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Two new species of *Lachesilla* in the *andra* group, from the Chapada Diamantina, Bahia, Brazil (Psocodea: 'Psocoptera': Lachesillidae)

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Abstract

Two new species of *Lachesilla* in the *andra* group are described from Brazil, where the group was previously unknown. They raise to five the number of species in the group known in South America. An identification key for females of the *andra* group in South America is included.

Key words: taxonomy, Neotropics, Lachesillidae

Introduction

The *andra* species group of the psocid genus *Lachesilla* (García Aldrete 1974; Mockford 1993; Mockford & García Aldrete 2010) presently includes 26 species, only three of which (*L. ambigua* Badonnel, *L. castrii* Badonnel, and *L. pisaqensis* García Aldrete & Mockford), occur in South America. Species of this group have not previously been recorded in Brazil. In September of 2012 we collected Psocoptera in the Chapada Diamantina, state of Bahia, Brazil, and found two female specimens that represent two undescribed species of *Lachesilla* in the *andra* group. The purpose of this paper is to describe and illustrate these species, and to comment on their affinities.

Materials and methods

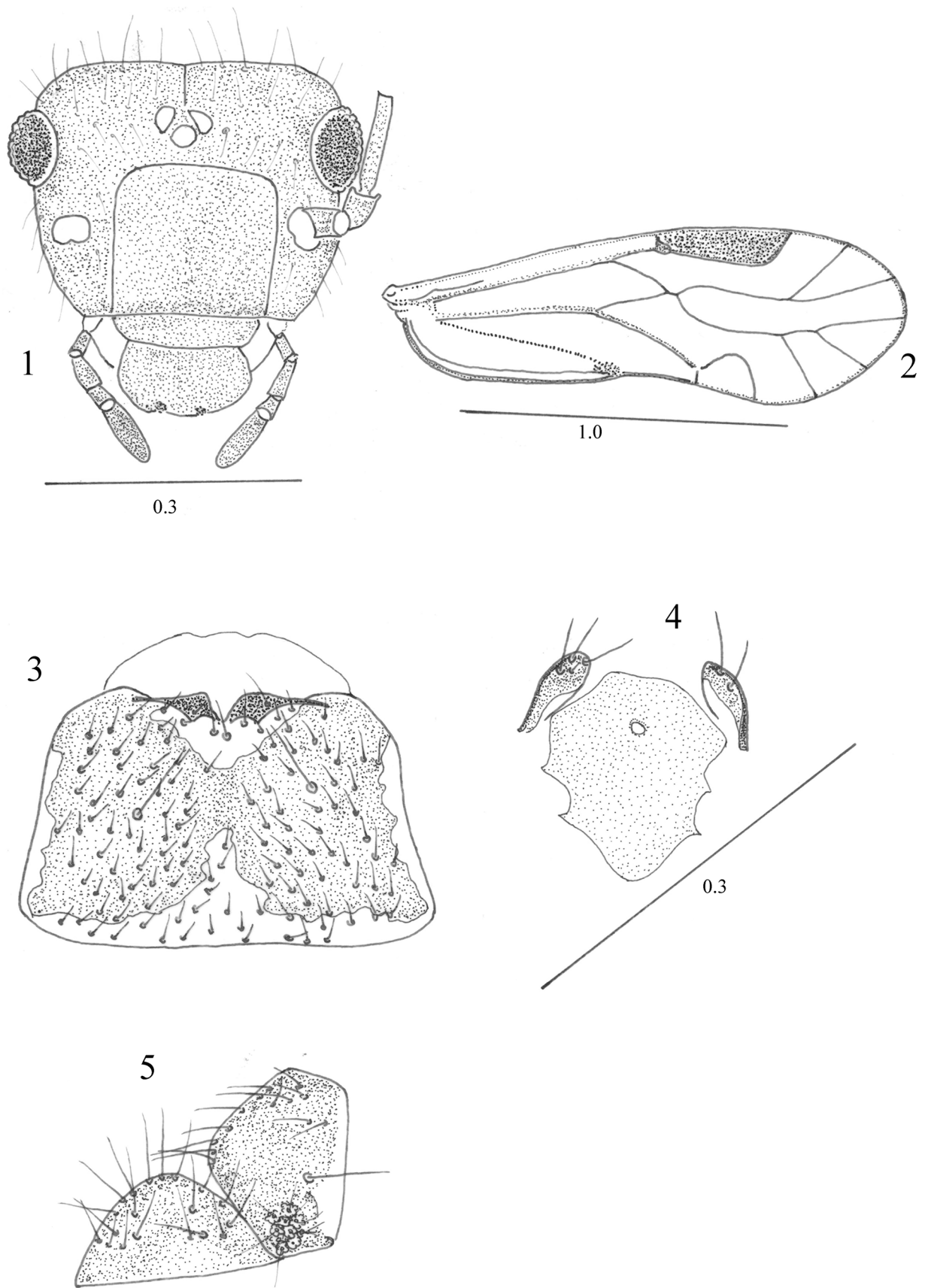
The specimens were dissected in 80% ethyl alcohol, and their parts (head, right wings and legs and genitalia) were mounted on slides in Canada Balsam. Standard measurements were taken on parts on the slides, utilizing a filar micrometer with measuring unit 136 microns for wings, and 53 microns for other parts. Abbreviations of parts measured are as follows: FW, HW: lengths of right fore- and hind- wings; F, T, t_1 and t_2 : lengths of femur, tibia, and tarsomeres 1 and 2 of right hind leg; Mx4: length of fourth segment of right maxillary palpus; ctt_1 : number of ctenidobothria on t_1 ; $f_1 \dots f_n$: lengths of flagellomeres 1...n of right antenna; IO, D, d: respectively, minimum distance between compound eyes, antero-posterior diameter, and transverse diameter of right compound eye, all in dorsal view of head; PO: d/D.

The types will be deposited in the Coleção Entomológica Prof. Johann Becker of the Museu de Zoologia da Universidade Estadual de Feira de Santana (MZUEFS), Feira de Santana, Bahia, Brazil.

Lachesilla diamantina n. sp. (Female)

(Figs 1–5)

Diagnosis. Macropterous. Subgenital plate of two pieces, proximal one broad, setose, pigmented, with one large sclerotized area posteriorly, on each side of midline; distal piece almost rounded posteriorly, almost unpigmented. Ninth sternum rounded anteriorly, concave at sides.



FIGURES 1–5. *Lachesilla diamantina* n. sp. (Female). 1. Front view of head. 2. Forewing. 3. Subgenital plate. Fig. 4. Gonapophyses and ninth sternum. 5. Epiproct and left paraproct. Scales in mm. Figures 3, 5 to scale of Fig 4.

Color (in 80% ethyl alcohol). Body pale brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. Maxillary palps slightly more pigmented than rest of the body. Thorax creamy brown, pleura brown, with well defined sulci, thoracic lobes of meso and metathorax dark brown. Wings hyaline, unmarked, veins brown. Abdomen creamy.

Morphology. Forewing pterostigma (Fig 2) almost rectangular, wider posteriorly, veins Rs-M fused anteriorly for a short distance, areola postica low, apically rounded. Hindwing veins Rs-M fused anteriorly for a distance. Subgenital plate (Fig 3) of two regions, the anterior one broad, setose, with pigmented area deeply cleft anteriorly, and a hyaline triangular area posteriorly in the middle; posterior border almost straight, with a strongly sclerotized sclerite on each side of midline, narrowing laterally. Distal region broad, almost unpigmented, with a small median lobe posteriorly. Gonapophyses short (Fig 4) directed postero-mesally, bearing 4-5 setae, with a strongly pigmented band along outer border. Ninth sternum slightly pigmented, rounded anteriorly and with a median concavity on each side; spermapore ellipsoid, with a slightly pigmented rim (Fig 4). Paraprocts broad, setose, with sides converging to rounded apex, bearing a row of setae; sensory fields with nine trichobothria on basal rosettes and a marginal trichobothrium without basal rosette (Fig 5). Epiproct slightly concave anteriorly, rounded posteriorly, with setal field on distal half and a row of setae along posterior border (Fig 5).

Measurements (in microns). FW: 1554; HW: 1224; F: 280; T: 535; t_1 : 177; t_2 : 83; ctt_1 : 12; Mx4: 71; f_1 : 153; f_2 : 107; f_3 : 88; f_4 : 75; IO: 288; D: 88; d: 60; IO/d: 4.8; PO: 0.68.

Specimen studied. Holotype female. **BRAZIL**, Bahia, Rodovia BR-242, 24 km SE Palmeiras (12°28'20"S: 41°23'5"W), 9.ix.2012, beating tree branches with dead leaves. A. N. García Aldrete & A. M. Silva-Neto.

Etymology. The specific name refers to the fact that the species was collected in the Chapada Diamantina, Bahia, Brazil.

***Lachesilla lapadoce* n. sp. (Female)**

(Figs 6–10)

Color (in 80% ethyl alcohol). Body pale brown. Compound eyes black, ocelli hyaline, without pigmented centripetal crescents. Maxillary palps dark brown. Wings almost hyaline, opaque, forewing with brown spots on veins at wing margin. Tergal lobes of meso- and metathorax dark brown. Abdomen creamy, with dark brown subcuticular rings.

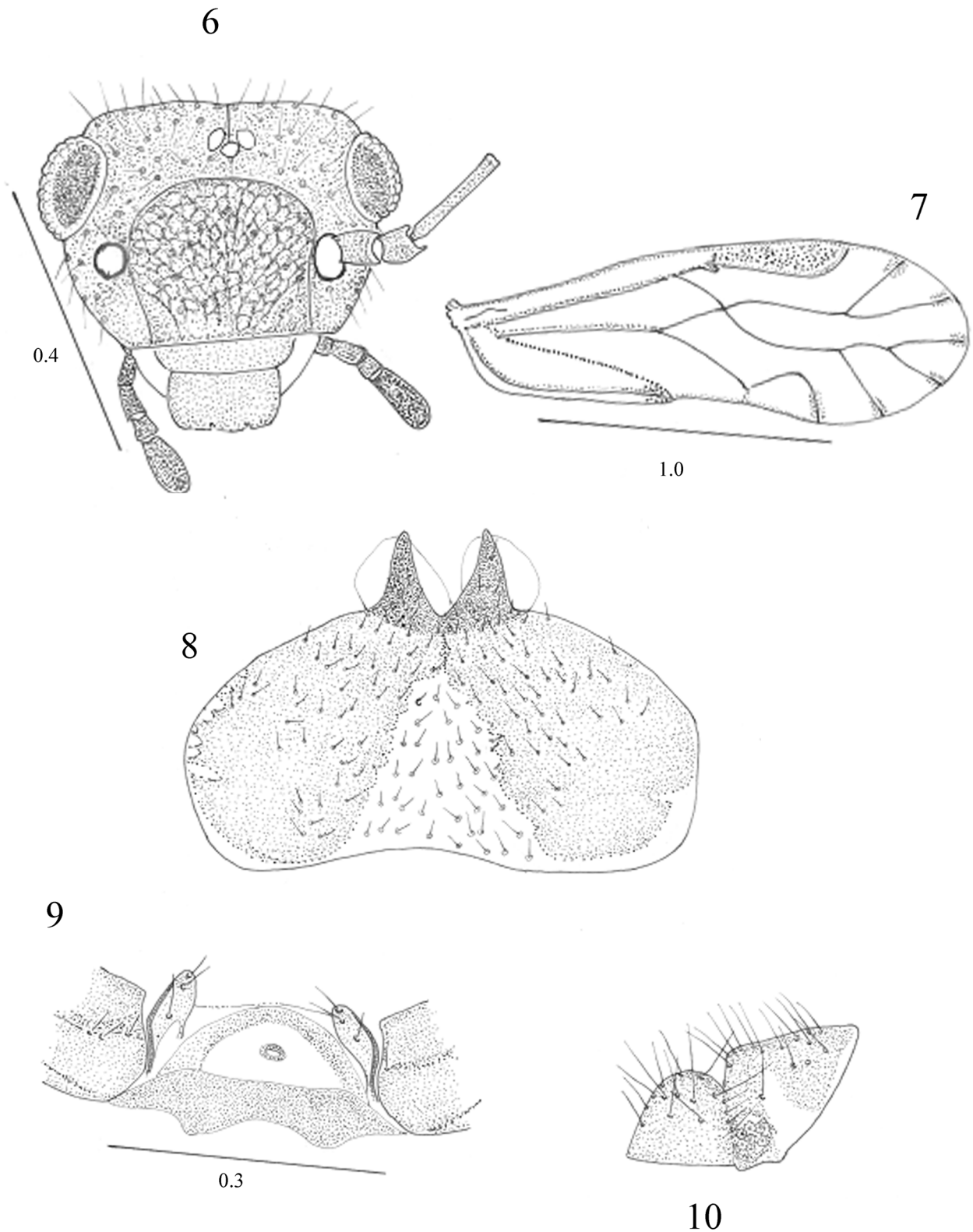
Morphology. Forewing pterostigma slightly wider posteriorly; veins Rs and M diverging from a point, areola postica low, wide based, rounded apically (Fig 7). Subgenital plate broad, with setae as illustrated; pigmented area deeply concave anteriorly; posteriorly with two deeply sclerotized processes, wide based, narrowing to blunt apex, underlaid by two unpigmented rounded areas (Fig 8). Gonapophyses short, distally rounded, with three setae, and with a strongly pigmented band along outer border (Fig 9). Ninth sternum with a transverse pigmented band anteriorly, with anterior border concave; a less pigmented arch as illustrated, enclosing the spermapore, this elliptic, with a pigmented rim (Fig 9). Paraprocts (Fig 10) broadly triangular, with setae as illustrated, sensory fields with eight trichobothria in basal rosettes, and one marginal trichobothrium without basal rosette (Fig 10).

Measurements (in microns). FW: 1781; HW: 1420; F: 344; T: 707; t_1 : 188; t_2 : 84; ctt_1 : 13; Mx4: 83; f_1 : 168; f_2 : 123; f_3 : 118; f_4 : 85; IO: 330; D: 131; d: 80; IO/d: 4.1; PO: 0.61.

Specimens studied. Holotype female. **BRAZIL**, Bahia, Iraquara, ca. Lapa Doce cave (12°20'06"S: 41°36'14"W), 9.ix.2012, on dead leaves of grasses. A. N. García Aldrete & A. Moreira da Silva Neto.

Non-paratypes: **PARAGUAY**, Cordillera, Ca. Tobatí, 24.vii.2013, 1 female, beating tree branches with dead leaves, A. N. García Aldrete. San Bernardino, 25.vii.2013, 1 female, same biotope and collector.

Etymology. The specific name refers to the fact that the holotype was collected near the Lapa Doce cave, Bahia, Brazil.



FIGURES 6–10. *Lachesilla lapadoce* n. sp. (Female). 6. Front view of head. 7. Forewing. 8. Subgenital plate. Fig 9. Gonapophyses, ninth sternum and clunial ends. 10. Epiproct and left paraproct. Scales in mm. Figures 8, 10 to scale of Fig 9.

Key to the females of species of *Lachesilla* in the *andra* group in South America

1. Subgenital plate of one region, setose, pigmented, with two distal processes in the middle, strongly sclerotized, wide based,

- narrowing distally to blunt apex. Gonapophyses with outer border deeply sclerotized. Ninth sternum limited anteriorly by a transverse pigmented band, anteriorly concave; a less pigmented arch enclosing spermapore..... *lapadoce* n. sp. (Brazil, Paraguay)
- Subgenital plate of two well defined regions, a proximal one, large, setose and pigmented, and a distal one, small, glabrous and almost unpigmented. Gonapophyses sclerotized or not along outer border. Ninth sternum not as above 2
 - 2. Proximal region of subgenital plate with two posterior, pigmented areas, partially covering distal region. Gonapophyses not sclerotized along outer border. Macropterous, wings pigmented, mostly with brown spots distally on veins and along areola postica..... 3
 - Proximal region of subgenital plate without pigmented areas posteriorly, not covering distal region. Gonapophyses sclerotized along outer border. Macropterous or brachypterous, if macropterous, wings clear 4
 - 3. Distal region of subgenital plate posteriorly rounded..... *ambigua* Badonnel (Argentina, Chile)
 - Distal region of subgenital plate with a small obtuse concavity posteriorly in the middle. . *castrii* Badonnel (Argentina, Chile)
 - 4. Posterior border of subgenital plate almost straight, with one strongly sclerotized area on each side of midline. Macropterous .
..... *diamantina* n. sp. (Brazil)
 - Posterior border of subgenital plate concave, with a sclerotized band along it. Brachypterous.
..... *pisaqensis* García Aldrete & Mockford (Peru)

Discussion

Mockford & García Aldrete (2010) established a classification of the species of *Lachesilla* in the *andra* group, on the basis of male terminal abdominal structures, and assigned to Subgroup III the species *L. ambigua* Badonnel, *L. kola* Sommerman, *L. mayorgae* García Aldrete and *L. texana* Mockford & García Aldrete. They also indicated that *L. bilobata* García Aldrete, *L. castrii* Badonnel, *L. chiapensis* García Aldrete and *L. zapoteca* García Aldrete, known only from females probably belong in the same subgroup. Since *L. diamantina* forms an assemblage with *L. ambigua*, *L. castrii*, *L. kola*, and *L. pisaqensis* (in Subgroup III) on the basis of the structure of the female subgenital plate, constituted by a proximal and a distal region, this species is also assigned in Subgroup III. The absence of a pigmented plate underlying the subgenital plate is an apomorphic condition. *L. lapadoce* is not assignable to any of the subgroups established by Mockford & García Aldrete (2010), as, on female characters, it seems to bear no relation to any of the described species. It shares with *L. diamantina* and with *L. pisaqensis* the deeply sclerotized outer border of the gonapophyses.

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