Research Article

New data on Blaberoidea Saussure, 1864 (Insecta: Blattodea) from Morelos, Mexico, with a new species and a checklist of cockroaches for the state

Nuevos datos para Blaberoidea Saussure, 1864 (Insecta: Blattodea) de Morelos, México, con una lista de las cucarachas del estado

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ZooBank: urn:lsid:zoobank.org:pub:888B6283-E7AC-47E5-B2CD-3C1226CF4A79
https://doi.org/10.35249/rche.47.4.21.05

Abstract. Morelos is the second smallest state in Mexico, nevertheless, it possesses a remarkable diversity of habitats and insects. Contrastingly, very little is known about some taxa like Blattodea. Here we present new data and taxonomic arrangements for some Blaberoidea of the state and a checklist of cockroaches from Morelos. New material was sampled from Reserva de la Bisfera Sierra de Huautla, near the village El Limón and an urban site in Cuernavaca, Loma Bonita colony. We report 13 genera and 15 species for Morelos state. *Panchlora acolhua*, *Caloblatta* sp. and *Ischnoptera rufa occidentalis* are new state records. Holotypes of *Cahita nahua* and *C. yaqui* are illustrated for the first time, and a new species is described for Cuernavaca, Morelos. Total number of reported localities are scarce (18), with many municipalities poorly or not studied. Morelos shows an interesting potential richness according to the state area. In this work, with only a few samples from two localities, important information has been generated. With more studies and efforts, the number of species should increase, including new species.

Key words: Balsas River Basin; *Blattaria*; Reserva de la Biosfera Sierra de Huautla; Seasonally Dry Tropical Forest; Transmexican Volcanic Belt.

Resumen. Morelos es el segundo estado más pequeño de México, no obstante, posee una considerable diversidad de hábitats e insectos. Sin embargo, muy poco se conoce de algunos grupos como Blattodea. Aquí se presentan nuevos datos y arreglos taxonómicos para algunos Blaberoidea, y una lista de cucarachas del estado. El nuevo material fue recolectado en la Reserva de la Biosfera Sierra de Huautla, cerca del poblado El Limón y en un sitio urbano en la colonia Loma Bonita, Cuernavaca. Se reportan 13 géneros y 15 especies para el estado de Morelos. *Panchlora acolhua*, *Caloblatta* sp. e *Ischnoptera rufa occidentalis* son nuevos registros estatales. Los holotipos de *Cahita nahua* and *C. yaqui* son ilustrados por primera vez, y se describe una nueva especie para Cuernavaca, Morelos. El total de localidades con reportes es escaso (18), con muchos municipios muy poco o no estudiados. Morelos muestra una interesante riqueza potencial de acuerdo con el área del estado. En este trabajo, con solo

Received 19 August 2021 / Accepted 14 October 2021 / Published online 29 October 2021
Responsible Editor: José Mondaca E.

unas pocas muestras de dos localidades se generó información importante. Con más esfuerzos y estudios el número de especies podría aumentar, inclusive nuevas especies.

Palabras clave: *Blattaria*; Depresión del Balsas; Eje Volcánico Transversal; Reserva de la Biosfera Sierra de Huautla; Selva Baja Caducifolia.

Introduction

Morelos is the second smallest state in Mexico, nevertheless, it possesses a remarkable diversity of habitats (part of two biogeographic zones, Rzedowski 1978; six main types of vegetation, López & Barrera 1976) and insects (*e.g*., coleopterans, Zaragoza-Caballero *et al*. 2019; dipterans, Ávalos-Hernández 2007; lepidopterans, Luna-Reyes *et al*. 2012; dragonflies, González-Soriano & Novelo-Gutiérrez 2007; ants, Vásquez-Bolaños 2011). Contrastingly, very little is known about some taxa like Blattodea. For decades very little attention has been paid to these insects, especially in states like Morelos with no studies. Cockroaches are a small group of hemimetabolous insects with more than 4,400 worldwide described species (Roth 2003; Beccaloni 2014), with a greater occurrence in pantropical regions (Bell *et al*. 2007). In Mexico, 164 species have been reported (Estrada-Álvarez 2013; Estrada-Álvarez & Sormani 2018, 2019; Estrada-Álvarez & Guadarrama 2020; Estrada-Álvarez & Rojas 2020; Estrada-Álvarez *et al*. 2020) and in Morelos, 14 species (Hopkins 2014; Estrada-Álvarez 2013; Estrada-Álvarez & Sormani 2018; Estrada-Álvarez *et al*. 2020).

Here we present new data for some Blaberoidea of the state and illustrated for the first time the holotypes of the genus *Cahita* Hebard, 1922 present in Mexico, with description of a new species for Cuernavaca, Morelos. Also, we present a checklist of Blattodea from Morelos.

Materials and Methods

All information referring to descriptions or records of cockroaches from Morelos were reviewed. After that a data base with the fields: species, distribution, author, and year was constructed. All locality reports were checked and corrected according to the localities database of INEGI and the digital map of Mexico 6.0 (INEGI 2021). The taxonomic arrangement follows Roth (2003), with modifications of Djernaes *et al.* (2020).

Morelos state is located in the central part of Mexico, between lengths 99°29'39.84" - 98°37'58.44" W and latitudes 18°19'56.64" - 19°07'54.12" N (Fig. 1). It is bordered to the north by Estado de Mexico and Ciudad de Mexico, to the east by Estado de Mexico and Puebla, to the south by Puebla and Guerrero, to the west by Guerrero and Estado de Mexico (INEGI 2016). It has a territorial extension of 4,958 km², which represents 0.2% of the country's surface (second smallest state). The northern portion of Morelos is part of the Transversal Volcanic Belt which extends from the Popocatépetl Volcano to Lagunas de Zempoala National Park. The southern portion is located in the Balsas River Basin, between Sierra Madre del Sur to the southwest and the Oaxaca and Puebla Mountain System to the east (Villa 1966; Rzedowski 1978). Besides Morelos has six major types of vegetation, with some particular variations (López & Barrera 1976).

New material were sampled from two different locations within Morelos: 1) Reserva de la Biosfera Sierra de Huautla, near the village El Limón (18.542467° N, 98.937864° W, 1282 masl). The site is composed of seasonally dry tropical forest patches, secondary vegetation, agricultural fields and grazing pastures. For collection, 27 pitfall traps were placed in fragments of seasonally dry tropical forest, with a mixture of water,

biodegradable detergent and salt. Traps were baited with a mixture of plantain ferment and black beer following Schal and Bell (1986). 2) Cuernavaca, in a house of Colonia Loma Bonita (18.98002796695579° N, 99.2445861375842° W, 1854 masl). An urban site, relatively close to small fragments of vegetation. Simple manual recollection was use for all individuals. All material was putted in ethanol 80%, later changing it for clean new ethanol.

The collected material was observed submerged in 70% alcohol or dry, at different magnifications under a stereoscope and a microscope. Semi-permanent mounts were made to obtain digital images in ventral and dorsal views. The dissection and chemical digestion of the abdomen was performed based on McKittrick (1964), after that, pictures of genitals were taken under a microscope.

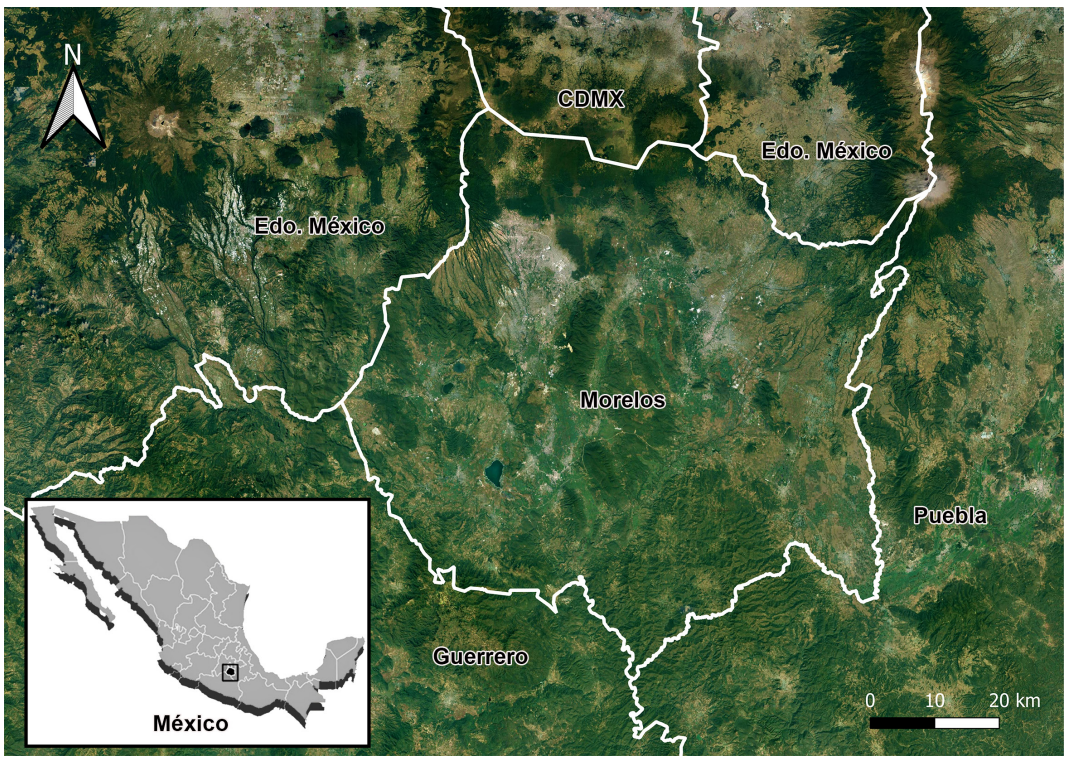


Figure 1. Map of Morelos state. White lines = state limits. / 1. Mapa del estado de Morelos. Líneas blancas = límites estatales.

Abbreviations used in the text: REBIOSH: Reserva de la Biosfera Sierra de Huautla. TL: Type Locality. *Morphology*: L1: First left sclerite; L2d: Second left-dorsal sclerite; L2vm: Second left-ventral-medial sclerite; L3: Third left sclerite; R1: First right sclerite; R2: Second right sclerite; R2v: Second right-ventral sclerite; R2d: Second right-dorsal sclerite R3: Third right sclerite. *Biogeographic provinces*: tvb: Transmexican Volcanic Belt; bal: Balsas Basin. Mpty: Municipality; masl: meters above sea level. *Collections referred in the study*: ANSP: The Academy of Natural Sciences of Philadelphia, USA. CER: Colección Entomological Research. Metepec, Estado de México, México. CNIN: Colección Nacional de Insectos, Instituto de Biología, UNAM. Ciudad de México, México. MHNG: Natural History Museum of Geneva, Switzerland.

Results

Blattodea fauna has been poorly studied in Morelos. The present contribution constitute the first attempt to summarize all available information on cockroaches from Morelos and give new data on some taxa. Here we report 13 genera and 15 species for Morelos state (Tab. 1) after amend some past misidentifications and mistakes. Three of this species (*Panchlora acolhua* Saussure & Zehntner, 1893, *Caloblatta* sp. Saussure, 1893 and *Ischnoptera rufa occidentalis* Saussure, 1862) are new records for Morelos and one is a new species (*Cahita gutierrezi* sp. n.). When reviewing and comparing the type material of *Cahita nahua* (Saussure, 1868) (MHNG) and *Cahita yaqui* Rehn, 1937 (ANSP) additionally with a male from Cuernavaca, Morelos, we conclude that this last specimen constitute a new species. Also, we present new localities for *Panchlora nivea* (Linnaeus, 1758) and *Latiblattella chichimeca* (Saussure & Zehntner, 1893) within the state.

Total number of reported localities are scarce (18), with many municipalities poorly or not studied (Fig. 11A). No species has been recorded to the north part of Morelos in the tvb. Family Pseudophyllodromiidae is poorly represented in the state (Fig. 10C) with only two known localities. Family Corydiidae has been reported in seven different localities, being the most sparse and well represented in the state, but only by one species (Fig. 10F).

Systematics

BLATTODEA Brunner von Wattenwyl, 1882

Superfamily BLABEROIDEA Saussure, 1864

Family Blaberidae Brunner von Wattenwyl, 1865

Subfamily Panchlorinae Brunner von Wattenwyl, 1865

Genus *Panchlora* Burmeister, 1838

Panchlora nivea (Linnaeus, 1758)
(Fig. 2)

Distribution. America Pantropical.

Distribution in Mexico. Chiapas, Nuevo León, Sinaloa, Tabasco, Veracruz, Puebla, Yucatán, Morelos, Mpty. Jiutepec, Zn. Industrial CIVAC (Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013).

Material examined. 2 males and 2 females from RBIOSH, El Limón, Estación Biológica, luces de noche; trampa de caída; /X/2020; Reinier Núñez coll. (CER).

New record for Morelos. Mpty. Tepalcingo, El Limón de Cuauchichinola (REBIOSH).

Notes. The absence of the sclerites of the male genitalia L2d and R2 in the males of REBIOSH situate it in the group 3 *sensu* Roth (1971) (*P. nivea* and *Panchlora thalassina* Saussure & Zehntner, 1893), the form of L1 and L2mv (Figs. 2e, 2f) confirm the identity of *P. nivea.*

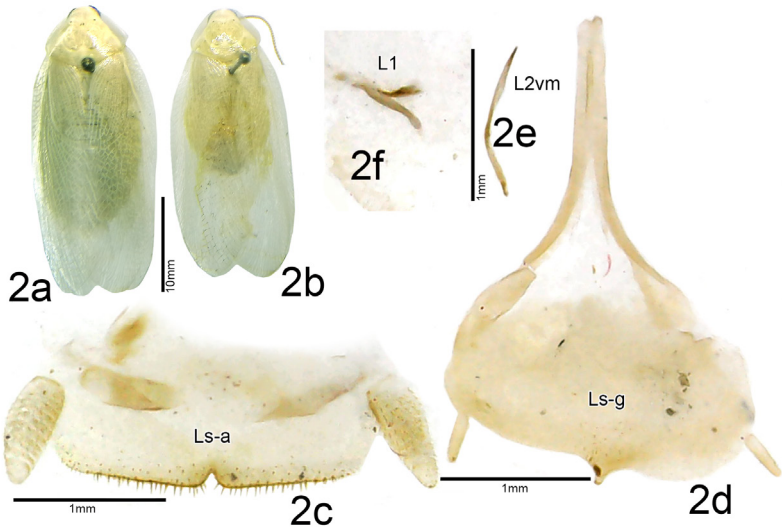


Figure 2. *Panchlora nivea* (Linnaeus). 2a. Female, dorsal habitus. 2b. Male, dorsal habitus. 2c. Supra-anal plate, ventral view. 2d. Subgenital plate, dorsal view. 2e-2f. Male genitalia sclerites. 2e. L2vm. 2f. L1. / 1. *Panchlora nivea* (Linnaeus). 2a. Hábito dorsal de la hembra. 2b. Hábito dorsal del macho. 2c. Lámina supra-anal en vista ventral. 2d. Lámina subgenital en vista dorsal. 2e-2f. Escleritos genitales del macho. 2e. L2vm. 2f. L1.

Panchlora acolhua Saussure & Zehntner, 1893
(Fig. 3)

Panchlora acolhua Saussure & Zehntner, 1893: 95 [species description, both sex] [Mexico, State of Guerrero (TL); [ex. var minor= *Panchlora minor*].
Mentioned in Hebard 1921: 213 [reg. n. Tonala, Chiapas]; Estrada-Álvarez 2013: 274; Beccaloni 2014.

Type material. Holotype male, paratype female; H. H. Smith coll. (BMNH), not reviewed.

Material examined. 2 females: El Limón, Sierra de Huautla, Morelos; trampa de luz; II/2020; Daryl Cruz coll. (CER).

Distribution. Mexico, Guatemala, Nicaragua, Costa Rica and Panama.

Distribution in Mexico. Guerrero, Chiapas, Mpty. Tonalá, Tonalá, **Morelos,** Mpty. Tepalcingo, El Limón de Cuauchichinola (REBIOSH) (**First state record**).

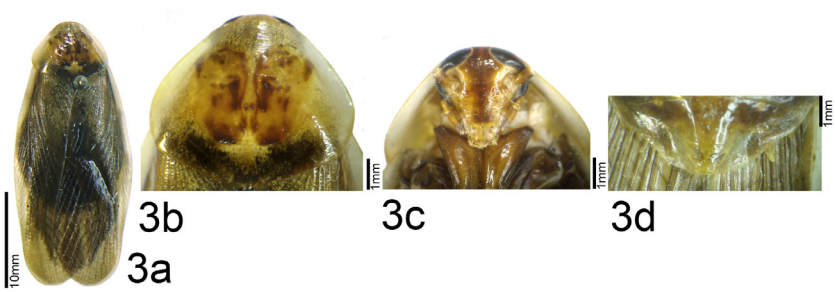


Figure 3. *Panchlora acolhua* Saussure & Zehntner. 3a. Habitus dorsal. 3b. Detail of pronotum. 3c. Detail of rostrum. 3d. Detail of subgenital plate. / 3. *Panchlora acolhua* Saussure y Zehntner. 3a. Hábito dorsal. 3b. Detalle del pronoto. 3c. Detalle del rostrum. 3d. Detalle de la lámina subgenital.

Table 1. List of cockroach species present in Morelos, Mexico. / 1. Lista de las especies de cucarachas presentes en Morelos, México.

Superfamily	Family	Subfamily	Genera	Species	Localities	References
Corydoidea	Corydiidae	Corydiinae	*Arenivaga*	*Arenivaga aquila*	Jiutepec, Barrio de las Piedras; Jojutla Jojutla; Yautepec de Zaragoza, 7.3 mi S de Yautepec de Zaragoza, 6.7 mi. S de Yautepec de Zaragoza, Cañada de Lobo; Xochitepec, Alpuvec.	Hebard 1917, 1920, 1921; Estrada-Álvarez 2013; Hopkins 2014
Blaberoidea	Blaberidae	Panchlorinae	*Panchlora*	*Panchlora nivea*	Tepalcingo, El Limón de Cuauchichinola (RBSH).	Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013. Reported in this contribution.
				Panchlora acolhua	Tepalcingo, El Limón de Cuauchichinola (RBSH).	Reported in this contribution.
		Pycnoscelinae	*Pycnoscelus*	*Pycnoscelus surinamensis*	Jojutla, Cueva del Ídolo; Jiutepec, Zn. Ind. CIVAC.	Hoffmann *et al*. 1986; Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013.
	Blattellidae		*Blattella*	*Blattella germanica*	*Jiutepec*, Zn. Ind. CIVAC	Estrada-Álvarez 2013
			Cahita	*Cahita gutierrezi* **sp. n.**	Cuernavaca, Cuernavaca.	Reported in this contribution.
			Calayotlus	*Calayotlus discicollis*	Tepalcingo, El Limón de Cuauchichinola (RBSH).	Estrada-Álvarez & Sormani 2018.
			Caloblatta	*Caloblatta* sp.	Tepalcingo, El Limón de Cuauchichinola (RBSH).	Reported in this contribution.

Table 1 (continuation). List of cockroach species present in Morelos, Mexico. / 1. Lista de las especies de cucarachas presentes en Morelos, México.

Superfamily	Family	Subfamily	Genera	Species	Localities	References
Blaberoidea	Blattellidae		*Pseudomops*	*Pseudomops interceptus*	Cuernavaca, Cuernavaca; Cuautla, La Heroica e Histórica Cuautla; Yautepec de Zaragoza, San Diego Atlihuayán; Jiutepec, Zn. Industrial CIVAC.	Rehn 1902, 1907; Hebard 1921, 1932; Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013. Reported in this contribution.
			Ischnoptera	*Ischnoptera rufa occidentalis*	Cuernavaca, Cuernavaca.	Reported in this contribution.
	Pseudophyllodromiidae		*Latiblattella*	*Latiblattella chichimeca*	Cuernavaca, Cuernavaca; Tepalcingo, El Limón de Cuauchichinola (RBSH).	Saussure & Zehntner 1893. Reported in this contribution.
Blattoidea	Blattidae	Blattinae	*Blatta*	*Blatta orientalis*	Emiliano Zapata, Cueva del Salitre.	Hoffmann *et al*. 1986; Estrada-Álvarez 2013.
			Neostylopyga	*Neostylopyga rhombifolia*	Jiutepec, Zn. Industrial CIVAC.	Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013.
			Periplaneta	*Periplaneta americana*	Cuernavaca, Cuernavaca; Jojutla, Cueva del Ídolo; Emiliano Zapata, Cueva del Salitre; Jiutepec, Zn. Ind. CIVAC.	Rehn 1900; Hebard 1917; Hoffmann *et al*. 1986; Estrada-Álvarez & Guadarrama 2013; Estrada-Álvarez 2013.
				Periplaneta australasiae	Jiutepec, Zn. Ind. CIVAC.	Estrada-Álvarez 2013.

Family Blattellidae Karny, 1908

Genus *Cahita* Hebard, 1922

Cahita Hebard, 1922: 167.
Mentioned in Hebard 1926: 185 [as *Galibia*]; Rehn 1937: 209 [key to males].
Type species. *Ischnoptera nahua* (Saussure, 1868) [*Cahita nahua*]; by monotype.

Taxonomic key to males of *Cahita* Hebard from Mexico

1a. Posterior border of subgenital plate emarginated (Fig. 4g); pseudo-reticulate pattern of veins in the tegminas (Fig. 4d) ..... *C. gutierrezi* **sp. n.**
1b. Posterior border of subgenital plate projected; tegminas venation non-reticulated 2
2a. Posterior border of subgenital plate slightly projected and convex (Fig. 4k) .... *C. yaqui* Rehn
2b. Posterior border of subgenital plate projected and truncate (Fig. 4i) .... *C. nahua* (Saussure)

Cahita nahua (Saussure, 1868)
(Figs. 4a, 4b, 4h, 4i)

Ischnoptera nahua Saussure, 1868: 356 [species description, both sex] [Mexico (TL)].
Mentioned in Saussure 1870: 57; Lam. II, Fig. 33 (male, female) [as *Ischnoptera nahua*] [reg. n. Mexique; les terres tempérées de la Cordillère orientale; Orizaba]; Walker 1870 [1871]: 31 [as *Ischnoptera nahua*]; Saussure & Zehntner 1893: 38 [as *Ischnoptera nahua*] [reg. n. Mexico, Eastern Cordillera, Orizaba; Guatemala, San Geronimo]; Finot 1897: 175 [as *Ischnoptera nahua*] [Paraguay?, Mexique, Guatemala]; Scudder 1901: 150 [as *Ischnoptera nahua*]; Kirby 1904: 84 [as *Ischnoptera nahua*]; Shelford 1908: 8 [as *Ischnoptera nahua*]; Hebard 1922 [1923]: 169; Lam. VI. Figs. 10-12 (male, female) [parte] [comb. n.] [reg. n. Motzorongo, Vera Cruz] [Cuernavaca, Morelos; Venvidio (sic) [Cuernavaca=*C. gutierrezi*] [=Venadillo=*C. Yaqui*]; Hebard 1932: 208 [reg. n. Tierra Colorado(sic), Guerrero, 2000 feet; Teapa, Tabasco; Honduras; Guatemala]; Rehn 1937: 212; Lam. XIV, Figs. 1-3 [State of Vera Cruz, Mexico; Vera Cruz] [reg. n. Hondura; Costa Rica]; Princis 1969: 751 [Mexiko; Guatemala; Honduras; Kostarika]; Maes 1992: 16; Estrada-Álvarez 2013: 275 [parte ex. Morelos]; Beccaloni 2014.

Distribution. Mexico, Guatemala, Honduras, Nicaragua and Costa Rica.

Distribución in Mexico. Guerrero, Mpty. Juan R. Escudero, Tierra Colorada. **Tabasco**, Teapa. **Veracruz**, Mpty. Orizaba, Orizaba; Mpty. Tezonapa, Motzorongo; Mpty. Veracruz, Veracruz.

Type material. *Ischnoptera nahua* Saussure, 1868. Lectotype female and paralectotype male from Orizaba, Mexique; Sumicraste col. (MHNG), revised (Figs. 4a, 4b).

Cahita yaqui Rehn, 1937
(Figs. 4e, 4j, 4k)

Cahita yaqui Rehn, 1937: 215 [species description, both sex] [part] [Venvidio (sic)[=Venadillo], State of Sinaloa, Mexico (TL).
Mentioned in Hebard 1922 [1923]: 169; Lam. VI, Figs. 10-12 (male) [as *Cahita nahua*] [part] [Venvidio (sic) [=Venadillo]; [Cuernavaca, Morelos=*C. gutierrezi*]; Princis 1969: 751; Estrada-Álvarez 2013: 275 [parte only Sinaloa]; Beccaloni 2014.

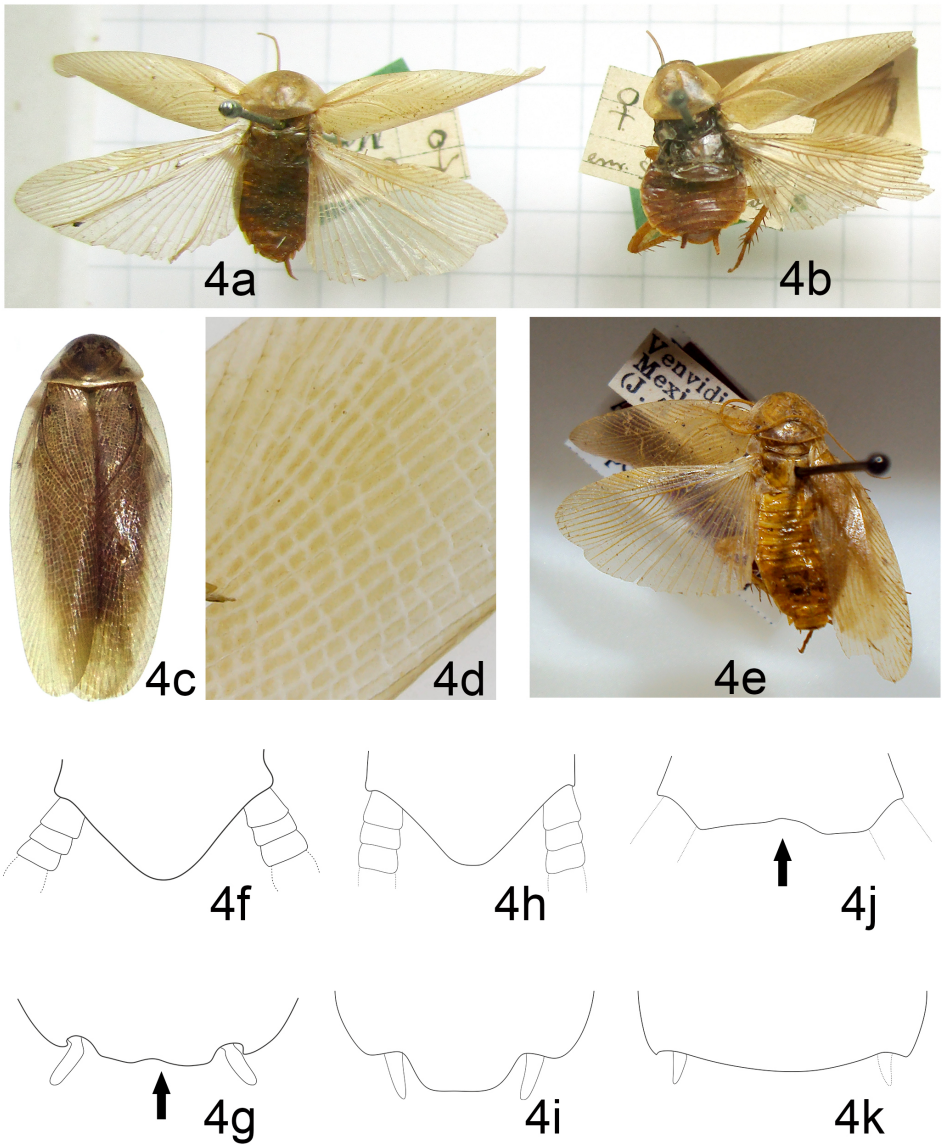


Figure 4. Comparison between three species of the genus *Cahita* Hebard present in Mexico. 4a, 4b, 4h, 4i. *Cahita nahua*. 4a, 4b. Types from MHNG in dorsal view. 4h. Posterior margin of the supra-anal plate in dorsal view. 4i. Posterior margin of the subgenital plate in dorsal view (reconstructed from Hebard 1922 and Rehn 1937). 4c, 4d, 4f, 4g. *Cahita gutierrezi* **sp. n.** 4c. Type in dorsal view. 4d. Detail of the pseudo-reticulate veins pattern in the tegminas. 4f. Posterior margin of the supra-anal plate in dorsal view. 4g. Posterior margin of the subgenital plate in dorsal view. 4e, 4j, 4k. *Cahita yaqui*. 4e. Dorsal view of type from ANSP (photograph courtesy of Esteban Gutiérrez). 4j. Posterior margin of the supra-anal plate in dorsal view. 4k. Posterior margin of the subgenital plate in dorsal view. / Comparación entre tres especies del género *Cahita* Hebard presentes en México. 4a, 4b, 4h, 4i. *Cahita nahua*. 4a, 4b. Vista dorsal de los tipos en MHNG. 4h. Margen posterior de la lámina supra-anal en vista dorsal. 4i. Margen posterior de la lámina subgenital en vista dorsal. 4c, 4d, 4f, 4g. *Cahita gutierrezi* **sp. n.** 4c. Tipo en vista dorsal. 4d. Detalle del patrón de venación pseudo-reticulado de las tegminas. 4f. Margen posterior de la lámina supra-anal en vista dorsal. 4g. Margen posterior de la lámina subgenital en vista dorsal. 4e, 4j, 4k. *Cahita yaqui*. 4e. Vista dorsal del tipo en ANSP (fotografía cortesía de Esteban Gutiérrez). 4j. Margen posterior de la lámina supra-anal en vista dorsal. 4k. Margen posterior de la lámina subgenital en vista dorsal.

Distribution. Mexico, endemic.

Distribución in Mexico: **Sinaloa**, Mpty. Mazatlán, El Venadillo.

Type material. *Cahita yaqui* Rehn, 1937. Holotype male from Venvidio (sic) [=Venadillo], State of Sinaloa, Mexico; September 2, 1918. J. A. Kusche coll. (ANSP-9377), photos of holotype male revised (ANSP).

Note. The supra-anal plate of the holotype is probably broken (Fig. 4j), changing its shape.

Cahita gutierrezi **sp. n.**
(Figs. 5, 6)

Type material. Holotype male from 2da Privada de los Pinos, Cuernavaca, Morelos; muerta en piso; 20/XI/2020; Reinier Núñez coll. (CER), at CNIN.

Diagnosis. This species can be easily separated from *C. nahua* and *C. yaqui* by the emargination of the posterior border of the subgenital plate and the reticulation of the tegminas.

Etymology. We dedicate this species in honor to Dr. Esteban Gutiérrez, great friend, colleague, professor, and researcher of the Museo Nacional de Historia Natural de La Habana, Cuba. For his contribution to the knowledge of the cockroaches of America.

Description. Holotype male: Total length 29 mm; body length 22 mm. **Color:** Usually amber, pronotum without distinguishable pattern; brown-orange abdomen with whitish posterior edges. **Head:** 2.5 mm long, 2.5 mm wide; interocular distance 1 mm; distance between eyespots 1.1 mm; distance between antennae 1.3 mm (Fig. 5d). **Pronotum:** subtriangular, rounded in the anterior margin and basal angles, posterior margin slightly projected. **Wings:** tegmen macropterous, 16 mm long, 7 mm wide, presence of a pseudo-reticulate veins pattern (Figs. 4d, 5a, 5b); hind wings of 15 mm long, anal area folded into a fan shape. **Legs** (Fig. 5e): femur I with spination type B2 (*sensu* Roth 2003) in the antero-ventral margin, four subequal basal spines, 11 middle spinules and two apical spines; femur II and III with one appendicular spine; tarsomeres I-IV of the three legs with numerous spinules on the prolateral margin, pulvillus of about the size of the internal length in each tarsomere I-IV; tarsal claws simple and asymmetric; aureolum between the nails, of about 80% of the length of the tarsal claws. **Abdomen:** With brush type tergal glands in tergite I (Figs. 5g, 5h); supra-anal plate triangular, projected posteriorly, asymmetric paraproctus; pincer-shaped (Fig. 5i); subgenital plate (*hypandrium*) slightly asymmetric, with similar and finger-like styles (Figs. 5j, 5k). **Male genitalia** (Figs. 5k, 56): L1 wide type with an inflection point (Fig. 6a); L2vm simple stick shape, L2d sickle shape (6b); L3 (genital hook) short and sclerosed (6c); R1 tapered (Fig. 6d); R2 curved (Fig. 6e); R3 laminate with multiple folds (6f).

Distribution. Known only to the type locality, colony Loma Bonita, Cuernavaca, Morelos, Mexico.

Note. Male holotype presents a teratology in the last basal spine, which makes the apex to have a bifid shape (Fig. 5f).

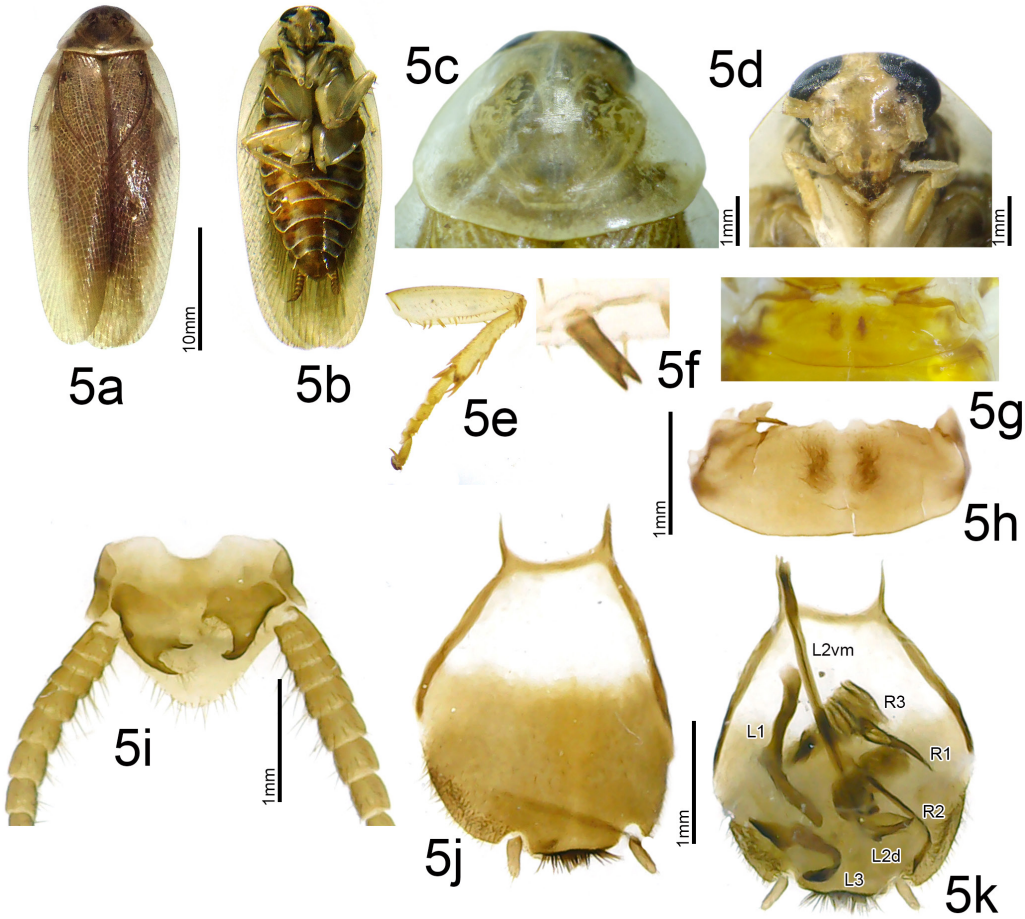


Figure 5. *Cahita gutierrezi* **sp. n.** 5a-5b. Dorsal and ventral habitus of the type. 5c. Detail of pronotum. 5d. Detail of rostrum. 5e, 5f. Leg I. 5f. Detail of spine showing a teratology. 5g, 5h. Detail of tergal gland in T-1. 5g. Before digestion. 5h. After digestion. 5i. Supra-anal plate in ventral view showing paraproctus. 5j-5k. Subgenital plate. 5j. Ventral view. 5k. Dorsal view, showing the sclerites in orthodox positions. / *Cahita gutierrezi* **sp. n.** 5a-5b. Hábito dorsal y ventral del tipo. 5c. Detalle del pronoto. 5d. Detalle del rostro. 5e, 5f. Pata I. 5f. Detalle de la espina con teratología. 5g, 5h. Detalle de glándula tergal en T-1. 5g. Antes de la digestión. 5h. Después de la digestión. 5i. Lámina supra-anal en vista ventral mostrando los paraproctos. 5j-5k. Lámina subgenital. 5j. Vista ventral. 5k. Vista dorsal, mostrando los escleritos en posición ortodoxa.

Genus *Caloblatta* Saussure, 1893

Caloblatta Saussure, 1893: 57.
Type species. *Caloblatta bicolor* Saussure, 1893; by designation Hebard 1923: 178.

Caloblatta sp. near *C. lampra* Hebard, 1922
(Fig. 7)

Material examined. 10 specimens from: México: Morelos, 2.5 Km. N, 4 Km O Huautla Estación CEAMISH, 940 msnm. T. L.; 30-07-1996; S. Zaragoza coll. (6 CNIN). México: Morelos, Huautla Estación; 8-VI-1996; coll. Anonymous (1 CNIN). MÉXICO: Michoacán,

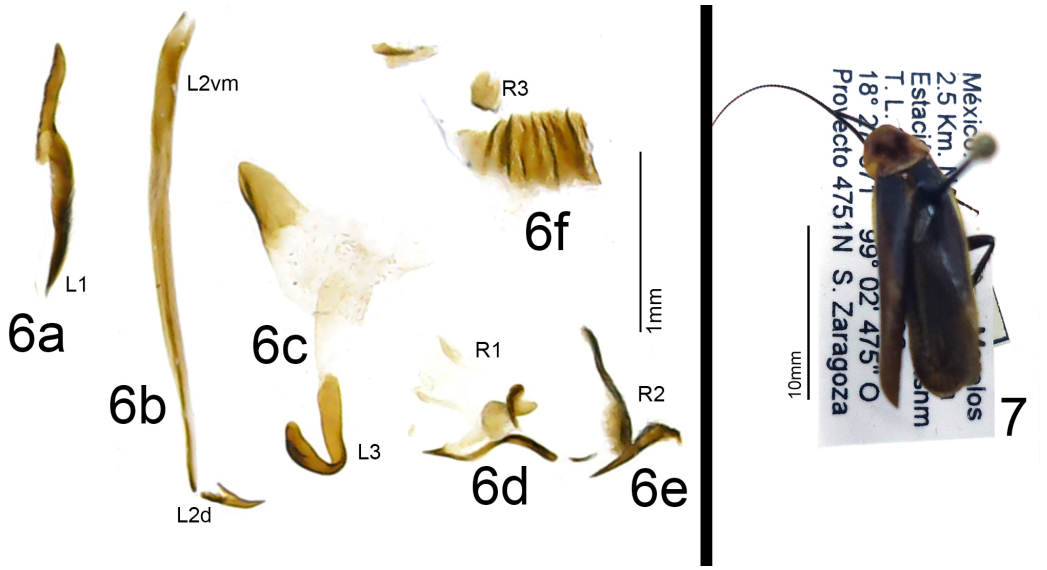
14 Km al Sur de Uruapan; 20 VII-1988; M. Cartle coll. (1 CNIN). México, Michoacán, Caleta de Campos, Manzanillo; 28-VI; R. Barba coll. (1 CNIN).

Caloblatta tricolor Saussure, 1893. 2 males syntypes from: Senahu, Vera Paz; Champion col. (MHNG), revised. *Caloblatta lampra* Hebard, 1922, male holotype from: Venvidio (sic) [=El Venadillo], Sinaloa, Mexico; VII 6-12 1918; J. A. Kusche coll. (ANSP), photos by Dr. Hopkins revised.

Note. These specimens conspicuously belong to the genus *Caloblatta*, quite possibly a new species; unfortunately, we are unable to review more material due to restrictions of the current pandemic of Covid-19.

Distribution. Mexico, northern in the state of Sinaloa, Mpty. Mazatlán, El Venadillo.

New genus records. Mexico: **Morelos**, Mpty. Tepalcingo, El Limón de Cuauchichinola (REBIOSH). **Michoacán,** Mpty. Lázaro Cárdenas, Bahía Bufadero (Caleta de Campos).



Figures 6-7. 6. Male genitalia sclerites of *Cahita nahua* (Saussure) from Cuernavaca, Morelos. 6a. L1. 6b. L2d and L2vm. 6c. L3. 6d. R1. 6e. R2. 6f. R3. 7. *Caloblatta* sp. near *C. lampra* Hebard from Huautla Estación CEAMISH. / 6. Escleritos genitales del macho de *Cahita nahua* (Saussure) de Cuernavaca, Morelos. 6a. L1. 6b. L2d y L2vm. 6c. L3. 6d. R1, 6e. R2. 6f. R3. 7. *Caloblatta* sp. cercana a *C. lampra* Hebard de Huautla Estación CEAMISH.

Genus *Pseudomops* Serville, 1831

Pseudomops Serville, 1831: 41.
Mentioned in Saussure 1864: 119 [as *Thyrsocera*] [nom. preoc. *Thyrsocera* Burmeister, 1838]; Shelford 1906: 263 [as *Pseudomops*] [sin. n. *Thyrsocera* Saussure, 1864].
Type species. *Blatta oblongata* Linnaeus, 1758; by monotype.

Pseudomops interceptus (Burmeister, 1838)
(Fig. 8)

Blatta intercepta Burmeister, 1838: 497 [species description?] [Mexiko (TL)].

Mentioned in Saussure 1862: 168 (description of both sex) [as *Thyrsocera tolteca*] [sp. n.] [Mexico calida (TL)] [sin. jun. de *P. oblongata sensu* Brunner von Wattenwyl 1865: 123]; Brunner von Wattenwyl 1865: 412 [as *Thyrsocera oblongata*] [sin. n. *Blatta intercepta* and *Thyrsocera tolteca*]; Shelford 1908: 4 [as *Pseudomops intercepta*] [Central America, Honduras].

Type material. Holotype *Blatta intercepta* Burmeister, 1838 (ESIZH? or lost); male lectotype, 4 males and 1 female paralectotypes of *Thyrsocera tolteca* Saussure, 1862; H de Saussure col. (MHNG), revised (Figs. 6a, 6b).

Material examined. 1 female from: Mexico, Morelos, Cuernavaca, 2da Privada de los Pinos, Cuernavaca, Morelos; VI/2020; Reinier Núñez coll. (CER). 1 female from: Mexico, Malinalco, El Platanar, entre flores; 25/VII/2005; Lidia Ordoñez coll. (CER). 1 male from: Morelos, Jiutepec, Zn. Industrial CIVAC; 27/VIII/2012; Mauricio coll. (CER).
Note. This species exhibit great chromatic variability, for a correct identification it is necessary to review the tergal glands (Figs. 8a, 8b), styles (Fig. 8c), paraproctus (Fig. 8d) and sclerites of genitalia in male (Figs. 8e-8g), for females it is necessary to review the valve complex (Fig. 8i). The female from Cuernavaca has a chocolate-colored face and an orange front, which is the darkest melanic form (Fig. 8h). Generally, the face of *P. interceptus* representatives have a red or orange face.

Distribution. Mexico, Guatemala, Honduras.

Distribution in Mexico. Chiapas, Mexico City, Guerrero, Estado de México, Oaxaca, Tabasco, Veracruz, Morelos: Mpty. Cuernavaca, Cuernavaca; Mpty. Cuautla, La Heroica e Histórica Cuautla; Mpty. Yautepec de Zaragoza, San Diego Atlihuayán; Mpty. Jiutepec, Zn. Industrial CIVAC.

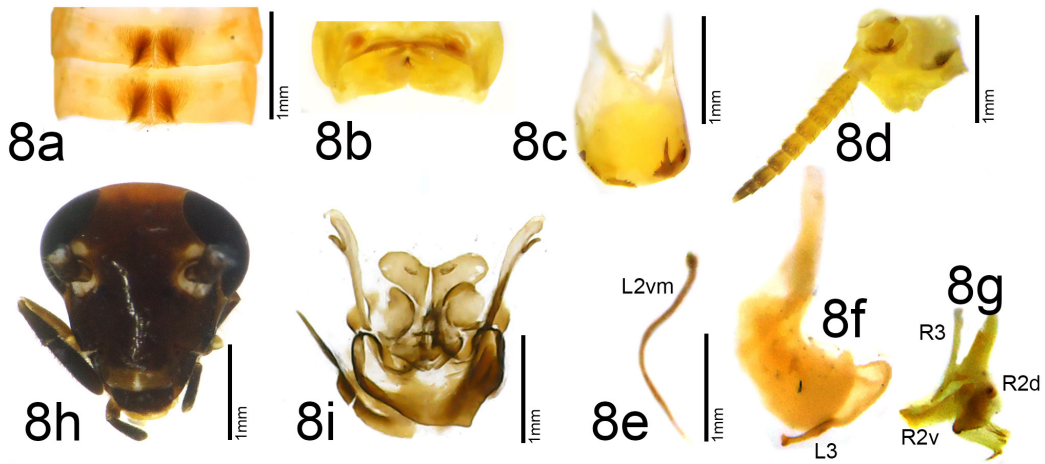


Figure 8. *Pseudomops interceptus* (Burmeister). 8a-8g. Male from Morelos: Jiutepec, Zn. Industrial CIVAC. 8a. Detail of T-3, T-4. 8b. Detail of T-8, T-9. 8c. Subgenital plate in dorsal view, see the modifications of styles. 8d. Supra-anal plate and cercus, see the paraproctus and apex of Ls-a. 8e-8g. Sclerites of male genitalia. 8e. L2vm, see the absence of L2d. 8f. L3. 6g. R2+3. 8h-8i. Female of Morelos, Cuernavaca, Sta. María Ahuac. 8h. Detail of rostrum, see the melanic form. 8i. Valvar complex. / 8a-8g. Macho de Morelos: Jiutepec, Zn. Industrial CIVAC. 8a. Detalle de T-3, T-4. 8b. Detalle de T-8, T-9. 8c. Lámina subgenital en vista dorsal, ver las modificaciones en los estilos. 8d. Lámina supra-anal y cerco, ver los paraproctos y el ápice de Ls-a. 8e-8g. Escleritos de los genitales del macho. 8e. L2vm, ver la ausencia de L2d. 8f. L3. 6g. R2+3. 8h-8i. Hembra de Morelos, Cuernavaca, Sta. María Ahuac. 8h. Detalle del rostrum, ver la forma melánica. 8i. Complejo valvar.

Tribe Ischnopterini Estrada-Álvarez, Sormani & Cano, 2020

Ischnopterini Estrada-Álvarez, Sormani & Cano, 2020: 131 [tribu nova].
Type genus. *Ischnoptera* Burmeister, 1838.

Genus *Ischnoptera* Burmeister, 1838

Ischnoptera Burmeister, 1838: 500.
Mentioned in Hebard 1917: 62; Roth 2001: 520.
Type species. *Ischnoptera morio* Burmeister, 1838.

Ischnoptera rufa occidentalis Saussure, 1862
(Fig. 9)

Ischnoptera occidentalis Saussure, 1862: 170 [species description?] [Nova (TL)= Nova Orleans].
Mentioned in Saussure 1862: 170 (description?) [as *Ischnoptera consobrina*] [sp. n.] [TL?] [=Cordova Saussure 1864: 88] [sin. jun. *sensu* Hebard 1916: 352]; Saussure 1870: 59; Lam. II; Fig. 34 (male, female) [*Ischnoptera consobrina*] [Mexique et le sud des Etats-Unis] [sin. n. *Ischnoptera occidentalis*, sin. desestimada]; Saussure & Zehntner 1893: 37; Lam. III; Fig. 24 (female) [as *Ischnoptera consobrina*] [reg. n.] [North America, Texas; Mexico, Guerrero, Jalisco and Vera Cruz, Orizaba, Cordova; Guatemala; Nicaeagua, Chontales]; Hebard 1916: 352; Lam. XVI, Fig. 7 (male) [sin. n. *Ischnoptera consobrina*] [status. n.] [reg. n. Atoyac, Fortin, Orizaba, Motzorongo, Vera Cruz, Mexico]; Hebard 1932: 207 [reg, n. Tampico, Tamaulipas]; Estrada-Álvarez 2013: 276 [as *Ischnoptera rufa*]; Beccaloni 2014 [as *Ischnoptera rufa*]; Domínguez 2017: 30, 64, 65 [Reserva de la Biosfera Selva el Ocote (REBISO), Chiapas]; Gómez *et al*. 2017: 252 [n. reg. Reserva de la Biosfera Selva el Ocote (REBISO), Chiapas].

Type material. Holotype female *Ischnoptera occidentalis* Saussure, 1862 (MHNG), revised; lectotype female *Ischnoptera consobrina* Saussure, 1862 (MHNG), revised; lectotype female *Ischnoptera conformis* Saussure & Zehntner, 1893 (BMNH), not revised.

Material examined. 1 Male and 1 female from 2da Privada de Pinos, Loma Bonita colony, Cuernavaca, Morelos; V/2020; Reinier Nuñez coll. (CER). Male from 3ra Privada de Reyes, Tetela del Monte colony, Cuernavaca, Morelos. Male from Cueva Pericos. selva mediana subcaducifolia. trampa de cebo, plátano fermentado; 17 octubre 2006; Soto, A.F. et al. colls. (IEXA). Female, ooteca and 2 juvs. from Xalapa Enríquez, Los Lagos. zona urbana. Manual; 23 julio 2003(14:30 hrs); Sormani, H.C.G. coll. (IEXA). 2 males, 2 females from Xalapa Enríquez y Coatepec. zona urbana. manual; septiembre-enero different years; Sormani, H.C.G. & Rojas, F.P. colls. (IEXA). Male from Estación Biológica UNAM, Chajúl, Montes Azules. manual; julio-octubre 2006; Sormani, H.C.G. col. (IEXA). 5 males, 1 female from Xalapa Enríquez, Santuario del Bosque de Niebla, Reserva Estatal-INECOL. bosque mesófilo de montaña. bajo la hojarasca. manual; mayo 2004; Sormani, H.C.G. & Ángeles, V.J.A. colls. (IEXA). *Ischnoptera consobrina* Var. b. male (MHNG).

Distribution. United States, Mexico, Guatemala, Nicaragua, Costa Rica, Panama.

Distribution in Mexico. Chiapas, Mpty. Ocozocoautla de Espinosa, Cintalapa de Figueroa, Tecpatán de Mezcalapa and Jiquipilas (Reserva de la Biosfera Selva El Ocote (REBISO). **Guerrero, Jalisco, Puebla, Tamaulipas**, Mpty. Tampico, Tampico. **Veracruz,** Mpty. Atoyac,

Atoyac; Mpty. Córdoba, Córdoba; Mpty. Fortín, Fortín de las Flores; Mpty. Orizaba, Orizaba; Mpty. Tezonapa, Motzorongo; Mpty. Veracruz, Veracruz. **New records. Morelos**, Mpty. Cueravaca, Loma Bonita colony, Tetela del Monte colony. **Veracruz**, Mpty. Xalapa Enriquez, Xalapa city, Santuario del Bosque de Niebla, Reserva Estatal-INECOL; Mpty. Coatepec, Coatepec; Mpty. Uxpanapa, Cueva Pericos.

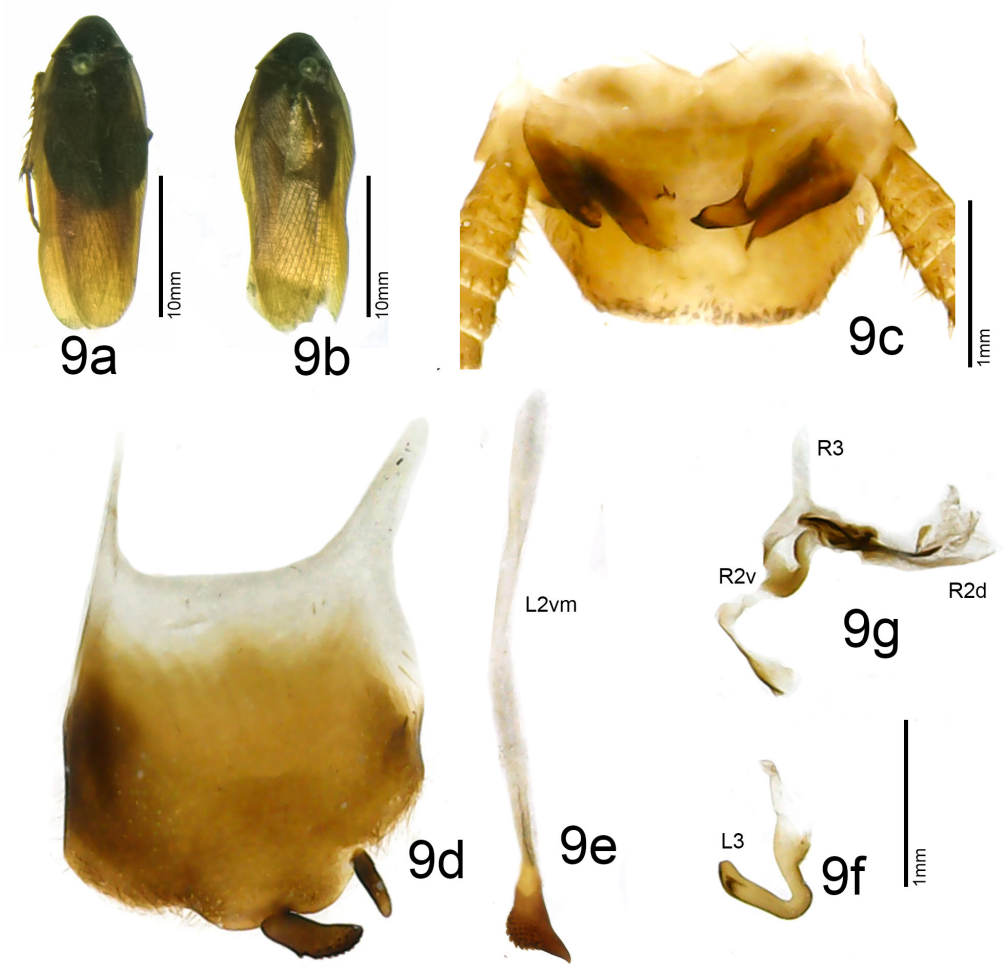


Figure 9. *Ischnoptera rufa occidentalis* Saussure from Morelos, Cuernavaca, Colony Loma Bonita. 9a. Female dorsal habitus. 9b-9g. Male. 9b. Dorsal habitus. 9c. Supra-anal plate in ventral view. 9d. Sub-genital plate in ventral view. 9e-9g. Sclerites of male genitalia. 9e. L2. 9f. L3. 9g. R2+3. / 9a. Hábito dorsal de la hembra. 9b-9g. Macho. 9b. Hábito dorsal. 9c. Lámina supra-anal en vista ventral. 9d. Lámina sub-genital en vista ventral. 9e-9g. Escleritos genitales del macho. 9e. L2. 9f. L3. 9g. R2+3.

Family Pseudophyllodromiidae Hebard, 1929

Genus *Latiblattella* Hebard, 1917

Latiblattella Hebard, 1917: 36.
Type species. *Latiblattella rehni* Hebard, 1917; by original designation.

Latiblattella chichimeca (Saussure & Zehntner, 1893)
(Fig. 10)

Blatta chichimeca Saussure & Zehntner, 1893: 46; Lam. IV. Fig. 22 [species description, only male] [Mexico (TL); Mexico City; Cuernavaca in Morelos].
Mentioned in Shelford 1908: 15 [as *Phyllodromia chichimeca*]; Hebard 1932: 206 [as *Blatta chichimeca*] [comb. n.] [pos. sin. *Latiblattella dilatata*] [Cuernavaca, Morelos and Mexico City]; Estrada-Álvarez 2013: 279; Beccaloni 2014.

Type material. 2 males syntype *Blatta chichimeca* Saussure & Zehntner, 1893 (MHNG), revised. 2 males syntype (BMNH), not revised.

Material examined. Female at RBSH from El Limón, trampa caída; /X/2020; Reinier Nuñez col. (CER).

Distribution. Mexico.

Distribution in Mexico. Ciudad de México. Morelos, Mpty. Cuernavaca, Cuernavaca. **New record. Morelos**, Mpty. Tepalcingo, El Limón de Cuauchichinola (REBIOSH).

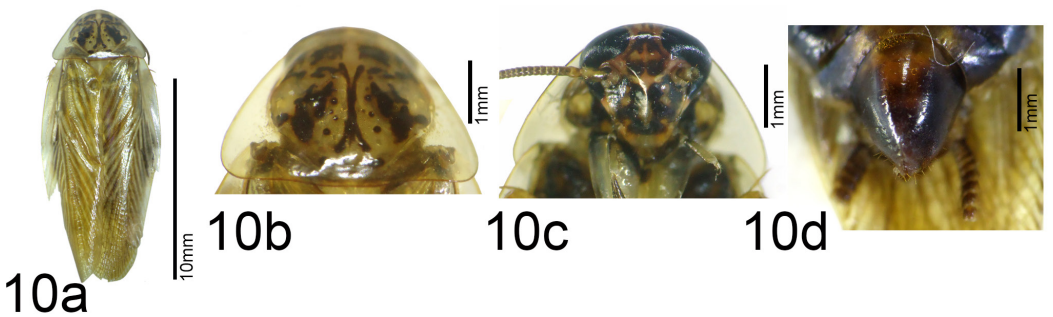


Figure 10. *Latiblattella chichimeca* (Saussure & Zehntner) female from REBIOSH. 10a. Dorsal habitus. 10b. Detail of pronotum. 10c. Detail of rostrum. 10d. Detail of subgenital plate in ventral view / 10a. Hábito dorsal. 10b. Detalle del pronoto. 10c. Detalle del rostrum. 10d. Detalle de la lámina subgenital en vista ventral.

Conclusions

Morelos cockroaches are poorly studied, nerveless, it shows an interesting potential richness according to the state area. In this work, with only a few samples from two localities, important information has been generated. With more studies and efforts, the number of species should increase, including new species.

Acknowledgments

To Dr. Alejandro Zaldívar R., MSc. Ma. Cristina Mayorga M. and MSc. Enrique Mariño P. (CNIN Instituto de Biología, UNAM (IBUNAM), CDMX, México); Dr. Patricia Rojas, Biol. Antonio Ángeles and Delfino Hernández (Instituto de Ecología (INECOL), Veracruz, México); Dr. José G. Palacios Vargas and Dr. Blanca E. Mejía Recamier (LESM, UNAM); Dr. Peter Schwendinger and Dr. John Hollier (MHNG, Genève, Suisse), for the kindness when reviewing the collection specimens, for this and other projects. To El Limón de Cuauchichinola station staff for they support and kindness during the collection of samples.

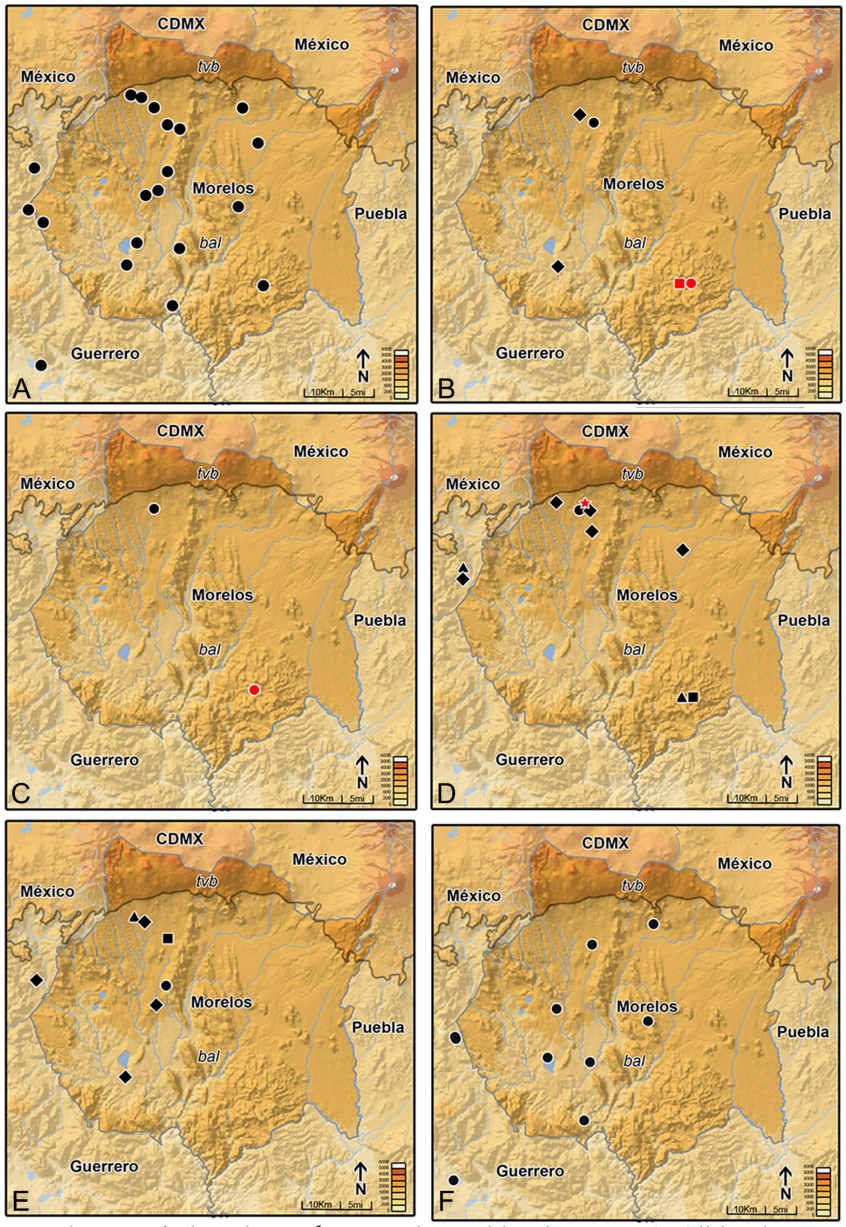


Figure 11. Distribution of Blattodea within Morelos and border areas. A. All localities with records of Blattodea. B. Family Blaberidae: *P. nivea* (circle), *P. colhua* (square), *P. surinamensis* (diamond). C. Family Pseudophyllodromiidae: *Latiblattella chichimeca* (circle). D. Family Blattellidae: *C. gutierrezi* **sp. n.** (circle), *Caloblatta* sp. (square), *C. discicollis* (triangle), *P. cinctus* (diamond), *I. rufa occidentalis* (star). E. Family Blattidae: *B. orientalis* (circle), *N. rhombifolia* (square), *P. americana* (diamond). F. Family Corydiidae: *A. aquila* (circle). Figures in black represent known records, in red new records. Grey line= State limits. Black line= limits to Biogeographic provinces. tvb= Transmexican Volcanic Belt; bal= Balsas River Basin. / A. Todas las localidades con registros de Blattodea. B. Familia Blaberidae: *P. nivea* (circulo), *P. acolhua* (cuadrado), *P. surinamensis* (rombo). C. Familia Pseudophyllodremidae: *Latiblattella chichimeca* (círculo). D. Familia Blattellidae: *C. nahua* (círculo), *Caloblatta* sp. (cuadrado), *C. discicollis* (triángulo), *P. cinctus* (rombo), *I. rufa occidentalis* (estrella). E. Familia Blattidae: *B. orientalis* (círculo), *N. rhombifolia* (cuadrado), *P. americana* (rombo). F. Familia Corydiidae: *A. aquila* (círculo). Figuras en negro registros conocidos, en rojo nuevos registros. Líneas grises= Límites estatales. Líneas negras= Límites de las provincias biogeográficas. tvb= Eje volcánico transversal; bal= Depresión del río Balsas.

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