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New species of *Lachesilla* (Psocodea: Psocomorpha: Lachesillidae), in species group *Corona*, from Guerrero and Chiapas, Mexico

Nuevas especies de *Lachesilla* (Psocodea: Psocomorpha: Lachesillidae), en el grupo de especies *Corona*, de Guerrero y Chiapas, México

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ABSTRACT

Three species of *Lachesilla*, in species group *Corona*, one from Guerrero and two from Chiapas, México, are here described and illustrated; their affinities are indicated, and a general account of species group *Corona* is presented.
Key words: Taxonomy, neotropics, 'Psocoptera', Southeastern Mexico.

RESUMEN

Son descritas e ilustradas tres especies de *Lachesilla* en el grupo de especies *Corona*, una del estado de Guerrero y dos del estado de Chiapas, México. Se indican sus afinidades, y se presenta un panorama general del grupo de especies *Corona*.
Palabras clave: Taxonomía, neotrópico, 'Psocoptera', Sureste de México.

This paper is part of an ongoing project on the taxonomy of the species of *Lachesilla* in species group *Corona* (for diagnoses of the group see García Aldrete, 1974 a, and Mockford, 1993). The group is morphologically distinct, with a close affinity with the *Rufa* species group (See García Aldrete, 1974 a, and García Aldrete, 1990), with which it shares the following characters: 1) a mesal flap on the subgenital plate, 2) four mesal macrosetae on the subgenital plate, 3) distal ends of the gonapophyses conical in most species, 4) posterior margin of the hypandrium concave and edged in a sclerotized rim in most species, 5) two mesal macrosetae near the posterior margin of the hypandrium, and 6) male paraprocts each with a mesal prong.

Separation of the two groups is based on the following characters: 1) flap of the female subgenital plate rounded apically in the *Corona* group and obtusely concave in the *Rufa* group, 2) male epiproct distally bilobed, often with sclerotized processes in the *Corona* group and bell-shaped, without sclerotized processes in the *Rufa* group, and 3) posterior margin of the hypandrium concave, with distinct, variously shaped lateral processes in the *Corona* group, and less concave, with the "processes" developed as distinct, lateral claspers. The affinities of these groups was recently confirmed in a cladistic analysis of the species groups of *Lachesilla*, in which the monophily of the pair of groups was demonstrated (Saenz Manchola, 2016).

The group presently includes 30 described species (Table 1), distributed as follows: Canada (2 species), Brazil (1 species), Ecuador (2 species), Costa Rica (1 species), Mexico (24 species), and USA (1 species). Sixty one species, already available in the National Insect Collection (Instituto de Biología, UNAM), remain to be described; these species are distributed as follows: Colombia (4 species), Costa Rica (1 species), Guatemala (8 species), Mexico (51 species), and Panama (1 species).

The species richness of Mexico is striking, since, despite the intense collecting conducted recently in Brazil and Colombia, the number of species in these countries is insignificant, as compared to the number of species in Mexico.

The purpose of this paper is to describe three species in group *Corona*, from the Mexican states of Chiapas and Guerrero. The species were chosen at random, from the array of undescribed species, except the first one since this paper is part of a volume that honors the distinguished hemipterist Harry Brailovsky Alperowitz.

MATERIAL AND METHODS

Four specimens were studied, they were dissected in 80% ethanol, and their parts (head, right wings, right legs, and genitalia), were mounted on slides in Canada balsam, following standard procedures. The parts on the slides were measured with a filar micrometer; abbreviations of measurements are as follows: FW, HW: lengths of right fore- and hind- wings, F, T, t1, t2: lenghts of femur, tibia and tarsomeres 1 and 2 of right hind leg, ctt1: number of ctenidobothria on t1, Mx4: length of fourth segment of right maxillary palpus, f1…fn: lengths of flagellomeres 1…n of right antenna, IO, D, d: minimum distance between compound eyes, antero-posterior and transverse diameter of right compound eye, respectively, in front view of head, PO: d/D.

The types are deposited in the National Insect Collection (CNIN), Instituto de Biología, UNAM, Mexico City.

RESULTS

Family Lachesillidae

Lachesilla brailovskyana n. sp. Male

(Figs 1-3)

http://zoobank.org/1AA2FFDD-1E9C-4A7B-B6C2-C0771C32E624

Diagnosis. Posterior processes of hypandrium of two parts: outer one bilobed, with outer lobe smaller; inner part constituted by a curved, posteriorly directed process arising from the inner lobe. Phallosome apodemes Y-shaped anteriorly, each arm distally dilated, curved and acuminate.

Description. Color (in 80% ethanol). Body chestnut brown, maxillary palps, legs and antennae pale brown. Compound eyes black, ocelli hyaline, with ochre centripetal crescents. Wings hyaline, with a light orange hue. Abdomen whitish, with pale brown, transverse subcuticular bands on pleura and tergites.

Morphology. Compound eyes well below the level of the vertex. Forewing pterostigma long, wider distally; Rs-M fused for a short distance; R2+3 and R4+5 slightly longer than Rs, areola postica wide, broadly rounded apically (Fig. 1). Hypandrium wide, posteriorly concave between the posterior processes, with a field of setae on each side. Posterior processes of the hypandrium consisting of an outer, bilobed area, concave in the middle, bearing a mesal group of three setae, and a long, posteriorly directed, acuminate projection, arising from the inner border of the bilobed area (Fig. 2). Phallosome apodemes Y-shaped anteriorly, with arms slender, distal halves proximally wide, narrowing distally, curved outwards and acuminate (Fig. 2). Paraprocts (Fig. 3), clearly joined to clunium, inner border, partially enclosing the sensory fields, forming a strongly sclerotized band; sensory fields with 12-13 trichobothria on basal rosettes; distal half of paraprocts with a medium sized, aquiline prong. Epiproct (Fig. 3), wide, anteriorly concave, bilobed distally, with a field of setae on each lobe.

Measurements (in μm). FW: 2427, HW: 1800, F: 496, T: 854, t1: 249, t2: 100, ctt1: 16, Mx4: 48, f1: 263, f2: 212, f3: 170, f4: 141, IO: 337, D: 181, d: 66, IO/d: 5.1, PO: 0.36.

Specimen studied. Holotype male. MEXICO. Guerrero. Tlapa, Km 29, Rd. Tlapa-Marquelia, 17º23'47"N: 98º35'22"W, 1700 m., 22.IV.2006. H. Brailovsky.

Etymology. This species is dedicated to its collector, in recognition of his important and vast work on the systematics of the Hemiptera in general, and of the Coreidae in particular.

Remarks. This species differs from the other species in the group in the structure of the hypandrium and of the phallosome. It is the only species with the inner borders of the hypandrium processes projected posteriorly to form an elongate, acuminate extension.

Lachesilla buenoi n. sp.

(Figs 4-10)

http://zoobank.org/C3794DCB-67F4-4D8C-AFBA-CA0CCA7A2587

Diagnosis. Male macropterous, female micropterous, neotenic. Hypandrium concave posteriorly in the middle, between the posterior processes, these wide based, each with a distal conic, short projection, and a mesal conic projection on the inner border. Phallosome apodemes V-shaped anteriorly, each arm long, slender, dilated distally, posterior border straight, finelly denticulate. Female subgenital plate wide, setose, with pigmented area anteriorly concave in the middle; flap wide, short, broadly trapeziform.

Description. Male. Color (in 80% ethanol). Body dark reddish brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. Antennae and legs slightly less pigmented. Maxillary palps dark brown. Abdomen whitish, with ochre, transverse subcuticular bands on pleura and terguites, not seen ventrally. Wings hyaline, with a light orange hue.

Morphology. Macropterous. Compound eyes well below the level of the vertex. Forewing pterostigma long, wider posteriorly. Rs-M diverging from a point. Areola postica wide, apically rounded (Fig. 4). Hypandrium (Fig. 6). Phallosome apodemes with distal third of each arm dilated, posterior border with a distinctly larger denticle close to the inner corner (Fig. 6). Paraprocts (Fig. 5), sensory fields with 9-10 trichobothria on basal rosettes, and one marginal trichobothrium, on outer border of the field, without basal rosette. Epiproct (Fig. 5) wide, slightly concave anteriorly, bilobed posteriorly, bearing a setal field on each lobe, other setae as illustrated.

Measurements (in μm). FW: 2070, HW: 1582, F: 493, T: 735, t1: 199, t2: 73, Mx4: 85, f1: 213, f2: 166, f3: 137, f4: 111, IO: 336, D: 159, d: 98, IO/d: 3.4, PO: 0.61.

Female. Color (in 80% ethanol). Same as in the male.

Morphology. Brachypterous. Forewinglet (Fig. 7), without traces of venation. Subgenital plate (Fig. 8). Gonapophyses directed mesally, sides parallel, blunt ended, ninth sternum almost circular, spermapore located posteriorly, a pigmented broad band anteriorly (Fig. 9). Paraprocts elliptic, with a macrosetae and a bifid cone mesally on inner border, sensory fields with four trichobothria on basal rosettes and a marginal trichobothrium without basal rosette. Epiproct wide, straight anteriorly and rounded posteriorly (Fig. 10).

Measurements (in μm). FW: 305 F: 392, T: 573, t1: 160, t2: 63, ctt1: 8, Mx4: 83, f1: 150, f2: 129, f3: 111, f4: 82, IO: 351, D: 140, d: 91, IO/d: 3.8, PO: 0.65.

Specimens studied. Holotype male. MEXICO. Chiapas. 14 km NW Comitán, 16º16'53"N: 92º10'20"W, 1800m., 23.VII.1978, beating vegetation. J. Bueno. 1 paratype female. Same data as the holotype.

Etymology. This species is dedicated to its collector, Dr. Joaquín Bueno Soria, formerly at the Instituto de Biología, UNAM, presently retired, in recognition of his work on the taxonomy of Mexican Trichoptera.

Remarks. The association of the macropterous male with the brachypterous female of this species is based on the following: both specimens were found in the same locality, in the same date and on the same biotope; in both specimens the ground color is similar, and the compound eyes are well below the level of the vertex. In *L. contrerasi* García Aldrete, the male is macropterous and the female is brachypterous; in both species the female forewinglet has no trace of venation, the gonapophyses are similar and the ninth sternum is anteriorly more pigmented. In the two species the males have a pointed apophysis posteriorly, on the inner margin of each hypandrial process. The two species differ in male and female genitalia, besides, the forewing of the male *L. contrerasi* has the veins Rs-M

joined by a crossvein, whereas in *L. buenoi* the forewing Rs-M are fused for a short distance.

Lachesilla cercade n. sp. Female
(Figs 11-14)
http://zoobank.org/251C15F8-8CF6-4610-97E0-91F6FB54FB8D

Diagnosis. Flap of the subgenital plate about as long as its width in the middle, concave posteriorly, with antero-lateral corners extended outwards. Gonapophyses short, stout, distally broad, slightly concave. Ninth sternum with anterior half pigmented, and a posterior pigmented arch enclosing the spermapore.

Description. Color (in 80% ethanol). Body dark reddish brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. Antennae and legs brown. Maxillary palps dark brown. Abdomen whitish, with ochre subcuticular bands on pleura and tergites. Wings hyaline, with light orange hue, veins pale brown.

Morphology. As in diagnosis, plus the following: Compound eyes well below the level of the concave vertex. Forewing pterostigma long, wider distally; Rs-M diverging from a point, R2+3 shorter than Rs; R4+5 about as long as Rs; pterostigma wide, low, apically rounded (Fig. 11). Hindwings missing. Subgenital plate (Fig. 12), broadly trapeziform, pigmented area anteriorly concave in the middle. Ninth sternum and gonapophyses (Fig. 14). Paraprocts (Fig. 13) semi-circular, with a long seta near each sensory field, other setae as illustrated, sensory fields with 10 trichobothria on basal rosettes. Epiproct trapeziform (Fig. 13), with a setal field on each postero-lateral corner, other setae as illustrated.

Measurements (in μm). FW: 1890, F: 365, T: 691, t1: 155, t2: 78, ctt1: 14, Mx4: 99, f1: 189, f2: 156, f3: 132, f4: 103, IO: 325, D: 148, d: 92, IO/d: 3.53, PO: 0.62.

Specimen studied. Holotype female. MEXICO. Chiapas. Km. 15, rd. Buenos Aires-Siltepec, 15º28'29"N: 92º18'26"W, 2500 m., 8.VII.1988. L. Cervantes & A.

Table 1. Described species of *Lachesilla* in species group *Corona*, sexes known of each, and distribution

Species	Sexes known	Distribution
L. albertina García Aldrete, 1992	Female	Canada
L. breviforceps García Aldrete, 1974b	Male	Brazil
L. chamula García Aldrete, 1982	Male	Mexico
L. contrerasi García Aldrete, 2015a	Both	Mexico
L. corona Chapman, 1930	Both	Canada, USA
L. curviforceps García Aldrete, 1974c	Both	Mexico
L. dispariforceps Mockford, 1986	Male	Male
L. dividiforceps García Aldrete, 1974 d	Both	Mexico
L. gomezfariasensis García Aldrete, 2015b	Female	Mexico
L. hermosa García Aldrete, 1982	Both	Mexico
L. ixtlanensis García Aldrete y Casasola González, 2012	Female	Mexico
L. jacalaensis García Aldrete, 2015b	Female	Mexico
L. lachataoensis García Aldrete y Casasola González, 2012	Male	Mexico
L. lacustrina García Aldrete, 2015b	Male	Mexico
L. lingua New y Thornton, 1975	Female	Ecuador
L. michiliensis García Aldrete, 1991	Female	Mexico
L. moroni García Aldrete, 2015b	Male	Mexico
L. neoleonensis García Aldrete, 1974e	Both	Mexico
L. obrieni García Aldrete, 1982	Male	Costa Rica
L. omitlanensis García Aldrete, 2015b	Female	Mexico
L. picticeps Mockford, 1986	Both	Mexico
L. picticepsoides García Aldrete, 1997	Both	Ecuador
L. querpina García Aldrete, 1991	Both	Mexico
L. regiomontana García Aldrete, 1973	Both	Mexico
L. reyesi García Aldrete, 1991	Both	Mexico
L. silvatica García Aldrete, 1988	Both	Mexico
L. tuita García Aldrete, 1988	Female	Mexico
L. unsijensis García Aldrete y Casasola González, 2012	Male	Mexico
L. zuninoi García Aldrete, 2014	Female	Mexico
L. zuninoides García Aldrete, 2014	Female	Mexico

Cadena.

Etymology. This species is dedicated to its collectors, the specific epithet is formed with the roots of their last names. It is also a small homage to Luis Cervantes, recently and untimely deceased.

Remarks. This species is unique by the shape of its gonapophyses: short, stout, distally broad and slightly concave. The flap of the subgenital plate reminisces that of the Canadian *L. albertina*.

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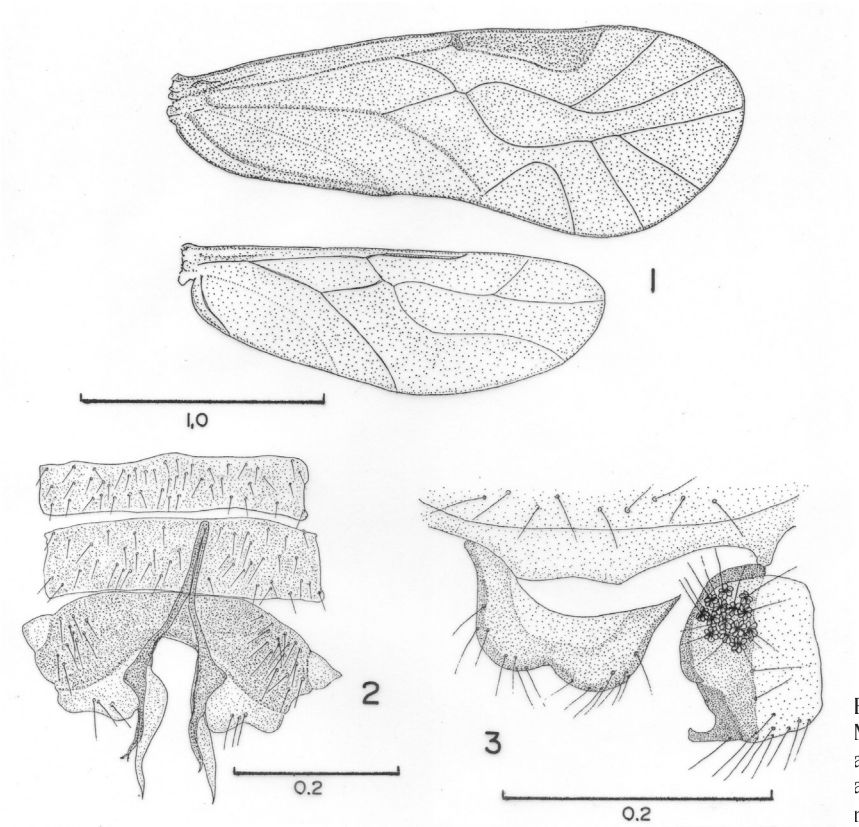
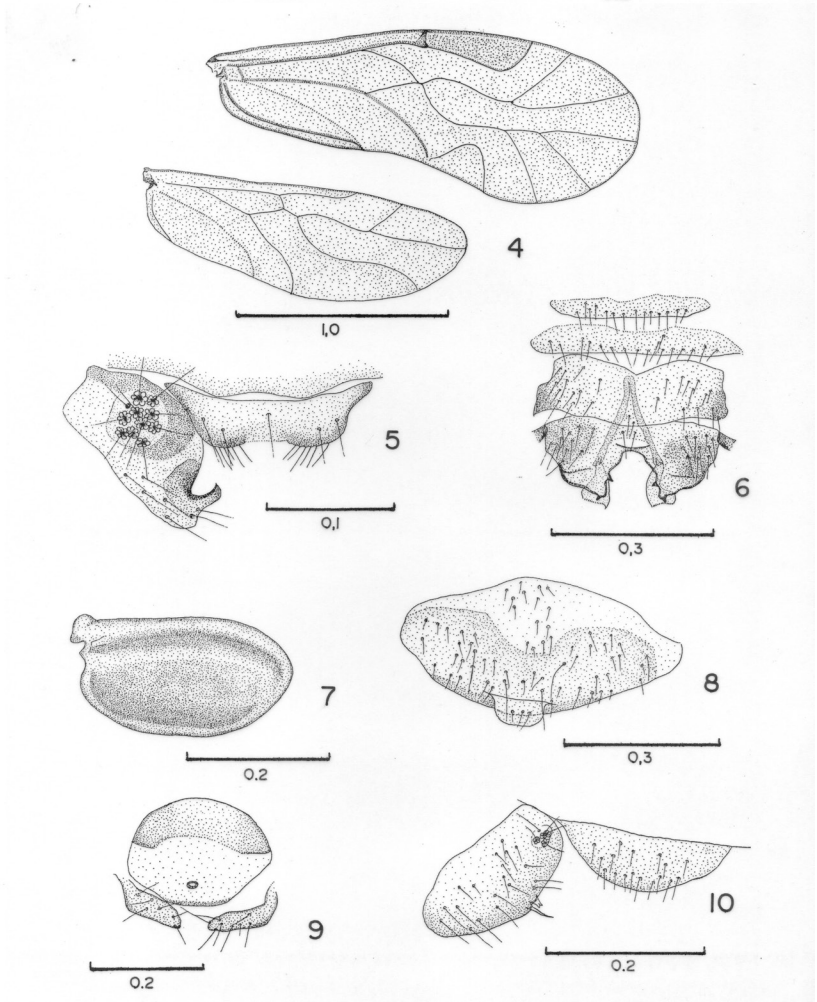
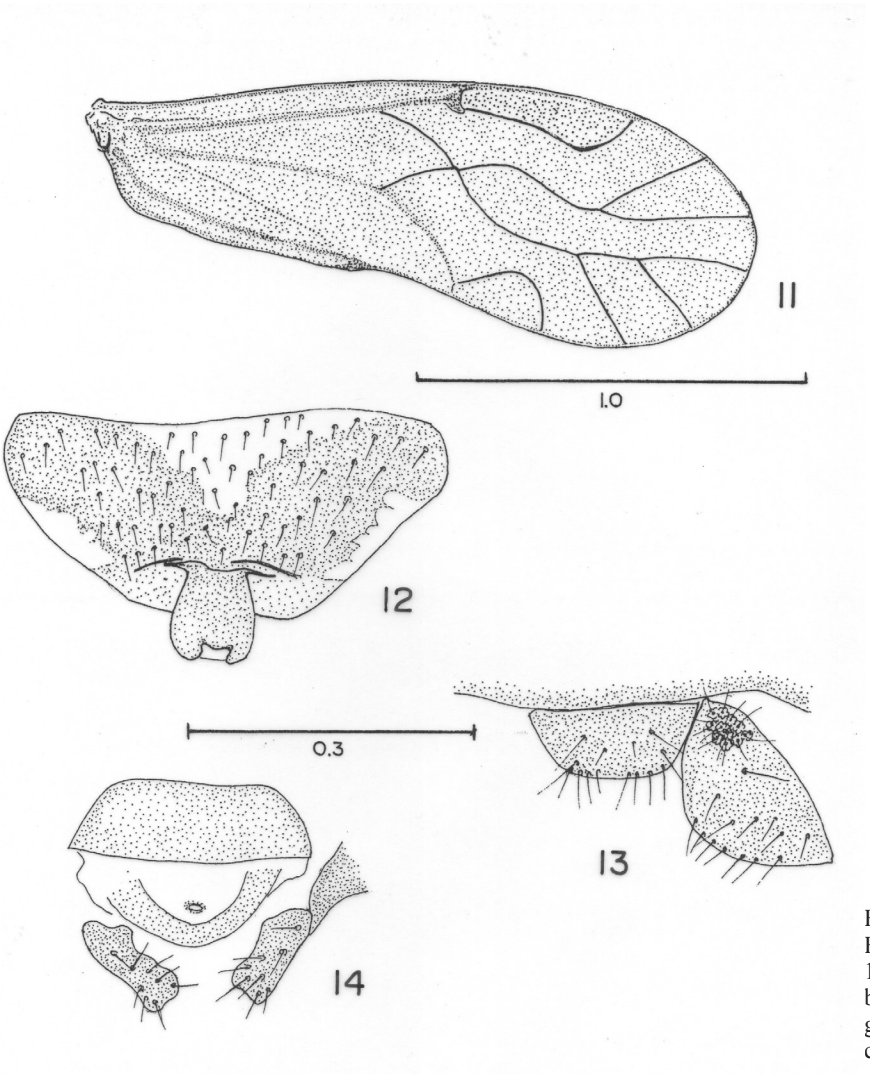


Figuras 1-3. *Lachesilla brailovskyana* n. sp. Male. 1. Fore- and hind- wings. 2. Hypandrium and phallosome. 3. Epiproct, right paraproct and posterior border of clunium. Scales in mm.



Figs 4-10. *Lachesilla buenoi* n. sp. 4. Fore- and hind- wings. Male. 5. Left paraproct, epiproct and posterior border of clunium. Male. 6. Hypandrium and phallosome. Male. 7. Forewinglet. Female. 8. Subgenital plate. Female. 9. Ninth sternum and gonapophyses. Female. 10. Left paraproct and epiproct. Female. Scales in mm.



Figs 11-14. *Lachesilla cercade* n. sp. Female. 11. Forewing. 12. Subgenital plate. 13. Epiproct, right paraproct and posterior border of clunium. 14. Ninth sternum and gonapophyses. Scales in mm. Figs 12-14 to common scale.