular and rounded lobes; male supra-anal plate subpentagonal, with subacute apex deeply emarginated to each side. Male subgenital plate short, conical, gently pointed. Hind tibiae bluish. Male genitalia with dorsal valvae expanded and deer horn shaped, ventral valvae flattened and subtriangular.

Figs. 2-5. Living males of *Melanoplus reflexus* group species: 2) *M. reflexus* Scudder, 1897, 3) *M. meridionalis* Scudder, 1897, 4) *M. chichimecus* n. sp. and 5) *M. cimatario* n. sp. (Photos by P. Fontana).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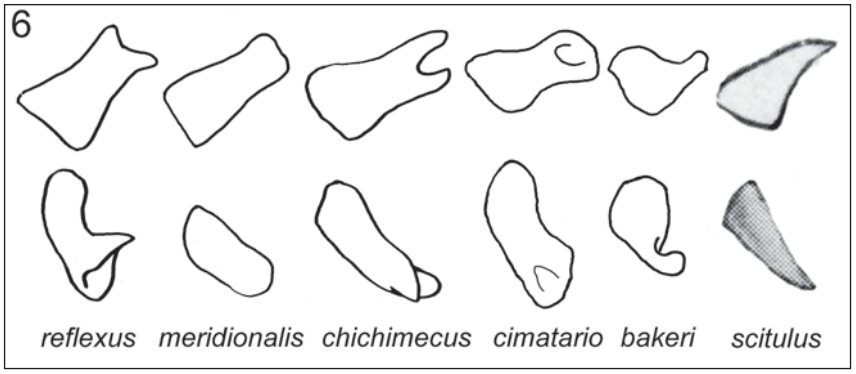


Fig. 6. Male cerci of *Melanoplus reflexus* group species in left lateral (upper line) and dorsal (lower line) view [*M. scitulus* Scudder, 1897 from Scudder (1897)].

Measurements:

	male	female
Body length	17,18	20,74
Pronotum length	3,80	4,50
Tegmina length	3,42	3,91
Hind femora length	9,21	11,31

Tab. II. Main measurements in mm (means) of *Melanoplus reflexus* Scudder, 1897.

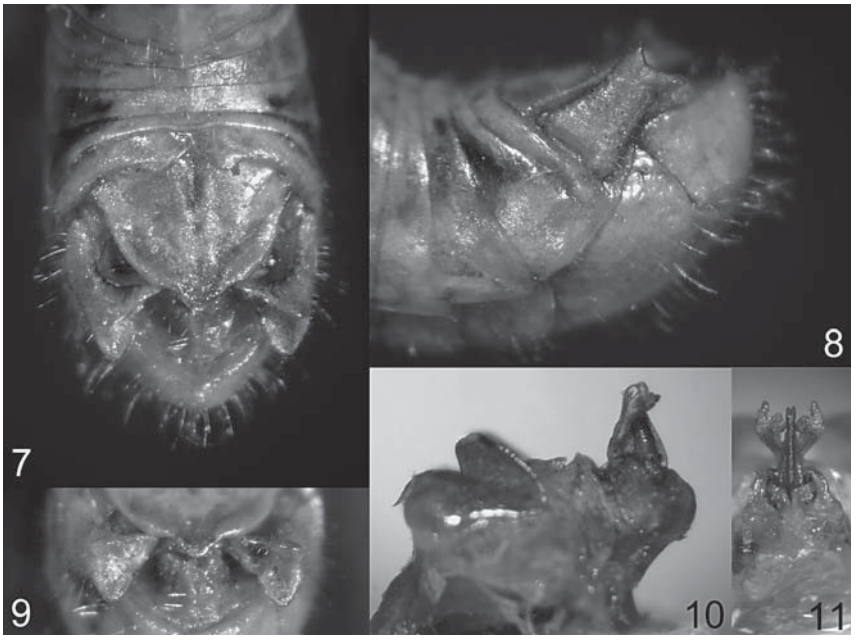
Distribution: Mexico (San Luis Potosì and Nuevo Leon).

Melanoplus meridionalis Scudder, 1897

Melanoplus meridionalis Scudder, 1897: 224.
Melanoplus meridionalis, Rehn & Hebard, 1912: 81.

Type locality: Mexico, San Luis Potosí, Mt Alvarez.
Type material: male lectotype, ANSP Philadelphia.

Examined material: **San Luis Potosí**, rd. S.L. Potosí-Río Verde, bef. S. José, Puerto de la Huerta #18, m 2341, N 22°5'46,6" W100°39'32,7", 27/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 2 males, 4 females , coll. P. Fontana; San Luis Potosí, rd. 70 to S.L.P.–Río Verde 19 Km W S. Catarina #26, m 1777, N 22°4'19,4" W100°32'44,8", 30/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male, 1 female, coll. P. Fontana.



Figs. 7-11. *Melanoplus reflexus* Scudder, 1897. Male abdomen apex in dorsal (7) and left lateral (8) view; cerci in posterior view (9); phallic complex in left lateral (10) and posterior (11) view. (Photos by P. Fontana).

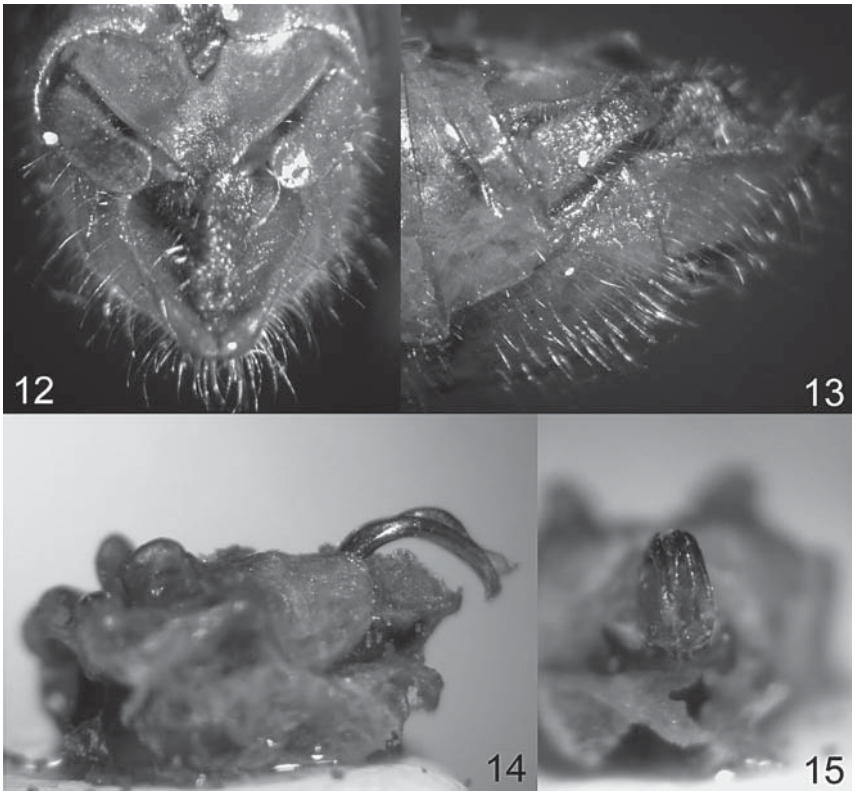
Recognition: Broad oval tegmina with emarginated hind margin (Fig. 3, 12-15, 30). Cerci subrectangular in lateral view, with rounded flattened apex. Furcula represented by short rounded lobes; male supra-anal plate short, triangular, with subacute apex. Male subgenital plate conical, with wide rounded apex. Hind tibiae bluish. Male genitalia with dorsal and ventral valvae markedly prolonged and curved backwards. The dorsal ones lie external to the ventral ones (Fig. 15).

Measurements:

	male	female
Body length	19,20	23,58
Pronotum length	4,32	5,28
Tegmina length	3,68	10,49
Hind femora length	4,44	12,73

Tab. III. Main measurements in mm (means) of *Melanoplus meridionalis* Scudder, 1897.

Distribution: Mexico (San Luis Potosì).



Figs. 12-15. *Melanoplus meridionalis* Scudder, 1897. Male abdomen apex in dorsal (12) and left lateral (13) view; phallic complex in left lateral (14) and posterior (15) view. (Photos by P. Fontana).

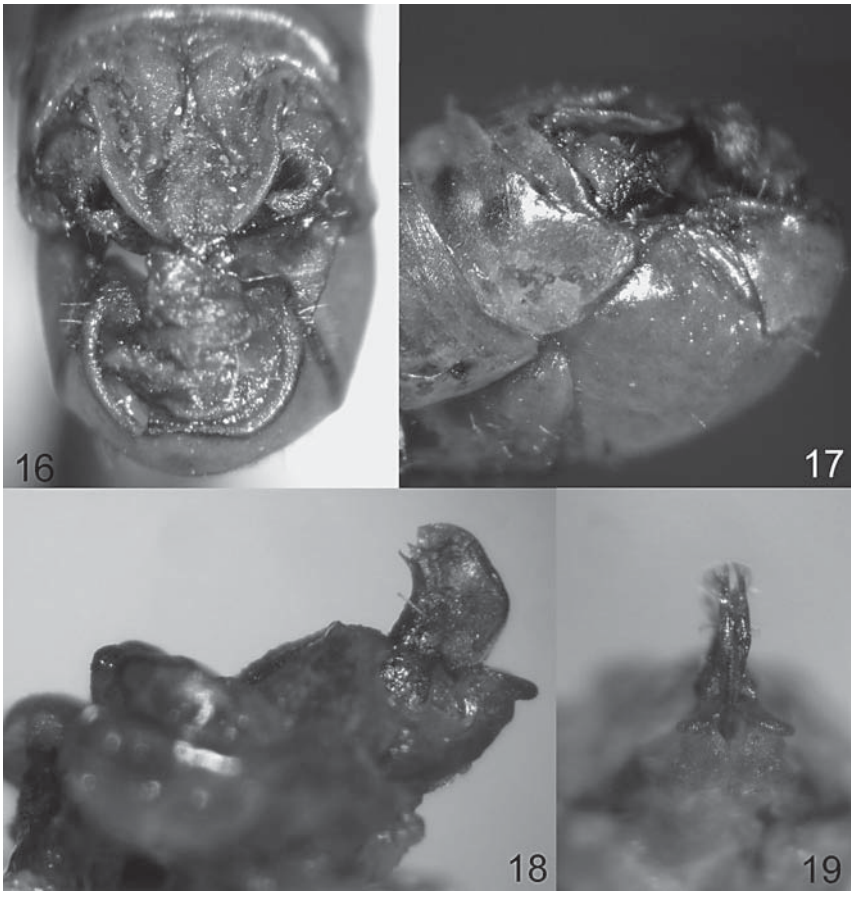
Melanoplus bakeri Hebard, 1932

Melanoplus bakeri Hebard, 1932: 287

Type locality: Mexico, Distrito Federal, Guajimaloa.
Type material: male holotype, ANSP Philadelphia.

Examined material: **Distrito Federal**, Cerro de la Cruz, Xochimilco, Col. Los Morales, m 2501, N 19°15'28" W99°8'18,3", 6/1/2007, leg. Garcia G.P.L., 1 male, 1 female, coll. P. Fontana.

Recognition: Tegmina broad oval (Fig. 31), subtrapezoidal with posterior margin broadly rounded. Furcula represented by long, finger-like



Figs. 16-19. *Melanoplus bakeri* Hebard, 1932. Male abdomen apex in dorsal (16) and left lateral (17) view; phallic complex in left lateral (18) and posterior (19) view. (Photos by P. Fontana).

subtriangular lobes with rounded globular apex; male supra-anal plate pentagonal with lateral sides slightly concave and with subacute apex (Fig. 16). Male cerci stout, with basal half expanded and apical portion thin and bent inward in dorsal view (Figs. 16-17). Male subgenital plate short and rounded. Hind tibiae bluish. Male genitalia with dorsal valvae thin, subtriangular, bent forward and with acute apex. Ventral valvae flattened and subpentagonal (Figs. 18-19).

Measurements:

	male	female
Body length	17,28	20,32
Pronotum length	3,68	4,48
Tegmina length	3,52	4,00
Hind femora length	9,60	10,72

Tab. IV. Main measurements in mm of *Melanoplus bakeri* Hebard, 1932.

Distribution: Mexico (Distrito Federal).

Melanoplus chichimecus n. sp.

Type locality: Mexico, Queretaro, Sierra Gorda, 9 km E Agua Salada, 10 km E desv. Carr. 120 - S. Joaquin m 2166.

Type material (*Examined material*): **Queretaro**, Sierra Gorda, 9 km E Agua Salada, 10 km E desv. Carr. 120 - S. Joaquin #18, m 2166, N 20°53'4,5" W99°39'53", 19/12/2006, leg. Garcia. P. L. and Fontana P., 12 males (1 holotype and 11 paratypes) and 8 females (1 allotype and 7 paratypes), coll. P. Fontana.

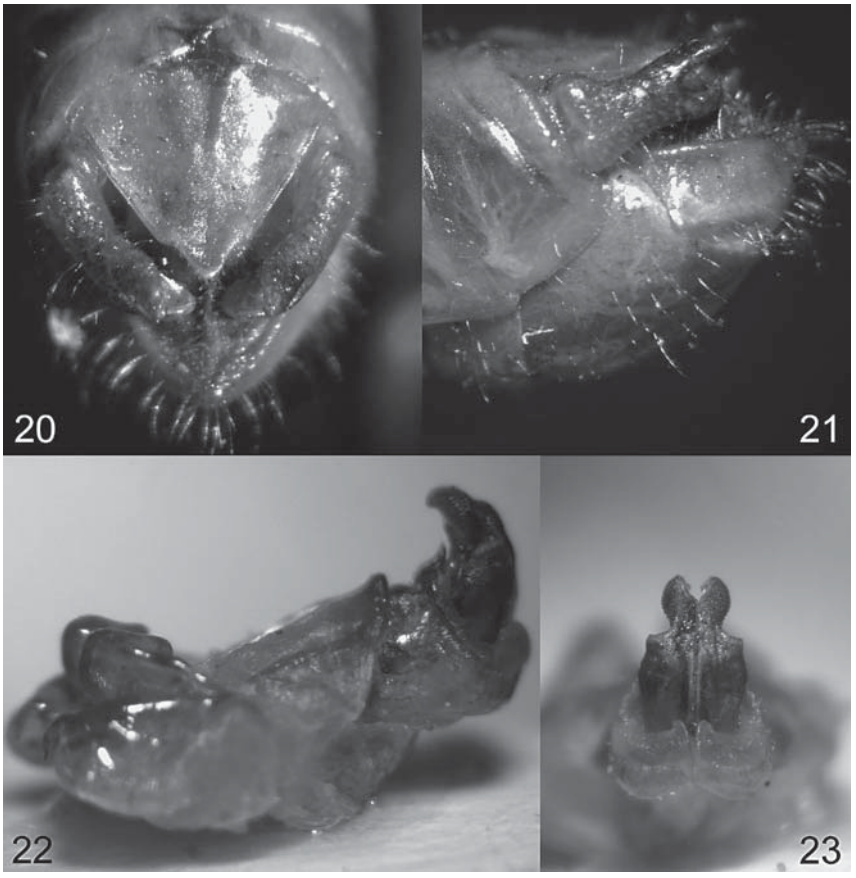
Diagnosis: Similar to *M. reflexus* and to *M. cimatario* n. sp. (see below). It differs from other congeneric species for the peculiar shape of bifurcate male cerci (Figs. 20-21), reduced furcula and robust and lobed phallic complex (Figs. 22-23). Very small in size and particularly dark, especially on outer side of hind femura.

Measurements:

	male	female
Body length	18,49	23,45
Pronotum length	3,80	4,86
Tegmina length	3,80	4,64
Hind femora length	10,01	12,41

Tab. V. Main measurements in mm (means) of *Melanoplus chichimecus* n. sp.

Recognition: Broad oval tegmina with emarginated hind margin (Figs. 4, 20-23, 32). Furcula hardly detectable; male supra-anal plate triangular



Figs. 20-23. *Melanoplus chichimecus* n. sp. Male abdomen apex in dorsal (20) and left lateral (21) view; phallic complex in left lateral (22) and posterior (23) view. (Photos by P. Fontana).

with lateral sides almost straight only slightly emarginated on each side of the subacute apex. Male cerci stout, long, bifurcate with basal lobe flattened and concave in the dorsal surface; dorsal lobe subconical with rounded apex. Male subgenital plate short, conical, gently pointed. Hind tibiae bluish. Male genitalia with dorsal valvae extremely reduced, thin, subtriangular, forward bent and acutely pointed; ventral valvae stout, with lateral sides, in posterior view, emarginated in the in the apical half, curved forward and subconical in a lateral view (Figs. 22-23).

Etymology: Chichimeca was the name used by Aztecs for the indigenous populations living in northern Mexico. In the Sierra Gorda re-

gion these indios survived for a long time before being submitted by Spanish.

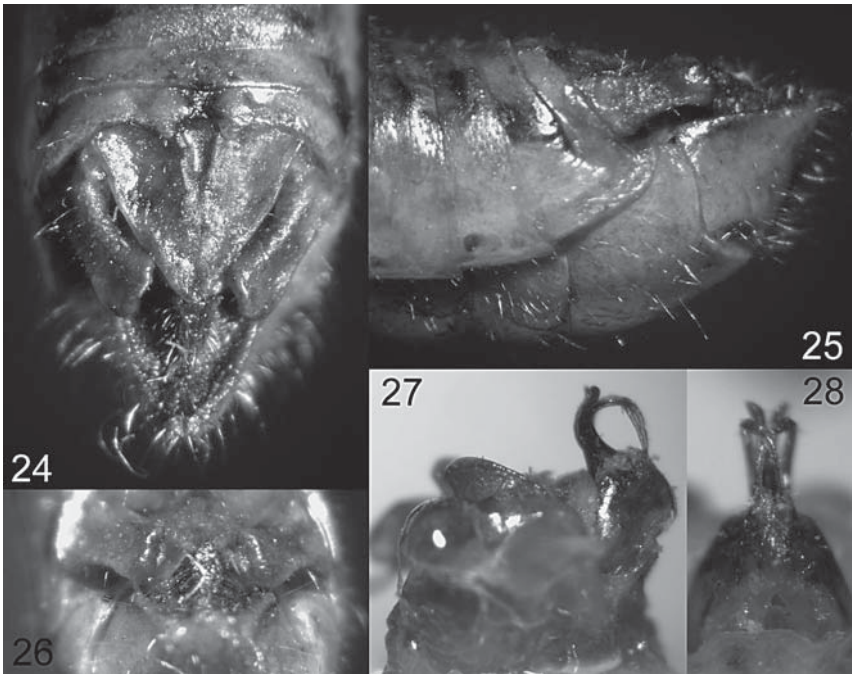
Distribution: Mexico (Queretaro).

Melanoplus cimatario n. sp.

Melanoplus sp., García García & Fontana, 2006: 250.

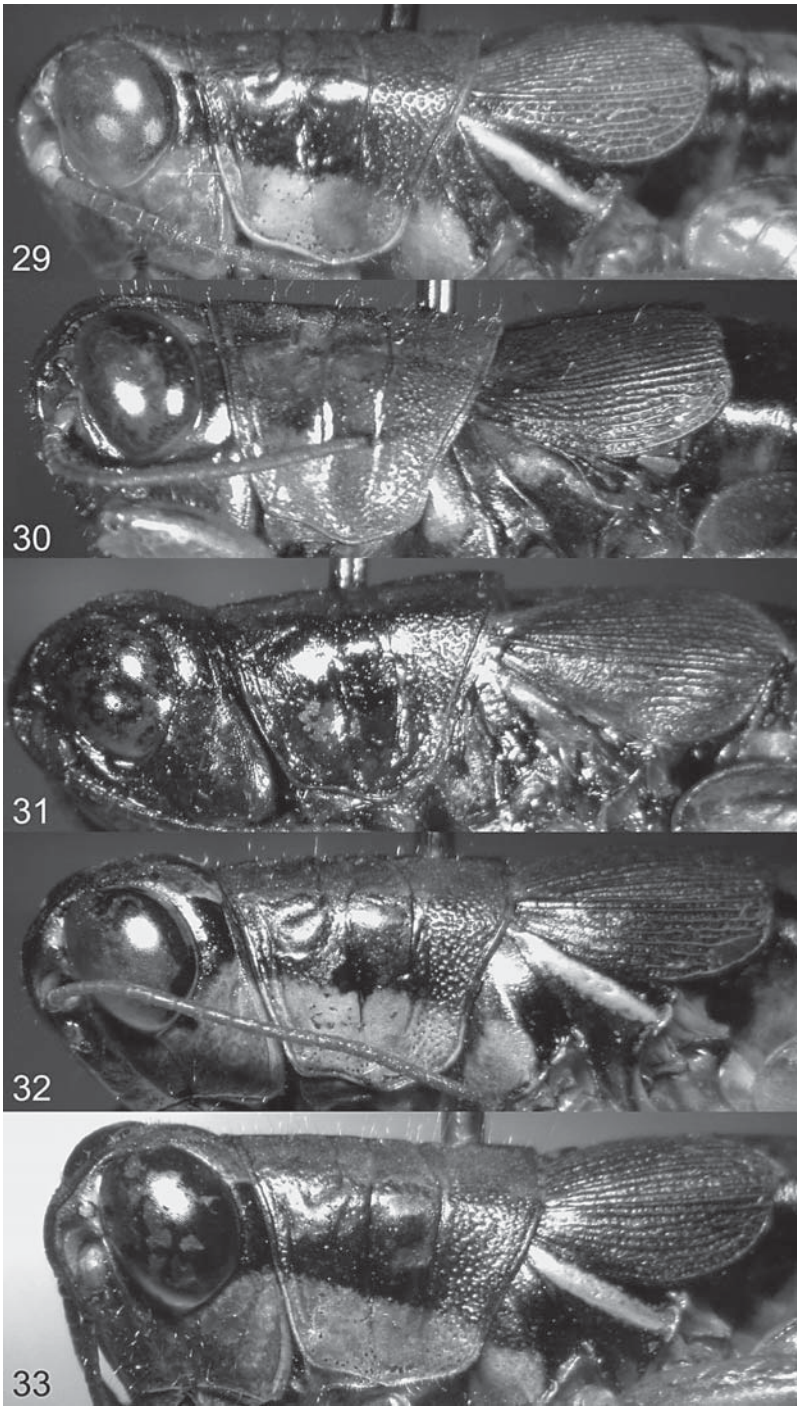
Type locality: Mexico, Queretaro, Parque Nacional el Cimatario.

Type material (*Examined material*): **Queretaro**, Parque Nacional el Cimatario, m 2150, N 20°32' W100°31', 29/11/2006, leg.Garcia G.P.L.,



Figs. 24-28. *Melanoplus cimatario* n. sp. Male abdomen apex in dorsal (24) and left lateral (25) view; cerci in posterior view (26); phallic complex in left lateral (27) and posterior (28) view. (Photos by P. Fontana).

Figs. 29-33. Male pronota of *Melanoplus reflexus* species group: 29) *M. reflexus* Scudder, 1897, 30) *M. meridionalis* Scudder, 1897, 31) *M. bakeri* Hebard, 1932, 32) *M. chichimecus* n. sp. and 33) *M. cimatario* n. sp. (Photos by P. Fontana).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8 males (1 holotype and 7 paratypes), 3 females (1 allotype and 2 paratupes), coll. P.Fontana; same locality, 18/11/2006, leg. Garcia G.P.L., 6 males (paratypes), coll. P. Fontana; same locality, 18/12/2006, leg. Garcia. G.P.L. and Fontana P., 1 male (paratype), 2 females (paratypes), coll. P. Fontana; same locality, 3/12/2005, leg. Garcia. P.L. and Fontana P., 4 males (paratypes), 5 females (paratypes), coll. P. Fontana.

Diagnosis: Mostly similar to *M. reflexus* and *M. chichimecus* n. sp. It differs from other congeneric species for the peculiar shape of subcilindrical cerci (Figs. 24-25), subtriangular lobes of furcula and robust and especially for the phallic complex (Figs. 26-28), bearing very long, crossing, backward and down curved ventral valvae of penis.

Measurements:

	male	female
Body length	20,41	24,12
Pronotum length	4,25	5,24
Tegmina length	4,25	4,54
Hind femora length	10,68	12,92

Tab. VI. Main measurements in mm (means) of *Melanoplus cimatario* n. sp.

Recognition: Broad oval tegmina (Fig. 33) with emarginated posterior margin (Fig. 5). Furcula represented by short subtriangular lobes with rounded apex. Male cerci stout, long, gently clavate with apex slightly concave in posterior view. Male subgenital plate conical, gently pointed. Hind tibiae bluish. Male genitalia (Figs. 26-28) with dorsal valvae gently sigmoid, subconical and with rounded apex; ventral valvae long, thin, conical, curved downward and backward and crossing in a posterior view.

Etymology: The new species is named after the type locality laying in the Parque Nacional Cimatario, in occasion of its 25th jubilee from institution.

Distribution: Mexico (Queretaro).

Genus ***Phaedrotettix*** Scudder, 1897

The genus *Phaedrotettix* Scudder, 1897 is a north American genus (Figs. 34-36) present mostly in Mexico (Tab. VII) with two species in Texas (U.S.A.). All the taxa are brachypterous being recognizable two main shapes of tegmina. One tegmen kind, typical for example of *P. bistrigatus* and *P. valgus* is very thin and elongated (subdigitiform) while the other kind, typical of *P. litus*, is clearly oval. In some species of the first tegmina shape, the subdigitiform one, tegmina can be extremely reduced or absent, even only on one side of the body, so that in some case a secondary and aberrant apterism can be observed.

Species	Type locality
Phaedrotettix accola (Scudder, 1897)	U.S.A., Texas
Phaedrotettix angustipennis Scudder, 1897	Mexico, San Luis Potosí
Phaedrotettix annulicornis Hebard, 1932	Mexico, Veracruz
Phaedrotettix bilineatus Descamps, 1975	Mexico, Veracruz
Phaedrotettix bistrigatus (Scudder, 1897)	Mexico, San Luis Potosí
Phaedrotettix coloratus Hebard, 1932	Mexico, Puebla
Phaedrotettix dumicola (Scudder, 1878)	U.S.A., Texas
Phaedrotettix gracilis (Bruner, 1908)	Mexico, Tamaulipas
Phaedrotettix gualagüises n. sp.	Mexico, Nuevo Leon
Phaedrotettix litus Hebard, 1917	Mexico, Tamaulipas
Phaedrotettix toltecus n. sp.	Mexico, Hidalgo
Phaedrotettix valgus Scudder, 1897	Mexico, Tamaulipas
Phaedrotettix violai n. sp.	Mexico, Nuevo Leon

Tab. VII. Species of the genus *Phaedrotettix* with type locality.

Phaedrotettix litus Hebard, 1917

Phaedrotettix litus Hebard, 1917: 255.
Phaedrotettix litus, Hebard, 1932: 282.

Type locality: Mexico, Tamaulipas, Victoria.
Type material: male holotype, ANSP Philadelphia.

Examined material: **Tamaulipas**, Balcón de Moctezuma, hwy. 101 Cd. Victoria-San Antonio, SW Cd. Victoria, ejido Alta Cumbre # 1, m 1254, N23°36'22,2" W99 °12'12,5", 26/06/2005, leg. P. Fontana, P.L.G. García, 2 males, 4 females, coll. P. Fontana; Tamaulipas, El Cañón del

Novillo, hwy. 101, SW Cd. Victoria, 15 min from Cd. Victoria # 3, m 481, N 23°41'6,2" W99°11'44", 28/06/2005, leg. P. Fontana, P.L.G. García, 1 male, 1 female, coll. P. Fontana.

Recognition: Pronotum with colour pattern typical of this species, with lower portion of lateral lobes whitish, medial portion reddish and dorsal part green. Long oval tegmina with rounded hind margin (Fig. 37). Furcula rudimental represented by small hardly detectable lobes with rounded apex (Fig. 39). Cerci boot-shaped, long, up curved with acute apex and with right angle at lower margin in a lateral view (Figs. 38-40). Male supra-anal plate subpentagonal with subacute apex and slightly emarginated lateral sides. Male subgenital plate short and subconical, gently pointed. Hind tibiae green. Male genitalia (Figs. 41-42) with dorsal valvae subtriangular in posterior view; dorsal valvae slightly swollen at apex in lateral view and ventral valvae with a subtriangular projecting lobe near the base.

Measurements:

	male	female
Body length	22,40	25,40
Pronotum length	4,37	5,21
Tegmina length	3,68	4,28
Hind femora length	12,00	13,60

Tab. VIII. Main measurements in mm (means) of *Phaedrotettix litus* Hebard, 1917.

Distribution: Mexico (Tamaulipas).

Phaedrotettix toltecus n. sp.

Type locality: Mexico, Hidalgo, Ixmiquilpan Panales, 4 km after cross to Zimapán.

Type material (*Examined material*): **Hidalgo**, Ixmiquilpan Panales, 4 km after cross to Zimapán #7, m 1844, N 20°30'38,3" W99°18'38,2", 23/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male (holotype) and 4 females (allotype and 3 paratypes), coll. P. Fontana.

Figs. 34-36. 34) Male of *Phaedrotettix toltecus* n. sp., 35) male of *P. valgus* Scudder, 1897 and 36) male of *P. violai* n. sp. (Photos by P. Fontana).


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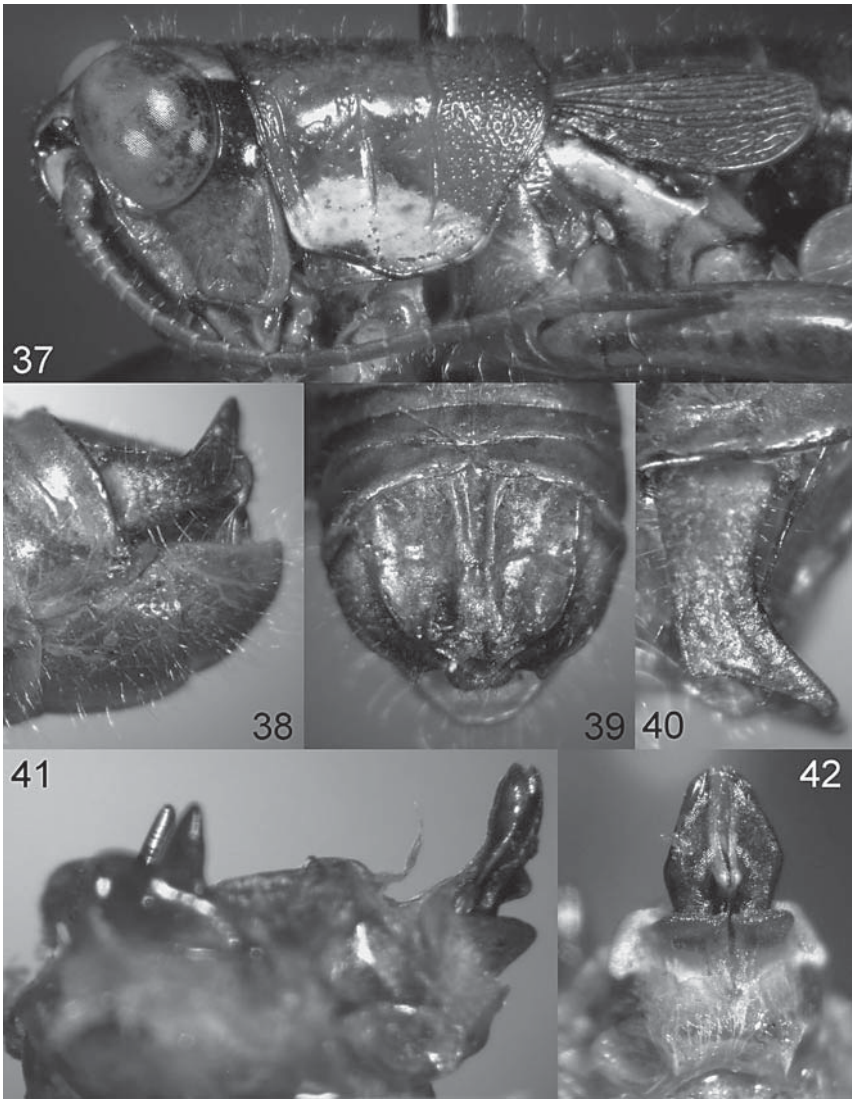
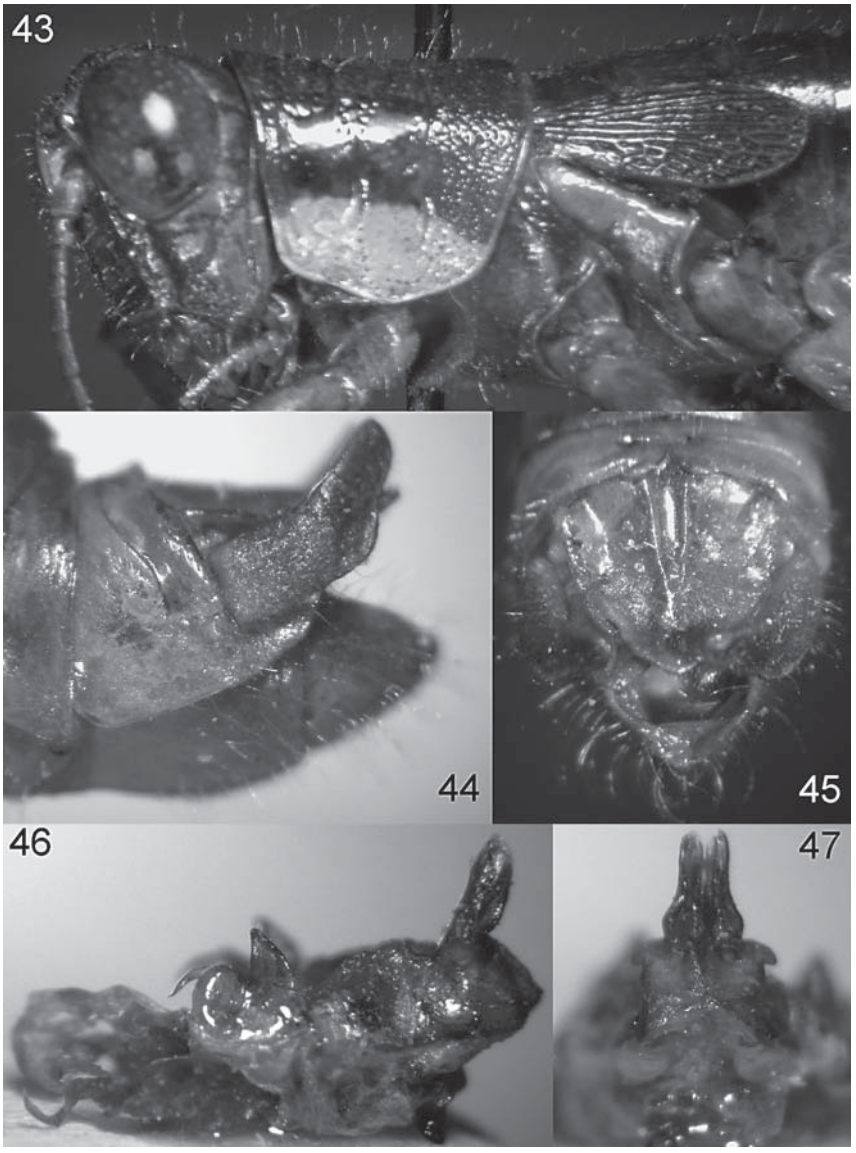


Figs. 37-42. *Phaedrotettix litus* Hebard, 1917. Male Pronotum in left lateral view (37); male abdomen apex in left lateral (38) and dorsal (39) view; left cercum in lateral view (40); phallic complex in left lateral (41) and posterior (42) view. (Photos by P. Fontana).

Diagnosis: Similar to *P. litus* Hebard 1917 but with male supra-anal plate, male cerci and male genitalia distinctly different (Figs. 34, 43-47). Tegmina much more elongated and male cerci with apex and lower margin rounded. Male genitalia (Figs. 56-47) smaller than in *litus*, in



Figs. 43-47. *Phaedrotettix toltecus* n. sp. Male Pronotum in left lateral view (43); male abdomen apex in left lateral (44) and dorsal (45) view; phallic complex in left lateral (46) and posterior (47) view. (Photos by P. Fontana).

lateral view with dorsal valvae scarcely swollen and ventral valvae without subtriangular projection. In posterior view dorsal valvae show emarginated lateral sides and ventral valvae subtriangular and acute apex.

Measurements:

	male	female
Body length	19,36	23,52
Pronotum length	3,68	4,46
Tegmina length	3,36	4,12
Hind femora length	10,08	12,60

Tab. IX. Main measurements in mm (means) of *Phaedrotettix toltecus* n. sp.

Recognition: Pronotum with same colour pattern as *P. litus*, showing a lower portion of lateral lobes whitish, medial portion reddish and dorsal part green. Elongated oval tegmina with rounded posterior margin. Furcula rudimental represented by small rounded lobes. Cerci sock-shaped, stout, slightly up curved with rounded apex and with obtuse rounded angle at lower margin (in lateral view). Male supra-anal plate subtriangular with convex lateral sides showing a subapical small emargination on each side. Male subgenital plate short and subconical, gently pointed. Hind tibiae green. Male genitalia thin and small, subtriangular (Fig. 46-47).

Etymology: The Tolteca was one pre-Columbian native American people dominating central Mexico during X and XII century.

Distribution: Mexico (Hidalgo).

Phaedrotettix gualagüises n. sp.

Type locality: Mexico, Nuevo Leon, after Cola de Caballo, rd. to Los Lirios, S Monterrey.

Type material (*Examined material*): **Nuevo Leon**, after Cola de Caballo, rd. to Los Lirios, S Monterrey #5, m 1016, N 25°20'35" W100°10'26,6", 30/6/2005, leg.Garcia. P. L. and Fontana P., 14 males (holotype and 13 paratypes), 10 females (allotype and 9 paratypes), coll. P. Fontana; Nuevo Leon, 2 km E. H. La Esperanza, Cola del Caballo W #42, m 1350, N 25°22'30,7" W100°12'42,7", 5/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male (paratype), coll. P. Fontana.

Diagnosis: Very similar to *P. litus* even in male cerci shape but with well distinct male supra-anal plate and genitalia. Tegmina much more elon-

gated and male cerci with apex and lower margin rounded. Male genitalia longer and thinner in lateral as in posterior view.

Measurements:

	male	female
Body length	22,24	25,22
Pronotum length	4,10	5,06
Tegmina length	3,84	3,84
Hind femora length	11,46	13,44

Tab. X. Main measurements in mm (means) of *Phaedrotettix gualagüises* n. sp.

Recognition: Pronotum with the same colour pattern as *P. litus*, showing a lower portion of lateral lobes whitish, medial portion reddish and dorsal part green (Figs. 48-52). Elongated oval tegmina with rounded posterior margin. Furcula rudimental represented by small rounded lobes. Cerci boot-shaped, up curved with subacute apex and with obtuse rounded angle at lower margin (in a lateral view). Male supra-anal plate subpentagonal with rounded apex. Male subgenital plate short and subconical. Hind tibiae green. Male genitalia long and thin, digitiform, with dorsal valvae apically swollen in lateral view (Fig. 51-52).

Etymology: The Gualagüises were a strong bellicose pre-Columbian native American people living in Nuevo Leon region.

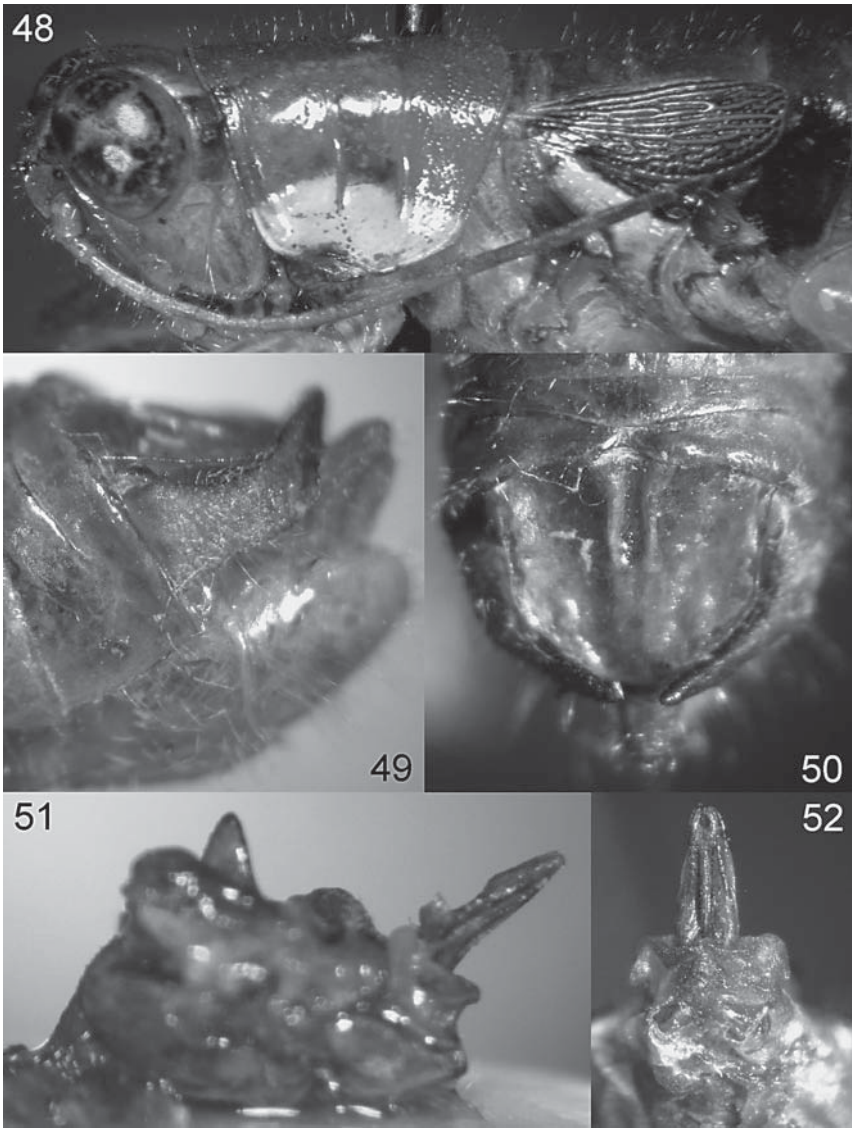
Distribution: Mexico (Nuevo Leon).

Phaedrotettix valgus Scudder, 1897

Phaedrotettix valgus Scudder, 1897: 39.
Phaedrotettix valgus, Hebard, 1917: 255.
Phaedrotettix valgus, Hebard, 1932: 282.

Type locality: Northern America, Mexico, Mexico Northeast, Tamaulipas, Sierra Nola, 3-6 XII
Type material: male holotype, ANSP Philadelphia.

Examined material: **Tamaulipas**, Balcón de Moctezuma, hwy. 101 Cd. Victoria-San Antonio, SW Cd. Victoria, ejido Alta Cumbre #1, m 1254, N23°36'22,2" W99°12'12,5", 26/06/2005, leg. P. Fontana & P.L.G.



Figs. 48-52. *Phaedrotettix gualaguises* n. sp. Male Pronotum in left lateral view (48); male abdomen apex in left lateral (49) and dorsal (50) view; phallic complex in left lateral (51) and posterior (52) view. (Photos by P. Fontana).

Garcia, 7 males, 5 females, coll. P. Fontana; Tamaulipas, rd. 101, 4Km SW Ciudad Victoria # 37, m 415, N2°41'52,5" W099°11'14,8", 04/10/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 1 male, coll. P. Fontana; **San Luis Potosí**, 1km E Ciudad del Maíz # 23, m

1305, N22°24'58,6" W099°35'39,9", 29/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 1 male, 1 female, coll. P. Fontana; San Luis Potosí, betw. S. Martín de Abajo and S. Nicolás Tolentino # 20, m 1487, N22°08'13,6" W100°30'34,6", 27/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 2 males, coll. P. Fontana; **Durango**, Cuencamé, 1.5 km S., rd. 49 to Gomez Palacio # 55, m 1631, N24°50'44,8" W104°04'16,6",10/10/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 1 male, coll. P. Fontana.

Recognition: Pronotum with peculiar colour pattern, having lower portion of lateral lobes whitish, medial portion brown, a second whitish stripe along pronotal lateral ridges and dorsal surface brown (Fig. 35). Long and thin tegmina (Fig. 53), expanding backwards and with rounded posterior margin. Furcula represented by small lobes with rounded apex (Fig. 55). Male cerci subtriangular, long, downcurved with apex hooked and a strong medial subtriangular tooth on the lower margin, in a lateral view; almost straight from a dorsal view (Figs. 54-56). Male supra-anal plate subpentagonal. Male subgenital plate short and subconical, with convex dorsal margin (Fig. 54). Hind tibiae bluish. Male genitalia (Figs. 57-58) with dorsal valvae cupola-shaped, developing over the apex of ventral valvae; ventral valvae thin and hooked backward. At the base of ventral valvae there are two lateral lamellar up going expansions.

Measurements:

	male	female
Body length	18,77	23,62
Pronotum length	3,57	4,58
Tegmina length	2,77	3,68
Hind femora length	9,81	12,26

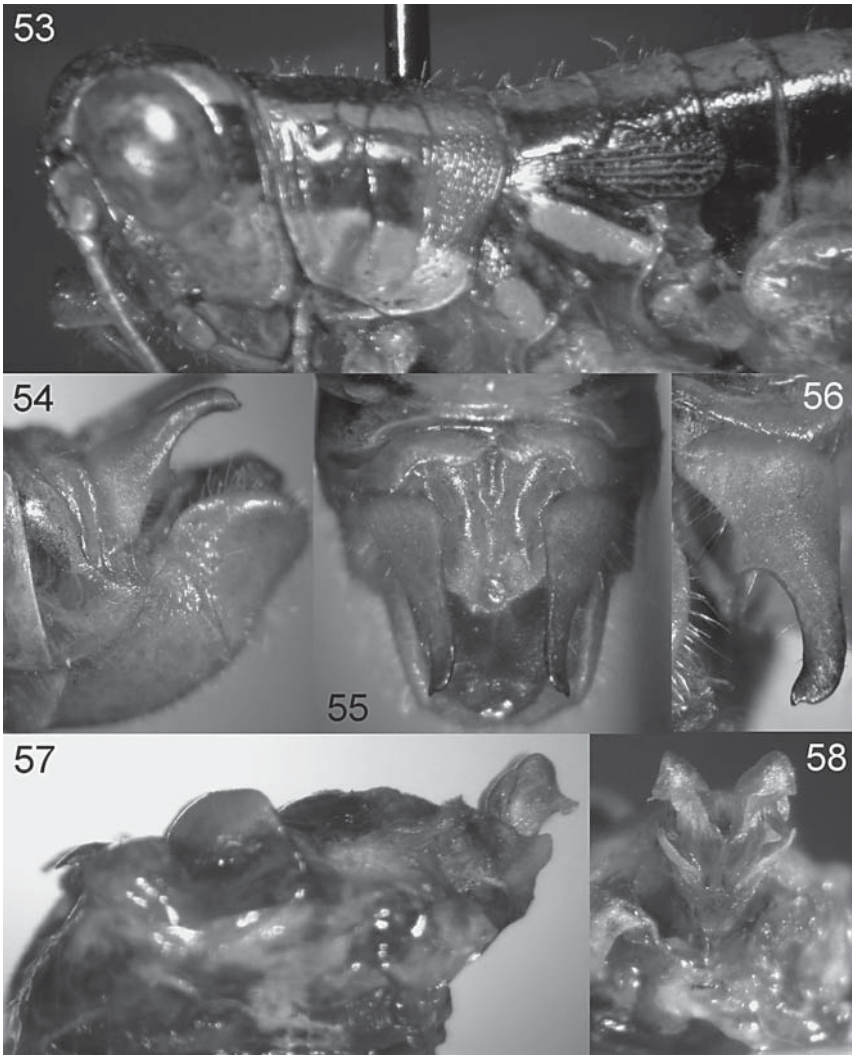
Tab. XI. Main measurements in mm (means) of *Phaedrotettix valgus* Scudder, 1897.

Distribution: Mexico (Tamaulipas, San Luis Potosí, Durango).

Phaedrotettix violai n. sp.

Type locality: Mexico, Nuevo Leon, S. Juan Bautista.

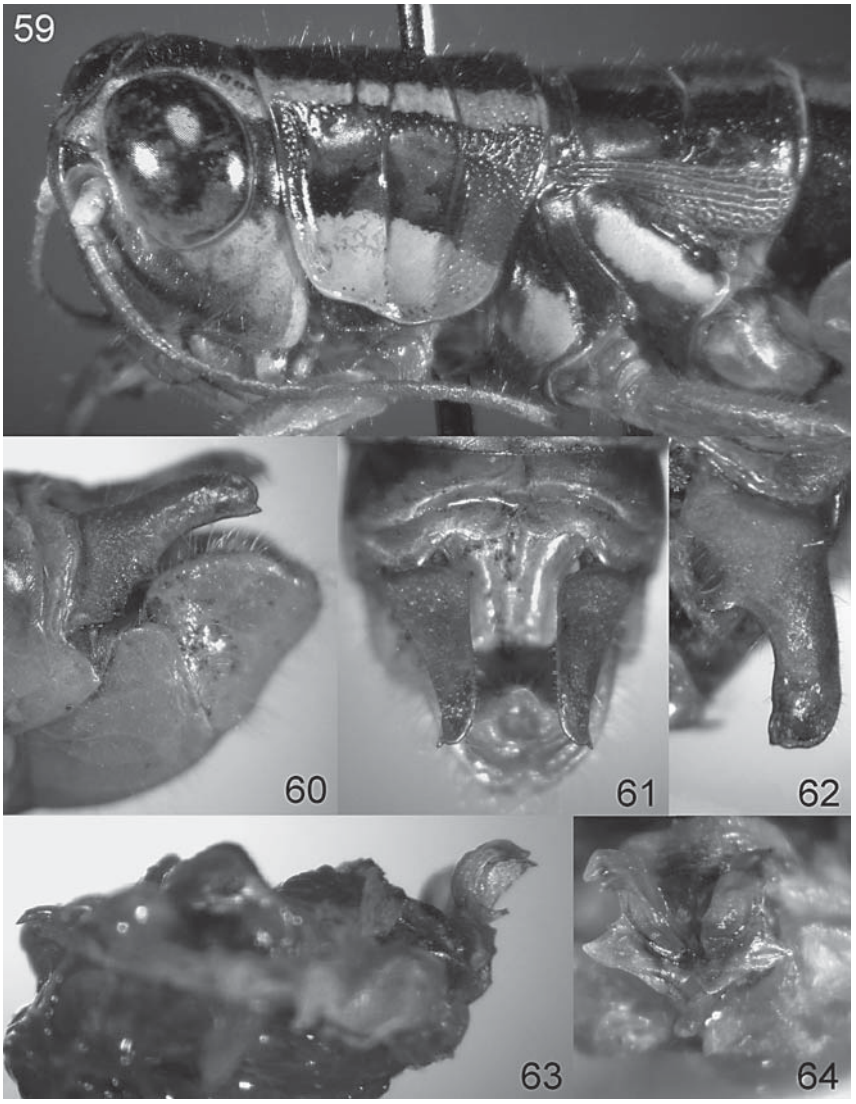
Type material and *examined material*: **Nuevo Leon**, S. Juan Bautista #46, m 1474, N 25°23'37,5" W100°18'8,4", 7/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 2 males (holotype and paratype),



Figs. 53-58. *Phaedrotettix valgus* Scudder, 1897. Male Pronotum in left lateral view (53); male abdomen apex in left lateral (54) and dorsal (55) view; left cercum in lateral view (56); phallic complex in left lateral (57) and posterior (58) view. (Photos by P. Fontana).

2 females (allotype and paratype), coll. P. Fontana; **Durango**, km 114 carr. Durango-Hgo del Parrai, 7/9/1984, 1 male, leg. Ibarra A., coll. P. Fontana.

Diagnosis: Similar to *P. valgus* but well characterised by stouter cerci and thinner male genitalia, with not cupola-shaped dorsal valvae (Figs. 36, 59-64).



Figs. 59-64. *Phaedrotettix violai* n. sp. Male Pronotum in left lateral view (59); male abdomen apex in a left lateral (60) and dorsal (61) view; left cercum in lateral view (62); phallic complex in left lateral (63) and posterior (64) view. (Photos by P. Fontana).

Measurements:

	male	female
Body length	22,00	23,60
Pronotum length	4,16	4,24
Tegmina length	3,20	3,28
Hind femora length	11,52	12,80

Tab. XII. Main measurements in mm (means) of *Phaedrotettix* ***violai*** n. sp.

Recognition: Pronotum as in *P. valgus*. Long and thin tegmina, markedly expanding backward and with rounded posterior margin (Fig. 59). Furcula represented by semicircular lobes with rounded apex (Fig. 61). Male cerci subtriangular, long, downcurved with apex hooked and a strong medial digitiform tooth on lower margin, in a lateral view; almost straight from a dorsal view (Figs. 60-62). Male subgenital plate short and subconical, with convex dorsal margin. Hind tibiae bluish. Male supraanal plate subpentagonal. Male genitalia (Figs. 63-64) with dorsal valvae curved backwards, only a little developing over the apex of ventral valvae. Ventral valvae thin and hooked backwards. At the base of ventral valvae there are two lateral subtriangular out going expansions (Fig. 63-64).

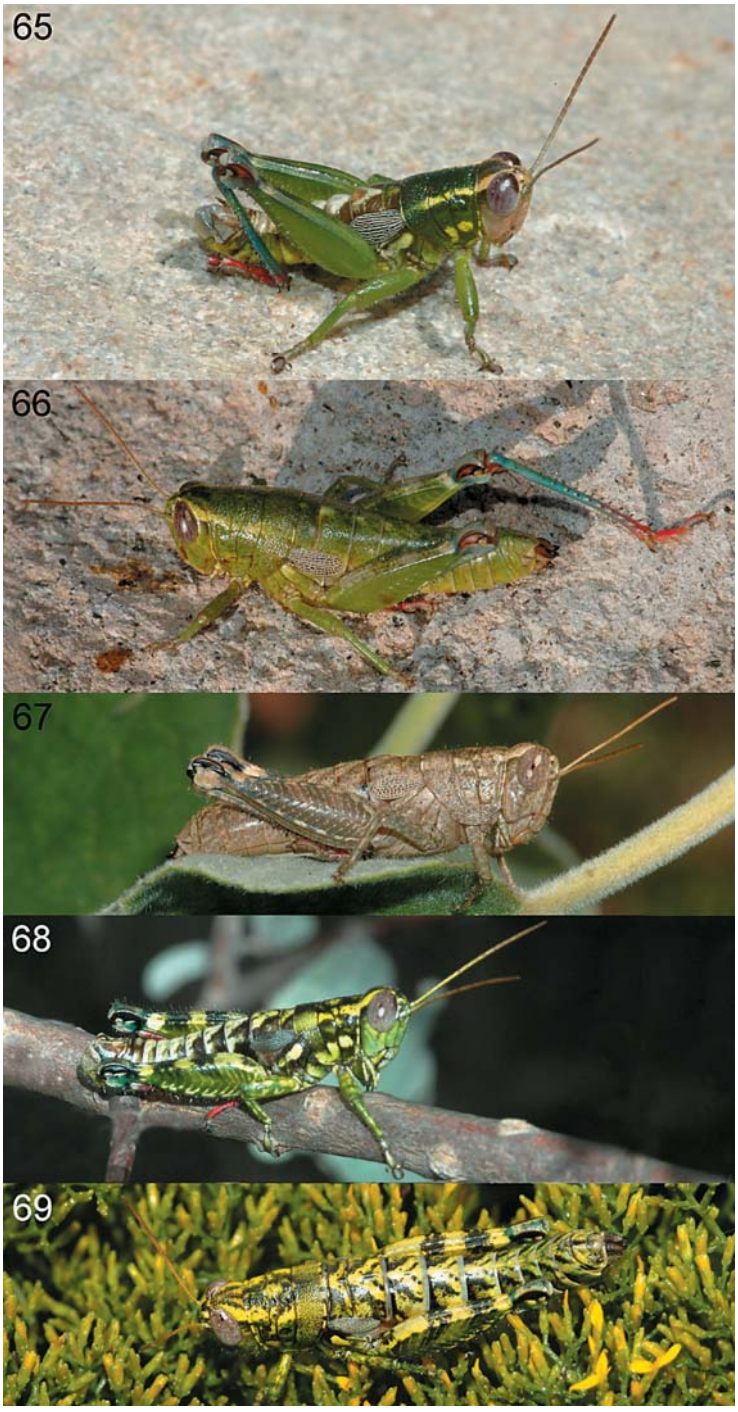
Etymology: We are glad to name this new species to dr. Renato Viola, renowned Italian orthopaedic, that operating the first author, allowed him to participate to the Mexican field expedition in December 2006.

Distribution: Mexico (Nuevo Leon, Durango).

Genus ***Phaulotettix*** Scudder, 1897

The genus *Phaulotettix* Scudder, 1897 (Figs. 65-69) comprehends two species up to date known for Mexico (*P. compressus* Scudder 1897) and for U.S.A. and Mexico (*P. eurycercus* Hebard 1918). The new material collected confirms the presence of the latter species in Northern Mexico.

Figs. 65-69. Living *Phaulotettix*: 65) *P. compressus* Scudder, 1897 green form male, 66) *P. compressus* green form female, 67) *P. compressus* brown form female, 68) *P. eurycercus* Hebard, 1918 male and 69) *P. eurycercus* female. (Photos by P. Fontana).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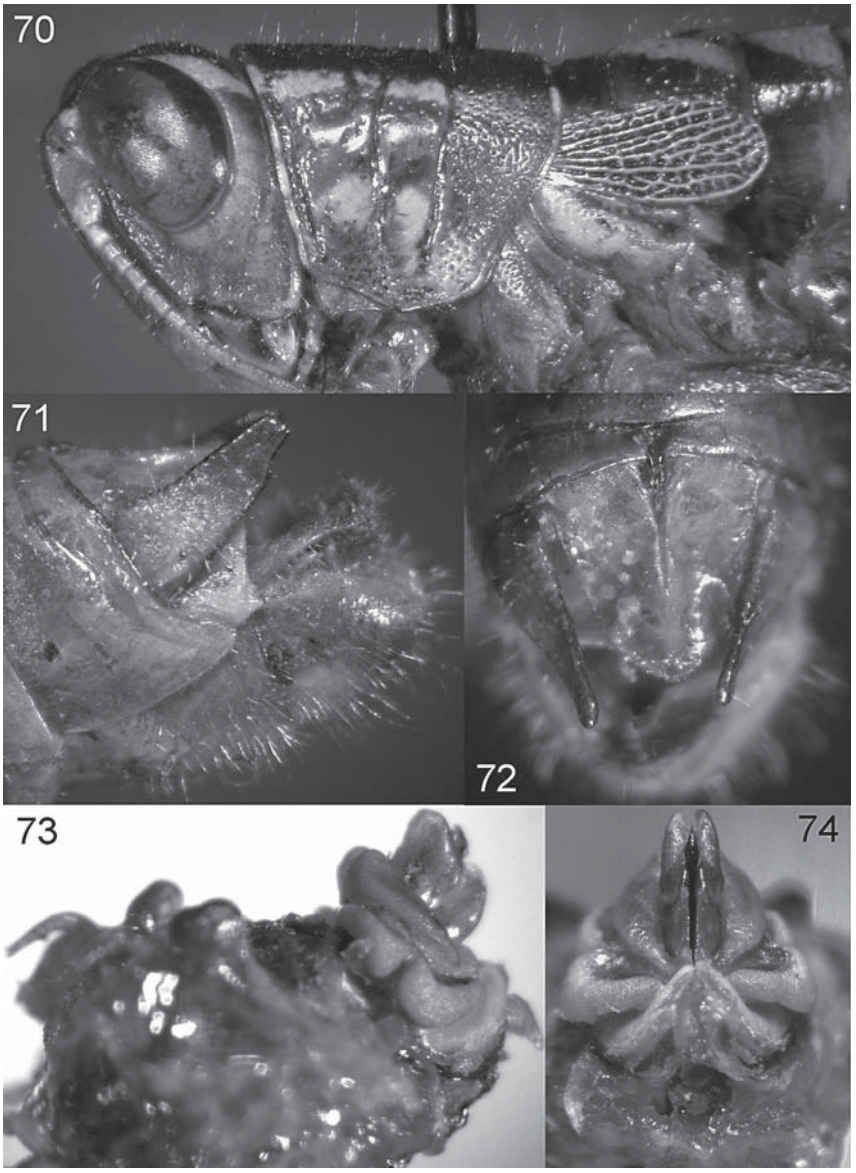
Phaulotettix compressus Scudder, 1897

Phaulotettix compressus Scudder, 1897:30.
Phaulotettix compressus, Rehn & Hebard, 1912: 74.
Phaulotettix compressus, Hebard, 1917: 262.
Calotettix bicoloripes Bruner, 1908, Biologia Centrali-Americana. 2: 309.
Sinaloabrevispinis Rehn, 1904, Proc. Ac. Nat. Sc. Phil. 56: 535.
Calotettix flavopictus Bruner, 1908, Biologia Centrali-Americana. 2: 310.
Calotettix obscurus Bruner, 1908, Biologia Centrali-Americana. 2: 311.

Type locality: Mexico, Coahuila, Monclova.

Type material: male holotype, ANSP Philadelphia.

Examined material: **San Luis Potosí**, Puente el Jaguey, Villa Hidalgo S. #30, m 1687, N 22°27'59,3" W100°41'22,3", 30/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 female, coll. P. Fontana; **Nuevo Leon**, rd. Santiago to Los Lirios, Cola del Caballo W. #43, m 1348, N 25°23'11,9" W100°14'35,8", 5/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 2 males, 3 females, coll. P. Fontana; Nuevo Leon, rd. 31, S. Roberto to Linares, E. of Tokio #32, m 1896, N24°41'36,7" W100° 5'29,5", 1/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 3 males, 4 females, coll. P. Fontana; Nuevo Leon, rd. 85, 20 km S. of Linares to Cd. Victoria #36, m 372, N 24°40'34,6" W 099°32'14,2", 03/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 females, coll. P. Fontana; **Cohauila**, Arteaga, 17 km S. along Hwy 57 #44, m 2126, N 25°20'19,2" W100°47'42,4", 5/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G. P. L., 2 females, coll. P.Fontana; Tamaulipas, rd. 101, Cd. Victoria NNE. 9 km road to Matamoros #38, m 224, N 23°49'44,1" W 099°04'09,6", 04/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G. P. L., 1 male, 2 females, coll. P. Fontana; **Tamaulipas**, rd. 101, 4Km SW Ciudad Victoria #37, m 415, N 23°41'52,5" W 099°11'14,8", 04/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 2 females , coll. P. Fontana; Tamaulipas, rd. 85, Cd. Victoria-Cd. Mantes, 60 km S. Cd. Victoria #40, N 23°17'40,0" W 099°01'38,1", 04/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 female, coll. P. Fontana; Tamaulipas, Balcón de Moctezuma, hwy. 101 Cd. Victoria-San Antonio, SW Cd. Victoria, ejido Alta Cumbre #1, m 1254, N 23°36'22,2" W 099°12'12,5", 26/06/2005, leg. Garcia. G.P.L. and Fontana P., 1 male, 1 female, coll. P. Fontana; Tam-



Figs. 70-74. *Phaulotettix compressus* Scudder, 1897. Male Pronotum in left lateral view (70); male abdomen apex in left lateral (71) and dorsal (72) view; phallic complex in left lateral (73) and posterior (74) view. (Photos by P. Fontana).

aulipas, El Cañón del Novillo, hwy. 101, SW Cd. Victoria, 15 min from Cd. Victoria #3, m 481, N 23°41'6,2" W 099°11'44", 28/06/2005, leg. Garcia. G.P.L. and Fontana P., 1 male, coll. P. Fontana.

Recognition: Long ovate tegmina with rounded posterior margin (Figs. 65-67 and 70). Furcula represented by short and thin digitiform lobes (Fig. 72). Male cerci stout, flattened, long and subtriangular, slightly emarginated in the lower apical portion, apically rounded (Figs. 71-72). Male supra-anal plate elliptical, with rounded apex. Male subgenital plate short and subconical, with convex dorsal margin. Hind tibiae bluish and hind tarsi red. Male genitalia (Figs. 73-74) with dorsal valvae subtrapezoidal in a lateral view, ventral valvae small, triangular and with acute apex, with dark sharp structure in the middle of the valvae. Basally around of valvae are present accessories lamellar-globose expansions. This species have two distinct colour form, brown and green, present in both sexes (Figs. 65-67).

Measurements:

	male	female
Body length	22,88	28,96
Pronotum length	4,85	6,93
Tegmina length	3,52	4,00
Hind femora length	12,91	15,52

Tab. XIII. Main measurements in mm (means) of *Phaulotettix compressus* Scudder, 1897.

Distribution: Mexico (San Luis Potosí, Nuevo Leon, Cohauila and Tamaulipas).

Phaulotettix eurycercus Hebard, 1918

Phaulotettix eurycercus Hebard, 1918: 143.

Type locality: U.S.A., Texas, Hidalgo County, Sam Fordyce.
Type material: male holotype, ANSP Philadelphia.

Examined material: **Nuevo Leon**, Monterrey - Saltillo, rd. 40 #48, m 1025, N25°42'28,2" W100°36'41,9", 8/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 3 males, 5 females, coll. P. Fontana; **Cohauila**, Rd. Saltillo - Monclova betw. Zertuche and Santa Cruz #49, m1113, N 25°42'11,3" W100°0'20,4", 8/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male, coll. P. Fontana; Cohauila, rd. 57, Saltillo-Monclova #51, m 1243, N 26°18'13,2"

W101°28'43,7", 8/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 female, coll. P. Fontana.

Recognition: Long ovate tegmina with rounded posterior margin (Figs. 68-69 and 75). Furcula represented by short digitiform lobes. Male cerci stout, subtrapezoidal, gently spatulated at apex (Figs. 76-77). Male supra-anal plate tongue-shaped, with rounded apex and lateral sides concave. Male subgenital plate short and subconical, with concave dorsal margin. Hind tibiae red as hind tarsi. Male genitalia (Figs. 78-78) with dorsal and ventral valvae forming a strong, protruding club, apically blackish. Basally on each side of valvae, accessories globular expansions are present. Colour pattern in both sexes markedly mimetic (Fig. 69).

Measurements:

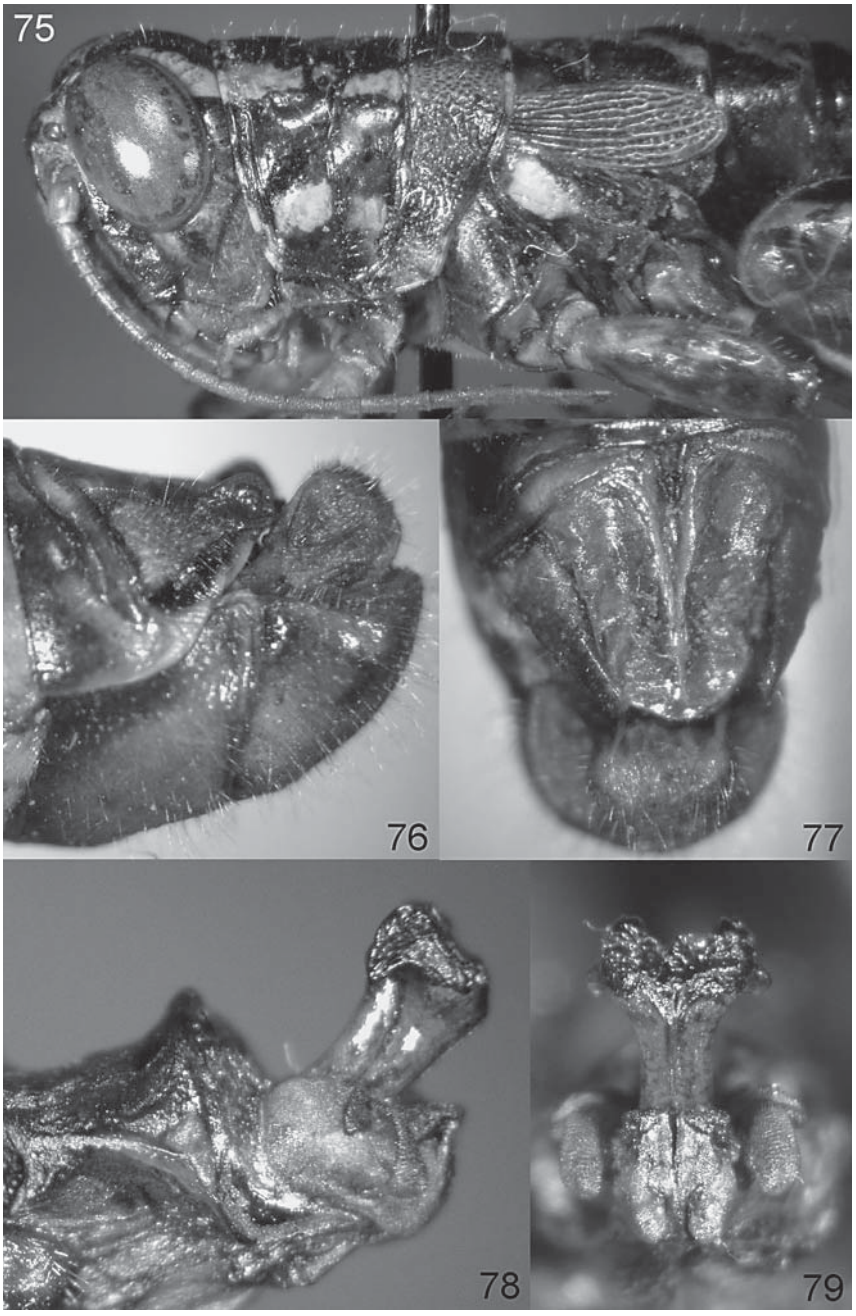
	male	female
Body length	21,81	25,21
Pronotum length	4,58	5,34
Tegmina length	3,52	3,56
Hind femora length	11,25	13,25

Tab. XIV. Main measurements in mm (means) of *Phaulotettix eurycercus* Hebard, 1918.

Distribution: U.S.A. (Texas) and Mexico (Nuevo Leon, Cohauila).

Genus ***Philocleon*** Scudder, 1897

The Mexican endemic genus *Philocleon* (Figs. 80-82) was instituted by Scudder (1897) for the species *Pezotettix nigrovittatus* Stål, 1875, a micropterous Melanoplinae. Subsequently Hebard (1932) described the new genus and new species *Zacatacris scudderi* a completely apterous taxon. Roberts (1941) described a second micropterous *Philocleon*, *P. anomalus* and later (Roberts, 1947) synonymized the genus *Zacatacris* with *Philocleon*, describing a new subspecies for *Philocleon nigrovittatus*, *Philocleon nigrovittatus spatulatus* Roberts, 1947. Up date the genus numbers 3 micropterous and one apterous taxa, the apterous *Philocleon* consisting of many distinct species, two of which will be here described.



Figs. 75-79. *Phaulotettix eurycercus* Hebard, 1918. Male Pronotum in left lateral view (75); male abdomen apex in left lateral (76) and dorsal (77) view; phallic complex in left lateral (78) and posterior (79) view. (Photos by P. Fontana).

Species	Type locality
Philocleon anomalus Roberts, 1941	Mexico, Guerrero
Philocleon nigrovittatus nigrovittatus (Stål, 1875)	Mexico
Philocleon nigrovittatus spatulatus Roberts, 1947	Mexico, Michoacan
Philocleon scudderi (Hebard, 1932)	Mexico, Zacatecas
Philocleon luceroae n. sp.	Mexico, Queratero
Philocleon ottei n. sp.	Mexico, San Luis Potosí

Tab. XV. Species of the genus *Philocleon* with type locality.

Philocleon scudderi (Hebard, 1932)

Zacatacris scudderi Hebard, 1932: 294.
Philocleon scudderi, Roberts, 1947: 226.

Type locality: Mexico, Zacatecas, Camacho.
Type material: male holotype, ANSP Philadelphia.

Examined material: **Nuevo Leon**, rd. 31, 7Km E. S. Roberto to Linares # 31, m 1932, N24°41'09,3" W100°12'59,4", 1/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P. L. G. García, 1 male, 1 female, coll. P. Fontana; **San Luis Potosí**, rd. 8, betw. San José de las Palmas and Alaquines # 25, m 1184, N22°09'28,7" W099°38'44,5", 29/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 2 males, 1 female, coll. P. Fontana; San Luis Potosí, Puente el Jaguey, Villa Hidalgo S. # 30, m 1687, N22°27'59,3" W100°41'22,3", 30/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 1 male, 1 female, coll. P. Fontana; San Luis Potosí, rd. 57 S.L. Potosí - Saltillo N of cross Guadalcázar # 22, m 1450, N22°44'30,7" W100°29'39,7", 28/09/2004, leg. P. Fontana, R. Battiston, B. Agabiti P.L.G. García, 6 males, 5 females, coll. P. Fontana.

Recognition: Apterous species, bright coloured with red, white, yellow and black(Figs. 80, 83-87). Pronotum short, swollen in pro and mesozona in lateral view in both sexes. Orange antennae. Tympana absent. Furcula represented by short and thin digitiform lobes (Fig. 85). Male cerci thin, in dorsal view C-shaped with subangular curvature in the middle forming an obtuse angle, slightly flattened apically (Figs. 84-85). Male supra-anal plate subtrapezoidal with posterior margin rounded. Male subgenital plate short and globose. Hind tibiae whitish, black

in basal portion. Phallic complex (Figs. 86-87) small with dorsal valvae in lateral view subtriangular, slightly curved upwards and in dorsal view apically rounded; ventral valvae in posterior view subtriangular, thin and with acute apex.

Measurements:

	male	female
Body length	20,85	26,50
Pronotum length	4,10	5,54
Tegmina length	–	–
Hind femora length	10,98	13,65

Tab. XVI. Main measurements in mm (means) of *Philocleon scudderi* (Hebard, 1932).

Distribution: Mexico (Nuevo Leon, San Luis Potosí, Zacatecas).

Philocleon luceroae n. sp.

Philocleon n. sp. grupo *scudderi*, García García & Fontana, 2006: 250.

Type locality: Mexico, Queretaro, Parque Nacional el Cimatario.

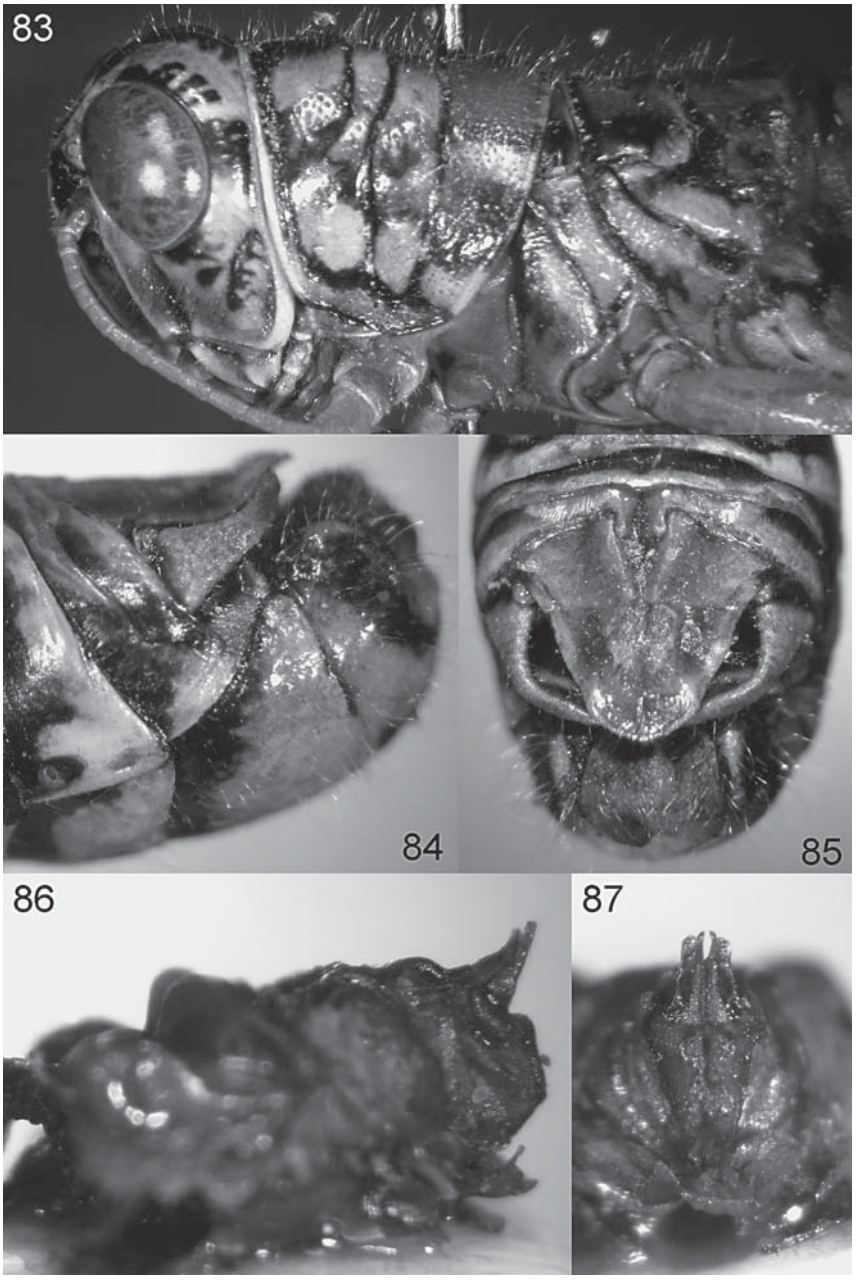
Type material (*Examined material*): **Queretaro**, Querétaro SE, P. Nac. El Cimatario #13, m 2183, N20°31'41,8" W100°20'6,8", 25/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 3 males (holotype and 2 paratypes), 5 females (allotype and 4 paratypes), coll. P. Fontana; same locality, 3/12/2005, leg. Garcia. P.L. and Fontana P., 13 males (paratypes), 12 females (paratypes), coll. P.Fontana; same locality, 18/11/2006, leg. Garcia. P.L. and Fontana P., 3 males (paratypes), 1 female (paratype), coll. P. Fontana; same locality, 18/12/2006, leg. Garcia. P.L. and Fontana P., 1 male (paratype), 1 female (paratype), coll. P. Fontana.

Figs. 80-82. Living *Philocleon:* 80) male of *P. scudderi* (Hebard, 1932), 81) male of *P. ottei* n. sp. and 82) mating of *P. luceroae* n. sp.


80


81


82



Fis. 83-87. *Philocleon scudderi* (Hebard, 1932). Male Pronotum in left lateral view (83); male abdomen apex in left lateral (84) and dorsal (85) view; phallic complex in left lateral (86) and posterior (87) view. (Photos by P. Fontana).

Diagnosis: Similar to *P. scudderi* but different in showing yellowish antennae, almost straight pronotum in lateral view, male cerci much more angulated in the middle, longer furcula and distinctly elongated male phallic complex (Figs. 82, 88-92).

Measurements:

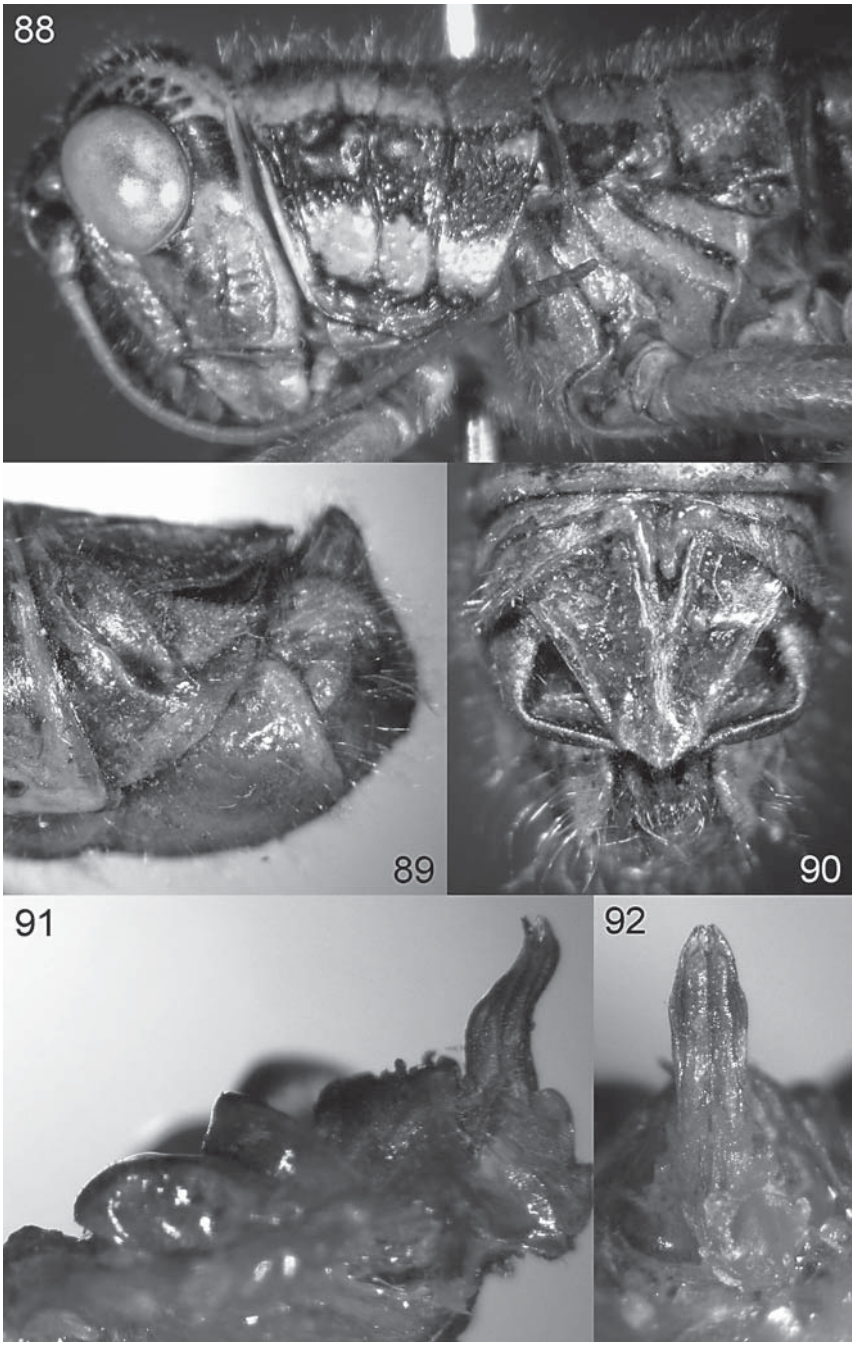
	male	female
Body length	20,26	23,62
Pronotum length	3,84	4,74
Tegmina length	–	–
Hind femora length	10,98	12,37

Tab. XVII. Main measurements in mm (means) of *Philocleon luceroae* n. sp.

Recognition: Apterous species, brightly coloured with red, white, yellow and black (Fig. 82). Pronotum of both sexes in lateral view short, almost straight in pro and mesozona (Fig. 88). Tympana absent. Furcula represented by digitiform, subconical lobes (Fig. 90). Male cerci in dorsal view thin, L-shaped with almost right angled curvature in the middle and with slightly flattened apex (Figs. 89-90). Male supra-anal plate subtriangular with angulate posterior margin. Male subgenital plate short and globose. Hind tibiae whitish, black in basal portion. Male genitalia (Figs. 91-92) elongated with dorsal valvae hardly sinuous, scarcely convex in basal portion, concave and up curved in apical half in lateral view and with apically subacute in dorsal view; ventral valvae in lateral view digitiform, thin, concave in basal portion, only gently up curved at apex and in posterior view with subacute apex,with lateral side concave.

Etymology: The new species is named after our friend and colleague Patricia Lucero García García (Mexico), that accompanied the first author in all his field expedition in Mexico up to 2006 and that studied intensively the Orthoptera of the Parque Nacional el Cimatario.

Distribution: Mexico (Queretaro).



Figs. 88-92. *Philocleon luceroae* n. sp. Male Pronotum in a left lateral view (88); male abdomen apex in left lateral (89) and dorsal (90) view; phallic complex in left lateral (91) and posterior (92) view. (Photos by P. Fontana).

Philocleon ottei n. sp.

Type locality: Mexico, San Luis Potosí, betw. S.Martín de Abajo and S. Nicolás Tolentino

Type material (*Examined material*): **San Luis Potosí**, betw. S.Martín de Abajo and S. Nicolás Tolentino #20, m 1487, N 22°8'13,6" W100°30'34,6", 27/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male (holotype), 1 female (allotype), coll. P. Fontana.

Diagnosis: Similar to *P. luceroae* n. sp. but different showing in both sexes swollen pronotum in lateral view (Fig. 93), shorter furcula and less sinuous phallic complex in lateral view (Figs. 95-96).

Measurements:

	male holotype	female allotype
Body length	20,48	24,00
Pronotum length	4,00	4,96
Tegmina length	–	–
Hind femora length	10,88	12,80

Tab. XVIII. Main measurements in mm of *Philocleon ottei* n. sp.

Recognition: Apterous species, brightly coloured with red, white, yellow and black. Pronotum of both sexes in lateral view short, swollen in pro and mesozona. Tympana absent. Furcula represented by short digitiform lobes. Male cerci in dorsal view thin, L-shaped with acute curvature in the middle. Male supra-anal plate subtrapezoidal with posterior margin rounded. Male subgenital plate short and globose. Hind tibiae whitish, black in basal portion. Male genitalia (Figs. 96-97) elongated with dorsal valvae almost stright. Ventral valvae digitiform, thin, almost stright in lateral view and with parallele lateral sides.

Etymology: The new species is named after Daniel Otte (Dept. of Entomology, Academy of Natural Sciences, Philadelphia, U.S.A.), famous orthopterologist.

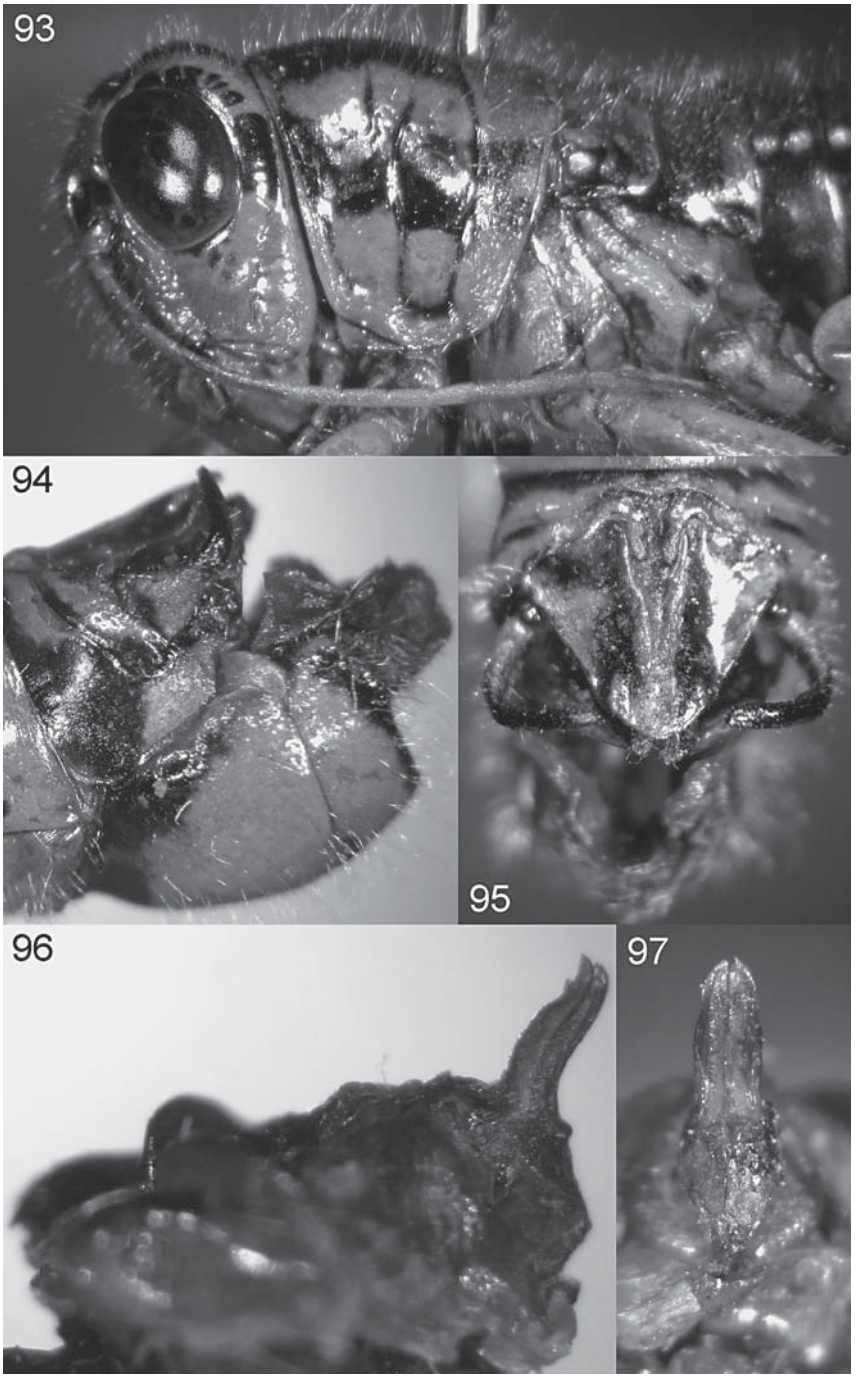
Distribution: Mexico (San Luis Potosí).

Tribe **Conalcaeini** Cohn & Cantrall, 1974

The tribe Conalcaeini was established by Cohn & Cantrall (1974) on the basis of the following morphological characters:

1. Rather stocky or robust body.
2. Pronotum gradually widening caudad with posterior margin broadly emarginated.
3. Tegmina lateral, elongate lobate, with rounded apices.
4. Male supra-anal plate trigonal, with rounded apex and usually with a single tooth or sharp projection dorsally on each mediolateral surface.
5. Furcula represented by short, rounded lobes.
6. Male cercus shape based on a short falcate pattern with the disto-dorsal margin variously enlarged, distally and usually dorso-distally incurved.
7. Male subgenital plate conical.
8. Sheath of fallus elaborated and involved in the formation of the dorsal valve of the aedeagus.
9. Presence of striking, much enlarged, oppressed and usually sclerotized ventral lobes of the ramus of the cingulum.
10. Presence of an exceptionally well-developed pair of sclerotized areas in the ventral membrane of the phallic mass.

Up to date the tribe numbers two described genera (*Conalcaea* Scudder, 1897 and *Barytettix* Scudder, 1897) both distributed in north-western part of Mexico. Other two undescribed genera of the tribe were mentioned by Cohn & Cantrall (1974) and one of them will be here described as *Huastecacris* n. gen. For this genus Roberts H. Radclyffe created in an unpublished manuscript the name *Geacris*. This name was used by Descamps (1975) for *Conalcaea truncatipennis* Scudder, 1897 referring it to the genus «*Geacris*, Roberts *in litteris*». Lacking any description and any type species designation, according to the International Code of Zoological Nomenclature (article 13), the name *Geacris* must be considered *nomen nudum* and cannot be used. We had not the possibility to study the manuscript of Roberts but we studied all the material of the Insect Division of the Museum of Zoology, University of Michigan, in Ann Arbor (USA) labelled as «*Geacris*» and after that we stated the synonymy of *Geacris* (*nomen nudum*) with the new genus here described.



Figs. 93-97. *Philocleon ottei* n. sp. Male Pronotum in a left lateral view (93); male abdomen apex in left lateral (94) and dorsal (95) view; phallic complex in left lateral (96) and posterior (97) view. (Photos by P. Fontana).

Huastecacris n. gen.

Geacris Descamps, 1975: 66 *nomen nudum*.

Type species: *Huastecacris zenoni* n. gen. and n. sp.

Diagnosis: Body robust (Figs. 98-100); pronotum posteriorly gradually widening with hind margin emarginated in dorsal view and lateral ridges well marked (Figs 101-104 and 109-112). Prosternal process subconical and flattened laterally. Tegmina lateral, subovate with posterior margin emarginated (Figs 101-104 and 109-112). Tegmina dark with whitish veins. Furcula represented by short, subtriangular and rounded lobes; male supra-anal plate subtriangular. Male cerci apically subconical, flattened or spatulated. Subgenital plate subconical, pointed. Dorsal valvae of penis stout and backwards curved, rugose. Ventral valvae of penis almost similar to dorsal ones. Female very stout and with markedly wide and subconical pronotum (Figs. 103, 104, 111, 112).

Etymology: The Huasteca is an Eastern Mexican region rich in naturalistic resources.

Distribution: Mexico (Tamaulipas, Nuevo Leon and San Luis Potosì).

Huastecacris zenoni n. sp.

Type locality: Mexcio, Tamaulipas, Balcón de Moctezuma, hwy. 101 Cd. Victoria-San Antonio, SW Cd. Victoria, ejido Alta Cumbre

Type material (*Examined material*): **Tamaulipas**, Balcón de Moctezuma, hwy. 101 Cd. Victoria-San Antonio, SW Cd. Victoria, ejido Alta Cumbre #1, m 1254, N23°36'22,2" W99°12'12,5", 26/6/2005, leg. Garcia. P. L. and Fontana P., 5 males (1 holotype and 4 paratypes), 2 females (1 allotype and 1 paratype), coll. P. Fontana;

Diagnosis: Similar mostly to *H. truncatipennis* (Scudder, 1897). It differs for its stouter size, shorter and spatulated male cerci, shorter male supra-anal plate, longer and much more curved backwards valvae of penis (Fig. Figs. 107-108).

Figs. 98-100. Living *Huastecaris* n. gen.. 98) male of *H. zenoni* n. sp., 99) female of *H. zenoni* n. sp. and 100) male of *H. truncatipennis* (Scudder, 1897). (Photos by P. Fontana).


98
99
100

Measurements:

	male	female
Body length	25,70	29,90
Pronotum length	5,81	6,63
Tegmina length	3,89	4,39
Hind femora length	13,28	16,05

Tab. XIX. Main measurements in mm (means) of *Huastecacris zenoni* n sp.

Recognition: Pronotum posteriorly gradually widening with hind margin emarginated in dorsal view and lateral ridge well marked (Figs. 101-102). Tegmina lateral, subovate with posterior margin slightly emarginated. Tegmina dark with whitish veins. Furcula represented by very short and rounded lobes; male supra-anal plate triangular, with subacute rounded apex (Fig. 106). Male cerci subconical, apically spatulate, decidedly upcurved in lateral view and incurved in dorsal view (Figs. 105-106). Subgenital plate short, subconical, pointed. Hind tibiae orange. Dorsal valvae of penis robust and markedly backwards curved, rugose. Ventral valvae of penis almost similar to dorsal ones but with slightly expanded apex (Figs. 107-108).

Etymology: We are glad to name this new species after Prof. Cano Zenon Santana of Departamento de Ecología y Recursos Naturales, Facultad de Ciencias, UNAM (Mexico), for his kind and indispensable help for our investigations.

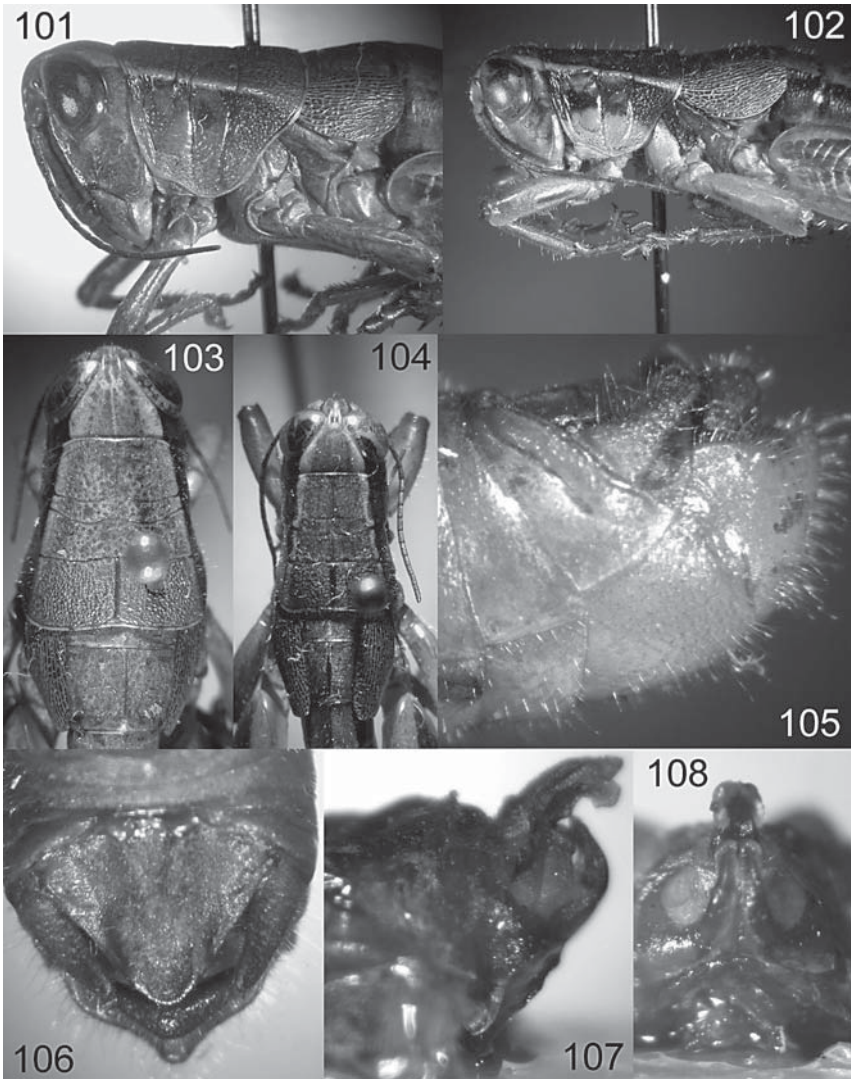
Distribution: Mexico (Tamaulipas).

Huastecacris truncatipennis (Scudder, 1897) n. comb.

Conalcaea truncatipennis Scudder, 1897: 27.
Conalcaea truncatipennis, Hebard, 1917: 264.
Geacris truncatipennis, Descamps, 1975: 66.
Conalcaea truncatipennis, Carbonell [Ed.]. 1977. Orthopterorum Catalogus. 17: 74.

Type locality: Mexico, Nuevo León, Saltillo.
Type material: female lectotype, ANSP Philadelphia.

Examined material: **Nuevo Leon**, rd. Santiago to Los Lirios, Cola del Caballo W #45, m 1480, N 25°22'42,4" W100°18'41,1", 6/10/2004,



Figs. 101-108. *Huastecacris zenoni* n. gen. and n. sp. Female (101) and male (102) pronota in left lateral view; female (103) and male (104) pronota in dorsal view; male abdomen apex in left lateral (105) and dorsal (106) view; phallic complex in left lateral (107) and posterior (108) view. (Photos by P. Fontana).

leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 3 males, 3 females, coll. P.Fontana; Nuevo Leon, 2 km E. H. La Esperanza, Cola del Caballo W #42, m 1350, N 25°22'30,7" W100°12'42,7", 5/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G. P. L., 1 male, 2

females, coll. P.Fontana; Nuevo Leon, rd. Santiago to Los Lirios, Cola del Caballo W # 43, m 1348, N25°23'11,9" W 100°14'35,8", 5/10/2004, leg. Fontana P. Battiston R., Agabiti B. and García G.P.L., 1 female, coll. P. Fontana; Nuevo Leon, S. Juan Bautista #46, m 1474, N25° 23'37,5" W100°18'8,4", 7/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G. P. L., 1male, coll. P.Fontana; Nuevo Leon, Las Adjuntas, S Monterrey #8, m1938, N 25°22'11,4" W100°26'10,3", 1/7/2005, leg. Garcia. P. L. and Fontana P., 3 males, 2 females, coll. P. Fontana; Nuevo Leon, after Cola de Caballo, rd. to Los Lirios, S Monterrey #5, m 1016, N 25°20'35" W100°10'26,6", 30/6/2005, leg. Garcia. P. L. and Fontana P., 1 male (paratype), coll. P. Fontana. **San Luis Potosí**, rd. S.L. Potosí-Río Verde, bef. S. José, Puerto de la Huerta 18, m 2341, N 22°5'46,6" W100°39'32,7", 27/9/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 2 females, coll. P. Fontana.

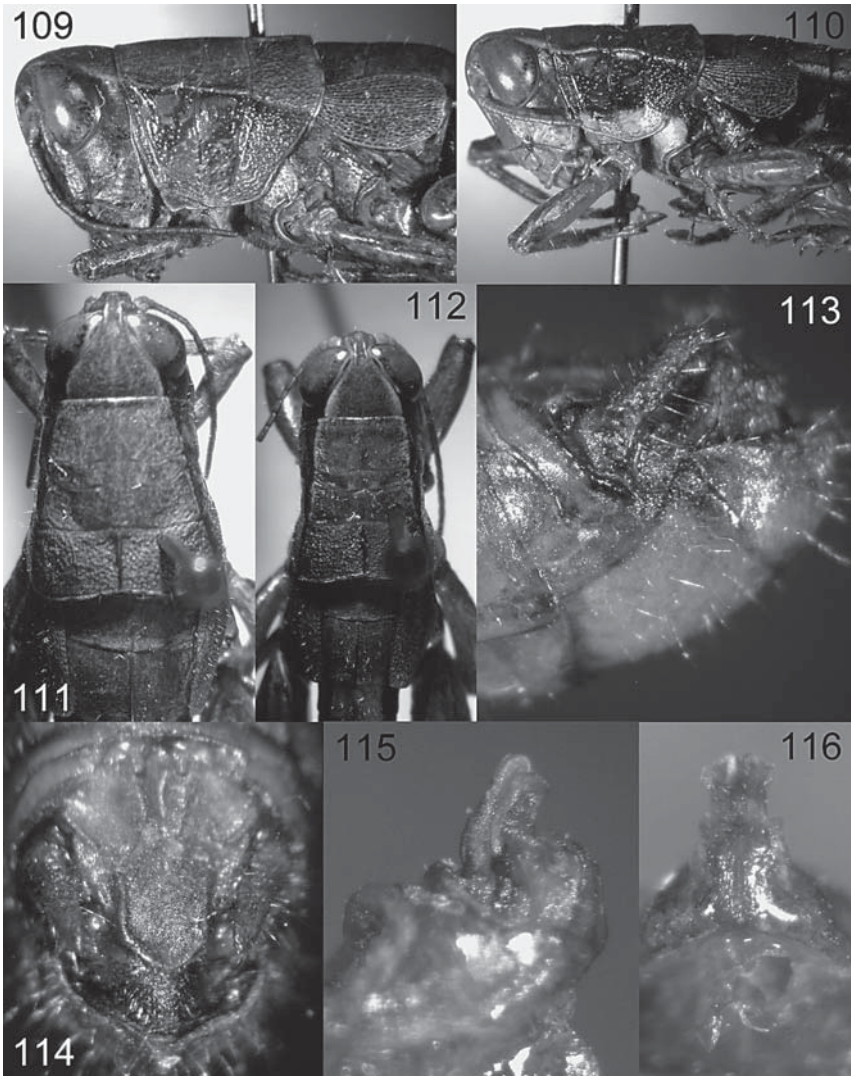
Recognition: Very similar to *H. zenoni* n. sp. but smaller in size (Fig. 100). Pronotum in dorsal view posteriorly gradually widening with hind margin emarginated, lateral ridges well marked. Tegmina lateral, subovate with posterior margin emarginated. Tegmina dark with whitish veins (Figs. 109-112). Furcula represented by short subtriangular rounded lobes; male supra-anal plate subtriangular, elongate, with rounded apex (Fig. 114). Male cerci subconical, thin, apically slightly flattened, straight (Figs. 113-114). Subgenital plate short, subconical. Hind tibiae greenish-reddish. Dorsal valvae of penis robust and hardly backwards curved, rugose. Ventral valvae of penis almost straight and shorter than dorsal ones (Fig. Figs. 115-116).

Measurements:

	male	female
Body length	21,60	27,14
Pronotum length	4,64	6,08
Tegmina length	3,46	4,26
Hind femora length	11,41	14,02

Tab. XX. Main measurements in mm (means) of *Huastecacris truncatipennis* (Scudder, 1897).

Distribution: Mexico (Nuevo Leon and San Luis Potosì).



Figs. 109-116. *Huastecacris truncatipennis* (Scudder, 1897). Female (109) and male (110) pronota in left lateral view; female (111) and male (112) pronota in dorsal view; male abdomen apex in left lateral (113) and dorsal (114) view; phallic complex in left lateral (115) and posterior (116) view. (Photos by P. Fontana).

Tribe **Dactylotini** Scudder, 1897

genus ***Paraidemona*** Brunner von Wattenwyl, 1893

The genus *Paraidemona* Brunner von Wattenwyl, 1893 numbers a little group of small, apterous Melanoplinae, mostly endemic of U.S.A. and with one species, *Paraidemona mimica* Scudder, 1897, known also from Mexico. Given the small size and very simple male genital structure, they could be confused with juvenile individuals and after that the material concerning this group is quite scarce in collections. In our field expeditions we collected very few specimens all to be referred to the new species here described.

Species	Type locality
Paraidemona fratercula Hebard, 1918	U.S.A., Texas
Paraidemona latifurcula Hebard, 1918	U.S.A., Texas
Paraidemona mimica Scudder, 1897	U.S.A., Texas
Paraidemona nuttingi Yin & Smith, 1989	U.S.A., Texas
Paraidemona olsoni Yin & Smith, 1989	U.S.A., Texas
Paraidemona punctata (Stål, 1878)	unknown

Tab. XXI. Known species of the genus *Paraidemona* with type locality.

Paraidemona cohni n. sp.

Type locality: Mexico, Nuevo Leon, rd. 85, 20 km S. of Linares to Cd. Victoria.

Type material (*Examined material*): **Nuevo Leon**, , rd. 85, 20 km S. of Linares to Cd. Victoria #36, m 372, N24°40'34,6" W99°32'14,2", 3/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G. P. L., 1 male (holotype), coll. P. Fontana; Nuevo Leon, Monterrey, rd. 40 to S. Catarina #47, m 667, N25°40'49,2" W100°27'3", 8/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male (paraype), coll. P. Fontana.

Diagnosis: Apterous species, small in size, with short pronotum, simple conical male cerci and globose phallic complex (Fig. 117). The main character are the male furcula, consisting in two touching subtrapeizodal expansions and the male supra-anal plate semicircular (Fig. 119).

Body brown and whitish, fore and middle legs green, hind femura green and hind tibiae blue.

Measurements:

	male	Female
Body length	18,80	–
Pronotum length	3,28	–
Tegmina length	–	–
Hind femora length	9,60	–

Tab. XXII. Main measurements in mm (means) of *Paraidemona cohni* n. sp.

Recognition: Apterous species. Pronotum straight in lateral view (Fig. 117). Furcula lamellar, consisting in two touching subtrapeizodal expansions with inner angle subrecte. Supra-anal plate semicircular, with largely rounded apex (Fig. 119). Male subgenital plate globose. Male cerci simple, conical (Figs. 118-120). Phallic complex globose with dorsal valvae short and wide, subtrapezoidal and ventral valve subtriangular (Figs. 121-122). Female unknown.

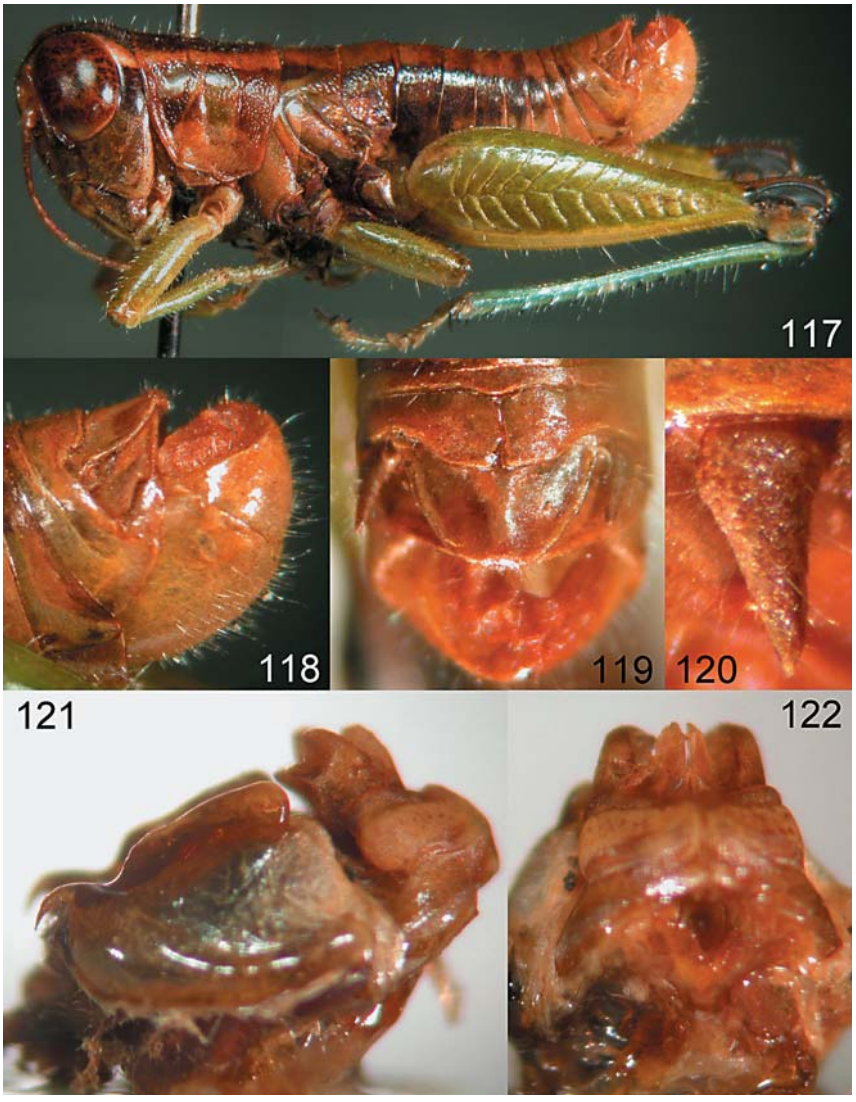
Etymology: We are glad to name this rare and peculiar species to Theodore J. Cohn (Insect Division/Museum of Zoology, University of Michigan, U.S.A.), that introduced and guided us to the study of the extraordinary Orthoptera fauna of Mexico.

Distribution: Mexico (Nuevo Leon).

Tribe **uncertain**

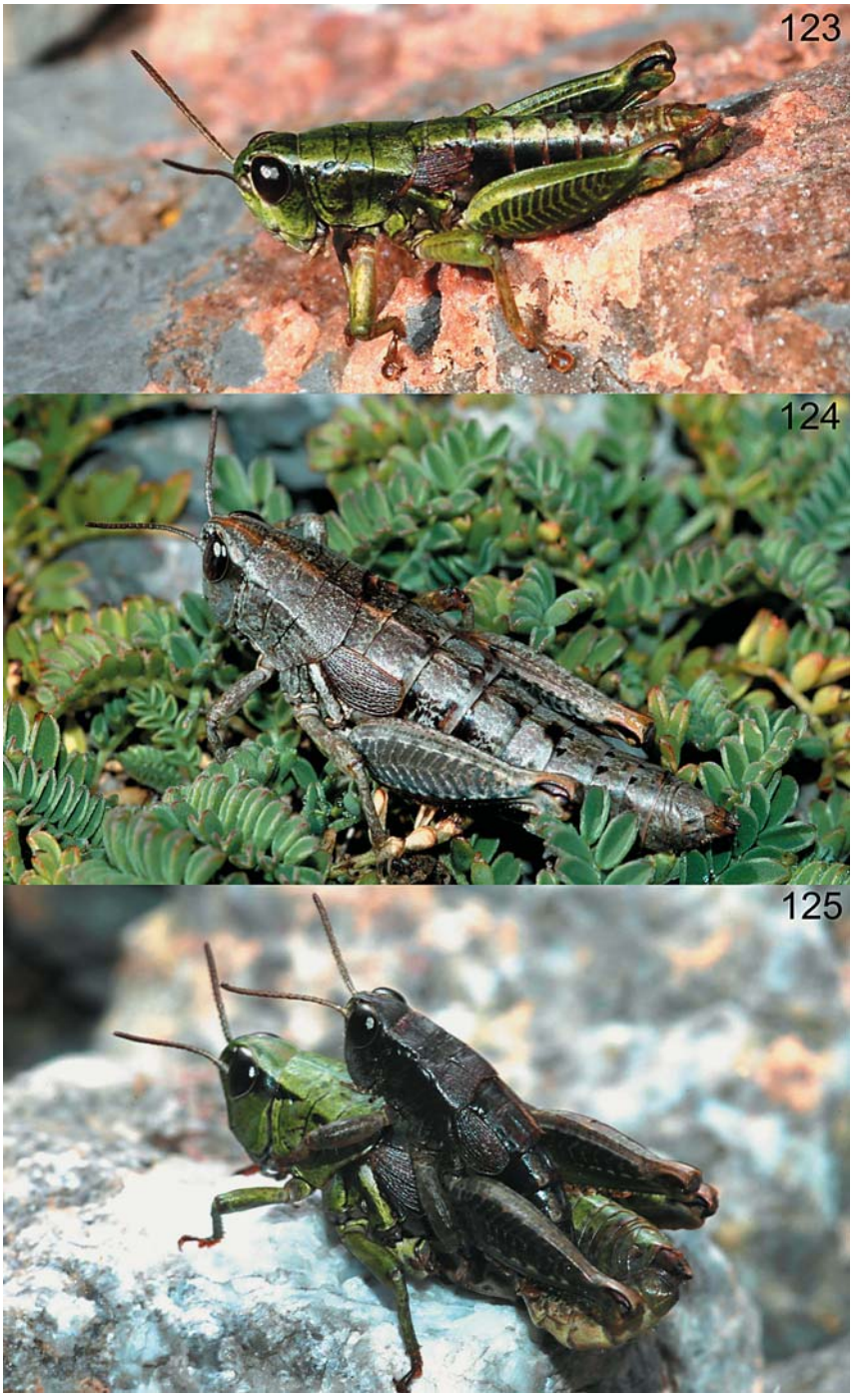
Genus ***Pedies*** Saussure, 1861

The genus *Pedies* Saussure, 1861 was recently revised by Cigliano & Otte (2003). It is a Mexican montane endemic taxon, the only south American species *Pedies andeanus* Bruner, L., 1913 being assigned to a distinct genus by Ronderos & Carbonell (1994): *Orotettix* Ronderos & Carbonell, 1994. Most of the species are known only for a single Mexican mountain and we can suppose that other new species could be present in the widely unexplored tops of other mountains in the country. The new species here described was the only Orthoptera living on top of Cerro Potosì at 3700 m, where it was abundant.



Figs. 117-122. *Paraidemona cohni* n. sp. mounted male (117) in left lateral view (the image is composed by two photos); male abdomen apex in left lateral (118) and dorsal (1119) view; left cercum in lateral view (120); phallic complex in left lateral (121) and posterior (122) view. (Photos by P. Fontana).

Figs. 123-125. *Pedies cerropotosi* n. sp. 123) green form male, 124) brown form female, 125) brown form male and green form female mating. (Photos by P. Fontana).


123
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125

Species	Type locality
Pedies capotamius Cigliano & Otte, 2003	Mexico, E.do de México
Pedies chicoensis Cigliano & Otte, 2003	Mexico, Hidalgo
Pedies comiamius Cigliano & Otte, 2003	Mexico, E.do de México
Pedies huacochaus Cigliano & Otte, 2003	Mexico, Veracruz
Pedies huarus Cigliano & Otte, 2003	Mexico, Distrito Federal
Pedies malinchensis Cigliano & Otte, 2003	Mexico, Tlaxcala
Pedies siyonamius Cigliano & Otte, 2003	Mexico, Veracruz
Pedies tabeius Cigliano & Otte, 2003	Mexico, Distrito Federal
Pedies tericercus Cigliano & Otte, 2003	Mexico, Hidalgo
Pedies virescens Saussure, 1861	Mexico, Veracruz

Tab. XXIII. Known species of the genus *Pedies* Saussure, 1861 with type locality.

Pedies cerropotosi n. sp.

Type locality: Mexico, San Luis Potosí, Cerro Potosí.

Type material (*Examined material*): **Nuevo Leon**, Cerro Potosí, E slope #33, m 2321, N24°53'17,6" W100°11'53,4", 1/10/2004, leg. Fontana P., Battiston R., Agabiti B. and García G.P.L., 1 male (paratype), coll.P. Fontana; Nuevo Leon, Cerro Potosí (top) #34, m 3712, N24°52'21,6" W99°13'55,4", 2/10/2004, leg.Fontana P., Battiston R., Agabiti B. and García G.P.L., 15 males (holotype and 14 paratypes), 8 females (allotype and 7 paratypes), coll. P. Fontana.

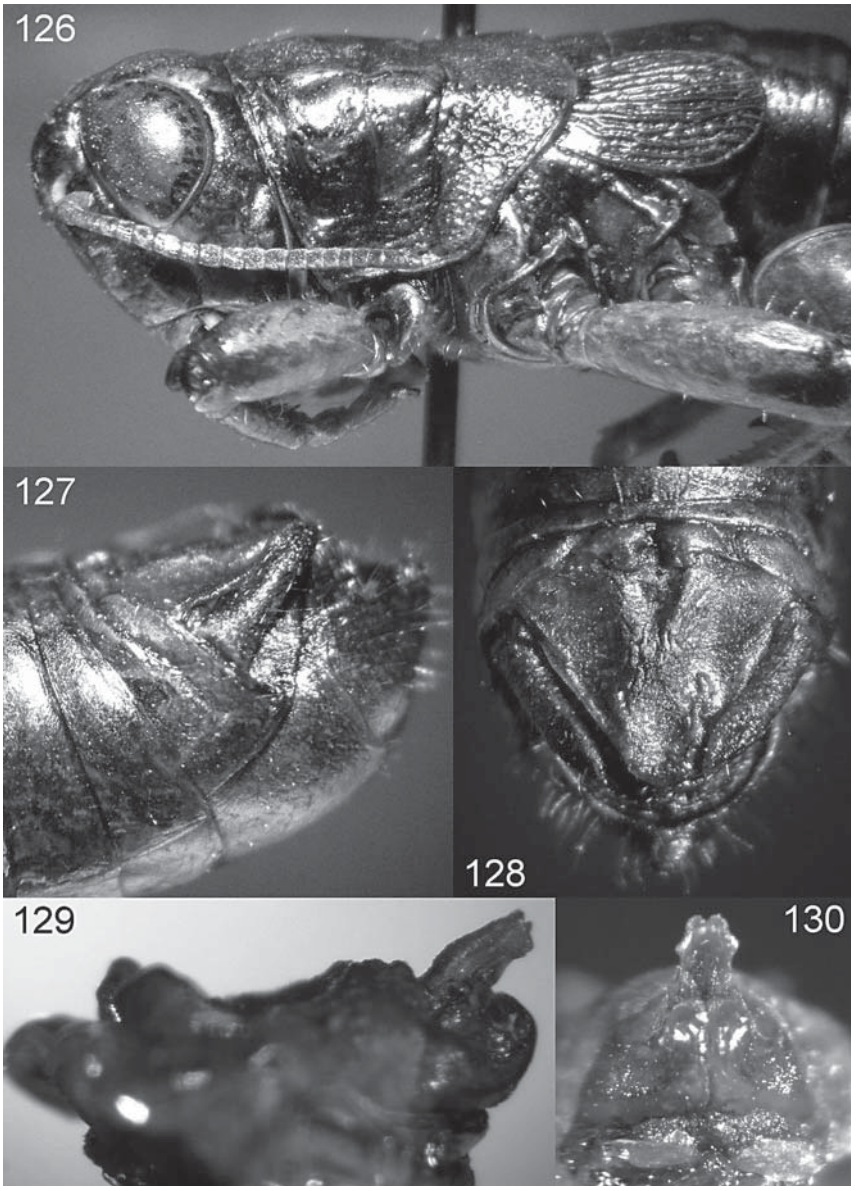
Diagnosis: Well distinct from all known species of the genus by the simple shape of short, almost straight male cerci, very short and simple male subgenital plate and male phallic complex extremely peculiar.

Measurements:

	male	female
Body length	19,25	22,56
Pronotum length	4,37	5,22
Tegmina length	3,04	3,89
Hind femora length	9,70	11,41

Tab. XXIV. Main measurements in mm (means) of *Pedies cerropotosi* n. sp.

Recognition: General colour green or grey-brown, with the presence of two more or less distinct colour forms, green and grey-brown (Figs. 123-125). Pronotum slightly swollen on prozona in lateral view (Fig.



Figs. 126-130. *Pedies cerropotosi* n. sp. Male Pronotum in left lateral view (126); male abdomen apex in left lateral (127) and dorsal (128) view; phallic complex in left lateral (129) and posterior (130) view. (Photos by P. Fontana).

126), expanding backwards and with emarginated hind margin in dorsal view. Antennae brown-grey. Brachypterous, with short, oval tegmina (Fig. 126). Furcula represented by short, subtriangular and rounded lobes (Fig. 128). Supra-anal plate subtriangular, with rounded apex (Fig. 128). Male subgenital plate short, subconical, with sharply apex. Male cerci (Figs. 127-128) in lateral view simple, subconical, slightly upcurved and with rounded apex, in dorsal view digitiform, greatly swollen and with subacute apex. Phallic complex (Figs. 129-130) simple, with valvae short, slightly backwards curved in lateral view. Dorsal valvae longer than ventral and with subtriangular rounded apex. Ventral valvae subtriangular, gently hooked inwards and with thin apex. At the base of ventral valvae there are two globular structures.

Etymology: The new species is named after the type locality, Cerro Potosì (3713m), the highest mountain in the Sierra Madre Oriental. It is located in the state of Nuevo León, about 80 km south of Monterrey. This mountain is composed of limestone, and is noted for its very diverse flora including several endemic or near-endemic species, such as the Potosí Pinyon (*Pinus culminicola*).

Distribution: Mexico (Nuevo Leon).

Conclusions

The new Melanoplinae taxa here described, ten new species and one new genus, are not a small amount in comparison to all 122 taxa to date known from Mexico (Barrientos Lozano, 2004) for this wide subfamily of Orthoptera. Mexican biodiversity is really astonishing and the order of Orthoptera can furnish an interpretative key for many aspects like evolution, biogeography, ecology and conservation. Taxonomical studies are preliminary to any other and field expeditions allow the naturalists to better understand the relations between a group of organism and his territory and habitat. Mexican Orthoptera fauna is represented by some species with a wide distribution, often extended to almost whole North America or even to deep South America. On the other hand there are many endemic species probably present only on the top of a single mountain (e. g. in the genus *Pedies*). Other species have a well detectable distribution, limited to small areas, apparently with any evident biogeographical or ecological reason. In addition, it is easy to observe in Mexican Orthoptera and especially in Melan-

oplinae, a great intraspecific variability in body size, both inside one population but even more within distinct populations. This variability is often frequent in colour pattern also. The most amazing exemplum of this variability is given by *Dactylotum bicolor* Charpentier, 1843. This fact is not apparently correlated to evident circumstances as elevation or vegetation and should be investigated studying many populations of the same taxon in different places and for some consecutive years. This high intraspecific variability could be one of the reasons of the great biodiversity of Mexican fauna. After these simple discussion it is easy to understand how a deeper study on this group of insect, known in a quite good level in Mexico but without a modern global vision, could give a great contribution to the general knowledge on the problems related to Mexican fauna diversity, origin and conservation.

ACKNOWLEDGEMENTS

We are debtor to Theodore J. Cohn and to Lacey Knowles for their kind welcome to the first Author at the Ortoptera Range of the Insect Division of the Museum of Zoology, University of Michigan, in Ann Arbor (USA), where a huge number of Mexican Orthoptera is preserved and where almost all the concerning literature is available. Without the possibility to spend some short but intense periods in this famous scientific institution, our results would not be possible. Sincere thanks to Patricia Lucero García García for her intense and fruitful cooperation, hoping that in future we will work again together in her extraordinary country. Kind thanks to Roberto Battiston and Barbara Agabiti (Italy), that participated to the first Mexican expedition with the first author. We are honoured that the Accademia Roveretana degli Agiati accepted to publish our article only apparently far from the «natural» interest area of this ancient but always new cultural institution.

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