

Taxonomia (Taxonomy)

Two new genera of the bee tribe Lonchopriini, with additional taxonomic notes (Apidae, Colletinae)¹

Dois novos gêneros de abelhas da tribo Lonchopriini, com notas taxonômicas adicionais (Apidae, Colletinae)

GABRIEL A. R. MELO

Laboratório de Biologia Comparada de Hymenoptera,
Departamento de Zoologia, Universidade Federal do Paraná.
Caixa Postal 19020, 81531-980, Curitiba-PR, Brazil. garmelo@ufpr.br

Our comprehension of the evolution and biogeography of the apid subfamily Colletinae has greatly advanced through the fundamental works of ALMEIDA & DANFORTH (2009) and ALMEIDA ET AL. (2012, 2018). These studies have shed light on the relationships within the subfamily and provided a solid basis upon which a revised higher-level classification could be established. One of the major novelties brought by the molecular evidence was the position of the Australian genus *Paracolletes* Smith. It came out as sister group of the diphaglossine bees, a clade restricted to the New World, and not together within the remaining genera traditionally allocated in the Paracolletini, or Paracolletinae in the traditional classification (e.g. MICHENER 2007). With removal of *Paracolletes*, this aggregate of genera was placed under the name “Neopasiphaeinae” by ALMEIDA ET AL. (2012), containing three Australian and two New World lineages.

Another significant finding derived from the molecular studies was the discovery that the New World “Neopasiphaeinae” were composed

¹ urn:lsid:zoobank.org/pub:6B604735-92AA-4900-9B2D-4A6D60F649A5



Copyright by the Author. This is an open-access article distributed under the terms of the Creative Commons Attribution License (type CC-BY), which permits unrestricted use, distribution and reproduction in any medium, provided the original article is properly cited.

of two separate lineages, one representing a large clade, encompassing most of the known diversity, and having as sister-group the Australian elements belonging to this clade. The other lineage was represented by *Lonchopria* sensu lato (in the sense of MICHENER 1989), which came out in a more basal position in relation to the larger clade mentioned above (see details in ALMEIDA ET AL. 2018). This lineage can be named as Lonchopriini, based on a family-group name proposed by MOURE (1945), but under a quite distinct scope (see also ENGEL 2020a for use of this name under an alternative classification).

The present contribution proposes two new genera in Lonchopriini. The species in these genera are found in Argentina and Brazil. Taxonomic notes are also provided for additional taxa in the tribe.

MATERIAL AND METHODS

The studied specimens belong to the DZUP – Coleção Entomológica Pe. Jesus Santiago Moure, Department of Zoology, Universidade Federal do Paraná, Curitiba, Brazil, and to the ZMB – Museum für Naturkunde, Berlin, Germany. The general morphological terminology follows URBAN (1967), SILVEIRA ET AL. (2002), and MICHENER (2007). The genus descriptions follow the format and character numbering used by MICHENER (1989). The color images were obtained on a camera Leica DFC295 associated to a stereomicroscope Leica M125 (DZUP) or on a camera Nikon Coolpix 995 attached to a stereomicroscope Leica MZ7 (ZMB). Image stacking was carried out in the software Zerene.

TAXONOMY

***Camposapis* gen. nov.**

urn:lsid:zoobank.org:act:02F4707D-368A-4040-B45E-39648A3FF6CC

(Figs. 1A–D)

Type-species: *Leiproctus (Perditomorpha) larejae* Compagnucci & Roig-Alsina, 2008.

Description

1. Integument mostly black, metasomal hair bands absent, terga with very inconspicuous metallic reflexes. Length 8–11 mm. 2. Face mostly flat, supraclypeal area not much elevated above clypeus and only slightly elevated above frons. Inner orbits converging below. Malar space null. Clypeus flat, disc sparsely punctate and shining in female and densely

punctate in male. 3. Facial fovea not recognizable or indicated only by broad, undefined area of slightly different texture than rest of face. 4. Vertex in frontal view straight in female and weakly convex in male, elevated well above upper ocular tangent. Anterior margin of median ocellus below upper ocular tangent. Occipital carina absent. 5. Mandible slender with small preapical tooth on upper margin, not modified in male. 6. Labrum short, about four times as wide as long. 7. Proboscis without unusual features, glossa with short lobes; labial palpus at least as long as one half as prementum; maxillary palpus with two last articles extending beyond apex of galea. 8. Antenna of male reaching tegula, middle flagellar segments about as long as broad. 9. Metapostnotum finely transversely wrinkled, dull due to fine microreticulation; base of propodeum sloping, about as long as metanotum, curving onto declivous surface, about one third as long as declivous surface in profile. 10. Fore basitarsus of female without comb of hairs on outer margin. 11. Inner hind tibial spur of female and male ciliate, with many fine and short teeth. 12. Femoral scopa loose, with sparse long hairs with few side branches, femoral corbicula closed basally by somewhat floccose, curved hairs arising on trochanter. Female hind tibia with loose scopa, leaving most of tibial surface exposed, hair ramifications arising toward apical half; hairs of inner surface of hind tibia simple, relatively long and not forming zone of short keirotrichia. 13. Hind basitarsus of female gently tapering toward extreme apex which is about two-thirds as wide as width near base. Hind basitarsus of female with outer surface flat, vestiture distinct from that of tibia, hairs about as long as those of inner surface, not obscuring surface. 13A. Tarsal claws simple. 14. Basitibial plate of female well defined, not hidden by hair, pointed, about one fourth as long as tibia. 15. Basitibial plate of male well defined on both anterior and posterior margins. 16. Wing vestiture dense; two submarginal cells; first abscissa of vein M meeting cu-a. Pterostigma slender, distinctly broader than prestigma; marginal cell 1.7 times as long as pterostigma; vein 2r-rs arising near middle of pterostigma; margin within marginal cell convex. Apex of marginal cell narrowly rounded, separated from wing margin by a few vein widths. 17. Jugal lobe of hind wing slightly surpassing level of cu-a. 18. Metasomal sterna with abundant short hair and apical fringes of longer hair. 19. Pygidial plate of male represented by ill-defined elevated area that tapers toward apex of tergum 7 which is narrowly rounded; apex of female pygidial plate rounded. 20. Sternum 7 of male narrow medially, with two pairs of apical lobes, both rather narrow. 21. Sternum 8 of male with base rounded; apical

process simple and pointed, not beveled like a pygidial plate. 22. Male genitalia with somewhat distinct gonostylus. Volsella with distinct denticles. Penis valves relatively large and elaborate, not strongly downcurved.



Figure 1. *Camposapis larejae* (Compagnucci & Roig-Alsina, 2008), specimens from Argentina: Entre Ríos, Pronunciamiento (new record; DZUP). A. Female, habitus in dorsal view. B. Female, head in frontal view. C. Male, habitus in dorsal view. D. Male, head in frontal view. Figures A and C, and B and D, respectively, at same scale.

Etymology

The genus is named in honor of professor Lucio Antonio de Oliveira Campos, from the Universidade Federal de Viçosa, in recognition of his multifaceted contributions to the advancement of Brazilian apidology.

Included species

Camposapis larejæ (Compagnucci & Roig-Alsina, 2008) comb. nov., from Argentina, and an undescribed species from southern Brazil. The undescribed species was included in the study of ALMEIDA ET AL. (2018) and identified both as *Bicolletes aff. larejæ* and *Lonchopria aff. larejæ*.

Remarks

Within the Lonchopriini, *Camposapis* stands out for the female scopa composed of loose plumose setae, leaving most of the integument surface visible, forewing with two submarginal cells, front basitarsus of female without comb of hairs on outer margin, inner spur of hind tibia ciliate, and claws simple. In ALMEIDA ET AL. (2018) it came out as sister group of the remaining Lonchopriini. Illustration of the male genitalia and associated sterna can be found in COMPAGNUCCI & ROIG-ALSINA (2008).

Silveirapis gen. nov.

[urn:lsid:zoobank.org:act:7D116393-0D20-4B3D-BE19-BDB469B2F2AF](http://zoobank.org/act:7D116393-0D20-4B3D-BE19-BDB469B2F2AF)

(Figs. 2A–D)

Type-species: *Lonchopria (Biglossa) robertsi* Michener, 1989

Description

1. Integument mostly black, terga uniformly covered by decumbent pubescence and lacking metallic reflexes. Length 7–10 mm. 2. Face moderately convex, supraclypeal area not much elevated above clypeus but distinctly elevated above frons. Inner orbits converging below. Malar space very short. Clypeus with depressed, medial closely punctate area, lateral and distal to which are more shining convex areas. 3. Facial fovea indicated only by broad, undefined area of slightly different texture than rest of face. 4. Vertex weakly convex in frontal view, elevated well above upper ocular tangent. Anterior margin of medial ocellus below upper ocular tangent. Occipital carina absent. 5. Mandible of female slightly expanded apically, with small preapical tooth on upper margin, apex in male broadened by expansion of lower margin. 6. Labrum less than twice as broad as long. 7. Proboscis with glossa moderately elongate and distinctly bifid; labial palpus about one-quarter as long as prementum; maxillary palpus barely extending beyond apex of galea. 8. Antenna of male reaching little beyond tegula, middle flagellar

segments 1.5 times as long as broad. 9. Metapostnotum mostly smooth and shining; base of propodeum sloping, about as long as metanotum, curving onto declivous surface, about one third as long as declivous surface in profile. 10. Front basitarsus of female with comb of hairs on outer margin. 11. Inner hind tibial spur of female pectinate with five very long teeth, their bases about as close as they can be so that they diverge from a sometimes somewhat thickened part of spur; of male ciliate with many fine and somewhat elongate teeth. 12. Femoral scopa of abundant, long hairs with numerous fine side branches, femoral corbicula closed basally by similar long, curved, plumose floccose hairs arising on trochanter. Female hind tibia with hairs of lower surface curled outward and upward, along with hairs of outer surface forming dense scopa of long, branched hairs entirely obscuring tibial surface; hairs of inner surface of hind tibia simple, moderately long, not forming zone of short keirotrichia. 13. Hind basitarsus of female tapering toward extreme apex which is only about half as wide as width near base. Hind (also mid) basitarsus of female with outer surface slightly longitudinally concave below upper margin, vestiture entirely different from that of tibia, hairs slightly shorter than those of inner surface, not obscuring surface. 13A. Tarsal claws bifid, inner ramus very short in female. 14. Basitibial plate of female well defined, hidden by hair, apex narrow to broadly rounded, about one-third as long as tibia or slightly less. 15. Basitibial plate of male well defined on both anterior and posterior margins. 16. Wing vestiture very sparse on membrane of closed cells, much denser on wing apex; three submarginal cells; first abscissa of vein M distal to cu-a. Pterostigma slender, distinctly broader than prestigma; marginal cell about 2.3 times as long as pterostigma; vein 2r-rs arising near middle of stigma, margin within marginal cell convex, somewhat angulate. Apex of marginal cell narrowly rounded, separated from wing margin by a few vein widths. 17. Jugal lobe of hind wing attaining level of cu-a. 18. Metasomal sterna with abundant short hair and apical fringes of longer hair. 19. Pygidial plate of male represented by ill-defined elevated area that tapers toward apex of tergum 7 which is emarginate; apex of female pygidial plate emarginate. 20. Sternum 7 of male narrow medially, with two pairs of apical lobes, basal pair broader. 21. S8 of male with base rounded; apical process simple and relatively broad, not beveled

like a pygidial plate. 22. Male genitalia with somewhat distinct gonostylus. Volsella without denticles. Penis valves relatively large and elaborate, not strongly downcurved.

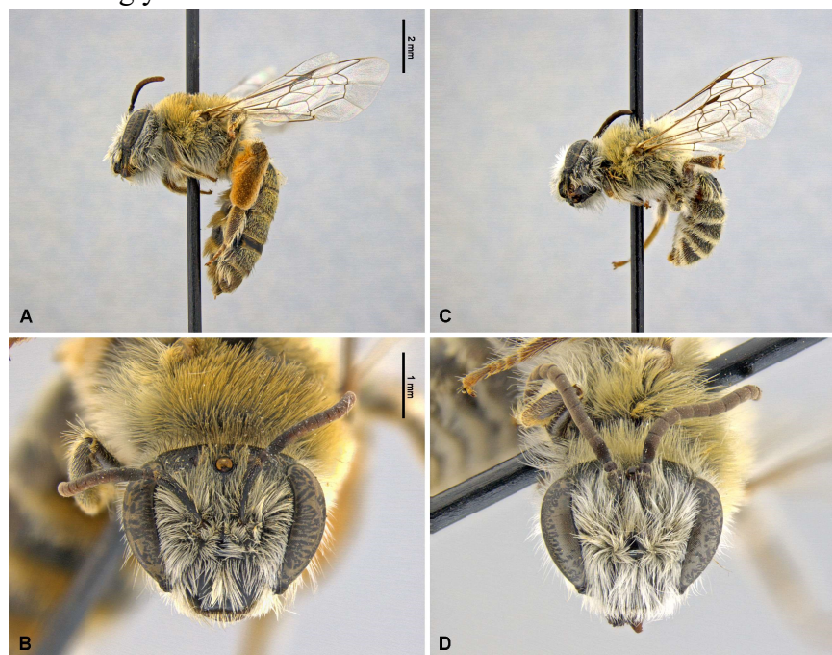


Figure 2. *Silveirapis robertsi* (Michener, 1989), paratypes from the type locality, Argentina: Tucumán, 5 km east of Amaicha, 2300 m (DZUP). A. Female, habitus in dorsal view. B. Female, head in frontal view. C. Male, habitus in dorsal view. D. Male, head in frontal view. Figures A and C, and B and D, respectively, at same scale.

Etymology

The genus is named in honor of professor Fernando Amaral da Silveira, from the Universidade Federal de Minas Gerais, a cherished colleague and friend, whose scientific contributions have significantly impacted our current understanding of bee systematics.

Included species

Silveirapis robertsi (Michener, 1989) comb. nov., from Argentina, and perhaps an additional undescribed species, also from Argentina.

Remarks

MICHENER (1989) included his *Lonchopria robertsi* in *Biglossa* Friese, then treated by him as a subgenus of *Lonchopria* Vachal and

under a broader scope due to inclusion of *Aeganopria* Moure and *Biglossidia* Moure. In ALMEIDA et al. (2018), *S. robertsi* came out as sister group of *Ctenosybina* Moure. Indeed, these two genera have in common the decumbent pale pubescence on their tergal disc, composed of plumose hairs with dense, short ramifications. Under low magnification each individual hair appears thick and simple.

Within the Lonchopriini, *Silveirapis* can be differentiated by the following combination of characters: (1) Clypeus with depressed, medial closely punctate area, lateral and distal to which are more shining convex areas; (2) Apex of male mandible broadened by expansion of lower margin; (3) Proboscis with glossa moderately elongate and distinctly bifid; (4) Inner hind tibial spur of female pectinate with five very long teeth; (5) Pubescence of outer surface of hind tibia forming dense scopa of long, branched hairs entirely obscuring tibial surface; (6) Outer surface of mid and hind basitarsus of female slightly longitudinally concave below upper margin; (7) Jugal lobe of hind wing attaining level of cu-a; (8) Terga uniformly covered by decumbent pubescence, tergal integument lacking metallic reflexes; (9) Apex of female pygidial plate and of male tergum 7 emarginate. Illustration of the male genitalia and associated sterna of *S. robertsi* can be found in MICHENER (1989).

***Biglossa thoracica* Friese**

(Figs. 3A–F)

Biglossa thoracica Friese, 1906: 374. Lectotype female, presently designated, Argetina: Salta (ZMB, examined).

Remarks

This taxon was chosen by COCKERELL (1914: 328) as the type species of Friese's *Biglossa*. Its identity was correctly interpreted by Moure (1948), who modified the classification of this group and segregated most species in the new genus *Biglossidia*, leaving only the type species in *Biglossa*. Unfortunately, MICHENER (1989) promoted a very conservative classification and lumped *Biglossidia* and *Aeganopria* under *Biglossa* and placed the latter as a subgenus of *Lonchopria*. The relationships within the Lonchopriini are still poorly known, but it is possible that *Biglossa* is more closely related to the clade formed by *Silveirapis* and *Ctenosibyne*.

Type material

FRIESE (1906) stated in the original description that the taxon was based on 2 males and 12 females "von Salta 1200-2500 mtr; Steinbach leg.". In the ZMB collection, I located three females and two males that can be considered syntypes. One female and the two males bear a locality label as shown in Figs. 3C and 3F, while in the other two females the label is identical except for having "1200" instead of "2500". All specimens, except for one male, bear Friese's identification label (as shown in Figs. 3C and 3F). The female shown in Figs. 3A–B is here designated as lectotype. The specimen is in perfect conditions and clean. One male paralectotype is illustrated in Figs. 3D–F.

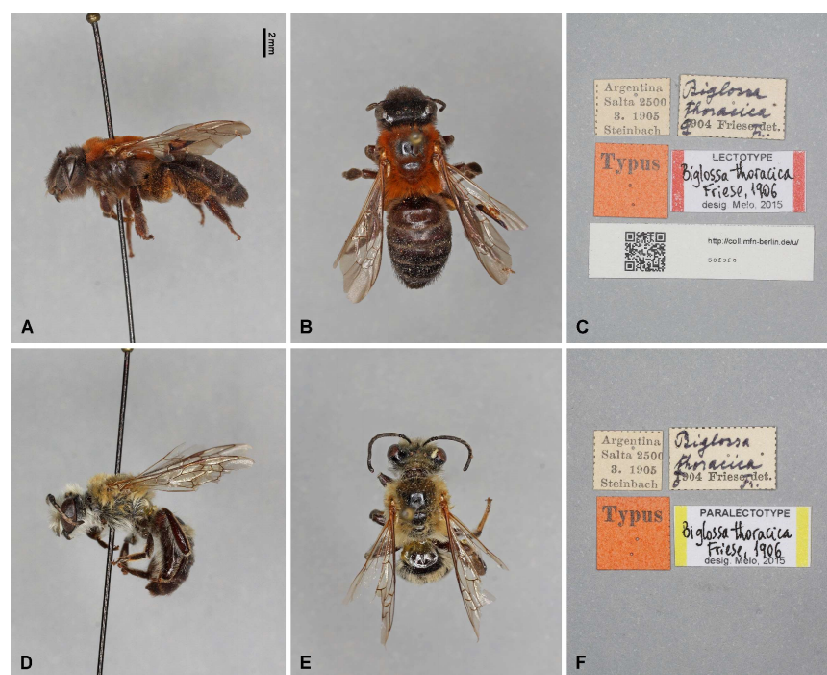


Figure 3. *Biglossa thoracica* Friese, 1906, type material (ZMB). A–C, Lectotype female, presently designated. A. Habitus, in lateral view. B. Habitus, in dorsal view. C. Specimen labels. D–F, Male paralectotype. D. Habitus, in lateral view. E. Habitus, in dorsal view. F. Specimen labels. Figures A, B, D and E at same scale.

***Biglossidia chalybaea* (Friese)**

(Figs. 4A–C)

Biglossa chalybaea Friese, 1906: 378. Lectotype female, presently designated, Argentina: Salta (ZMB, examined).**Remarks**

MOURE (1948) established the genus *Biglossidia* having Friese's *Biglossa chalybaea* as type species. He also kept *Biglossa armata*, described by Friese (1906) based on a single male also from Salta (Argentina), as a synonym of *B. chalybaea*. This synonymy has not been questioned, although it should be reevaluated considering the subtle differences observed in the forms occurring in the Argentinian Andes (see also MOURE 1948). *Biglossidia* is the largest genus in Lonchopriini and currently contains nine species.

Type material

FRIESE (1906) stated in the original description that the taxon was based on 3 females "von Salta, 2500 mtr., Steinbach leg.". In the ZMB collection, I located a single syntype, designated here as lectotype (Fig. 4). It is in perfect conditions. The labels of the specimen are shown in Fig. 4C.

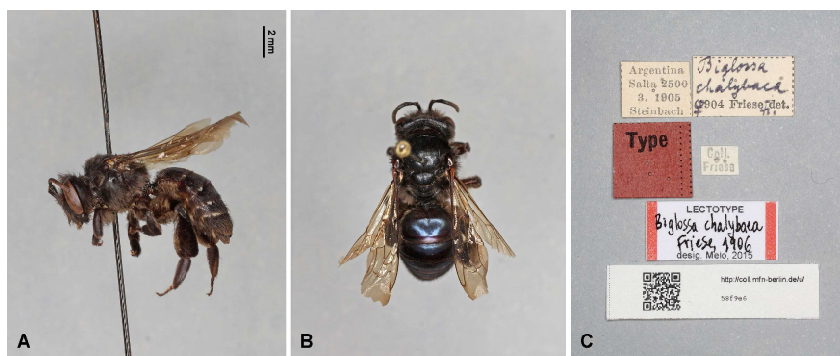


Figure 4. *Biglossidia chalybaea* (Friese, 1906), lectotype female, presently designated (ZMB). A. Habitus, in lateral view. B. Habitus, in dorsal view. C. Specimen labels. Figures A and B at same scale.

***Biglossidia solanophila* nom. nov.**

urn:lsid:zoobank.org:act:3782D9C6-2E40-45E8-A46B-7CBBDFC8522A

(Figs. 5A–C)

Rhinetula chalybaea Friese, 1922: 585. Holotype female, Bolivia: Mapiri (ZMB, examined). Junior secondary homonym of *Biglossidia chalybaea* (Friese, 1906).

Remarks

In addition to the species already placed in *Biglossidia* (see MOURE ET AL. 2007), the taxon described by FRIESE (1922) under the name *Rhinetula chalybaea*, from Mapiri (Bolivia), also belongs in this genus. It has been omitted from compilations (e.g., MICHENER 1989) and catalogs (e.g., MOURE ET AL. 1999, 2007) probably because of uncertainties about its identity. I was able to study the female holotype of this Friese's taxon and found out that it belongs in *Biglossidia* (Fig. 5). Due to the homonymy with the type species of the genus — *Biglossidia chalybaea* (Friese, 1906) — I propose here the name *Biglossidia solanophila* nom. nov. for *Rhinetula chalybaea* Friese, 1922. This species is quite distinct from *B. chalybaea*, what probably led Friese to describe it in a separate genus. *Biglossidia solanophila* is most similar to *B. comforti* (Gonzalez & Engel), from Colombia.

The new name is based on the species association with flowers of *Solanum* (Solanaceae) as source of pollen. I had the opportunity to collect two females of this species in Peru (new record: Cuzco, 19 km

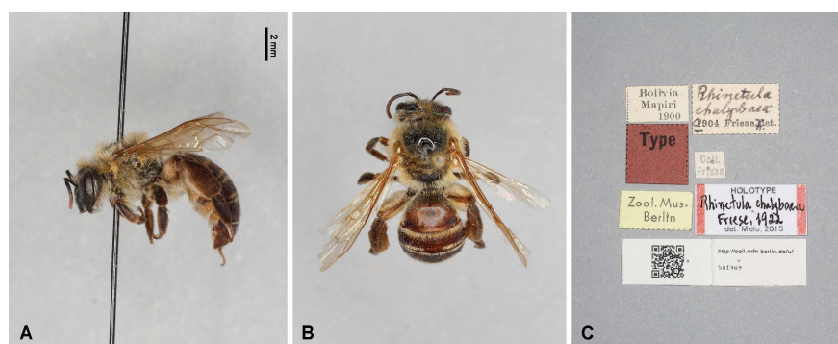


Figure 5. *Biglossidia solanophila* nom. nov.; holotype female of *Rhinetula chalybaea* Friese, 1922 (ZMB). A. Habitus, in lateral view. B. Habitus, in dorsal view. C. Specimen labels. Figures A and B at same scale.

NE of Marcapata, Capire, 1270 m) visiting flowers of an unidentified species of *Solanum*. Additional species in this clade have also been found harvesting pollen from *Solanum* (see GONZALEZ ET AL. 2014).

Type material

Friese (1922) stated in the original description that he based the taxon on female "von Mapiri in Bolivia", indicating that he had a single specimen. The holotype is in good condition (Fig. 5), except for missing the 4th and 5th tarsomeres of the left mid leg. It is also somewhat dirt due to some fine white powder over the integument and pubescence. The specimen has an anomalous condition of the spurs in the left hind tibia. There is a single spur, which has an exceptionally enlarged base. Apparently, this resulted from fusion of the two spurs. In the right leg, there are two spurs and the inner one exhibits the usual morphology for the group. The labels of the specimen are shown in Fig. 5C.

DISCUSSION

We still lack a well-established classification at genus-level for the Lonchopriini. Under the concepts then prevailing for the colletine bees, MICHENER (1989) adopted a too conservative classification, with recognition of a single genus *Lonchopria* including five subgenera. MOURE ET AL. (1999) segregated these taxa, giving them genus-level status, and removed *Aeganopria* and *Biglossidia* under the synonymy with *Biglossa*. In their system, a total of seven genera were recognized: *Aeganopria*, *Biglossa*, *Biglossidia*, *Ctenosibyne*, *Lonchoprella* Michener, *Lonchopria* and *Porterapis* Michener. This classification was followed in MOURE ET AL. (2007). More recently, ENGEL (2020a,b) retained a conservative approach to the classification of the Lonchopriini, recognizing only *Lonchopria* and *Lonchoprella*, and adding *Lonchorhyncha* Michener to the tribe, but without justifying why the latter genus should be included in this clade. Considering that *Lonchorhyncha* does not exhibit the few morphological characters that support the Lonchopriini, inclusive of *Camposapis*, it is not treated here as a member of this tribe.

Proposal here of two new genera expands our concepts for the Lonchopriini. While *Silveirapis* shares many features with the core Lonchopriini, *Camposapis* represents a considerably expansion of the tribal scope. At first glance, it looks quite an ordinary eulonchopriine bee and resembles the species placed in *Bicolletes* and *Perditomorpha*, es-

cially because of the two submarginal cells. Indeed, the type species, *C. larejae*, was associated with *Perditomorpha* by Compagnucci & Roig-Alsina (2008). An investigation of the morphological characters supporting the Lonchopriini, under the scope adopted here, is beyond the goals of this work and will be presented in a forthcoming contribution, which will also summarize the higher-level classification for the entire Colletinae.

ACKNOWLEDGMENTS

I thank Rodrigo Gonçalves, the editor of the Acta, for kindly handling this contribution. He and Kelli Ramos are thanked for reviewing the manuscript and for comments that helped improve it. I also thank Frank Koch and Michael Ohl for their kind help and support during my stay in the Museum für Naturkunde, Berlin. Financial support has been provided by Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq (grants 205250/2014-9 and 309641/2016-0).

SUMMARY

Two new genera are proposed in Lonchopriini, a tribe of the neopasiphaeinae line in the Colletinae. The new genus *Camposapis* (type-species: *Leioproctus larejae* Compagnucci & Roig-Alsina, 2008) is proposed to accommodate a distinct lineage from Argentina and Brazil. The new genus *Silveirapis* (type-species: *Lonchopria robertsi* Michener, 1989) is proposed for a lineage previously placed in *Biglossa* sensu Michener, but which came out as sister-group of *Ctenosibyne* Moure based on molecular evidence. In addition, *Biglossidia solanophila* is proposed as a replacement name for *Rhinotula chalybaea* Friese, 1922 due to homonymy with *Biglossidia chalybaea* (Friese, 1906). Lectotypes are designated for *Biglossa thoracica* Friese, 1906 and *Biglossa chalybaea* Friese, 1906.

KEYWORDS: Colletidae, Neopasiphaeinae, Neotropical, taxonomy

SUMÁRIO

Dois novos gêneros são propostos em Lonchopriini, uma tribo da linha neopasiphaeinae em Colletinae. O novo gênero *Camposapis* (espécie-tipo: *Leioproctus larejae* Compagnucci & Roig-Alsina, 2008) é proposto para acomodar uma linhagem distinta ocorrendo na Argentina e Brasil. O novo gênero *Silveirapis* (espécie-tipo: *Lonchopria robertsi* Michener, 1989) é proposto para uma linhagem previamente alocada em *Biglossa* sensu Michener, mas que se mostrou grupo-irmão de *Ctenosibyne* Moure com base na evidência molecular. Propõe-se também *Biglossidia*

solanophila como novo nome para *Rhinetula chalybaea* Friese, 1925 devido à homonímia com *Biglossidia chalybaea* (Friese, 1906). Lectótipos são também designados para *Biglossa thoracica* Friese, 1906 e *Biglossa chalybaea* Friese, 1906.

PALAVRAS-CHAVE: Colletidae, Neopasiphaeinae, Neotropical, taxonomia

BIBLIOGRAPHY

- ALMEIDA, E.A.B., DANFORTH, B.N. 2009. Phylogeny of colletid bees (Hymenoptera: Colletidae) inferred from four nuclear genes. *Mol. Phylog. Evol.* 50, 290–309.
- ALMEIDA, E.A.B., PIE, M.R., BRADY, S.G., DANFORTH, B.N. 2012. Biogeography and diversification of colletid bees (Hymenoptera: Colletidae): Emerging patterns from the southern end of the world. *J. Biogeog.* 39, 526–544.
- ALMEIDA, E.A.B., PACKER, L., MELO, G.A.R., DANFORTH, B.N., CARDINAL, S.C., QUINTEIRO, F.B., PIE, M.R. 2018. The diversification of neopasiphaeine bees during the Cenozoic (Hymenoptera: Colletidae). *Zool. Scr.* 48, 226–242.
- COCKERELL, T.D.A. 1914. Bees from Ecuador and Peru. *J. N. Y. Entomol. Soc.* 22, 306–328.
- COMPAGNUCCI, L.A., ROIG-ALSINA, A. 2008. Nuevos *Leioproctus* Smith de la Argentina correspondientes a los subgéneros *Spinolapis* Moure *Perditomorpha* Ashmead (Hymenoptera, Colletidae). *Rev. Mus. Argent. Cienc. Nat.* 10(2), 319–327.
- ENGEL, M.S. 2020a. Notes on the classification of certain colletid bees (Hymenoptera: Colletidae). *Entomol. Mon. Mag.* 156, 93–101.
- ENGEL, M.S. 2020b. A second species of *Lonchoprella* from northern Argentina (Hymenoptera: Colletidae). *Entomol. Mon. Mag.* 156, 155–162.
- FRIESE, H. 1906. Eine neue Bienengattung aus Chile und Argentinien. *Z. Syst. Hymenopterol. Dipterol.* 6, 374–380.
- FRIESE, H. 1922. Eine neue Bienengattung aus Südamerika: *Rhinetula* (Apidae). *Zool. Jahrb. Abt. Syst., Geogr. Biol. Tiere* 45, 581–586.
- GONZALEZ, V.H., VELEZ-RUIZ, R.I., ENGEL, M.S. 2014. A new paracolletine bee from Colombia (Hymenoptera: Colletidae), with an updated checklist of the tropical Andean bee fauna. *J. Melittol.* 43, 1–26.
- MICHENER, C.D. 1989. Classification of American Colletinae (Hymenoptera, Apoidea). *Univ. Kansas Sci. Bull.* 53(11), 622–703.
- MICHENER, C.D. 2007. *The Bees of the World*. 2nd ed. Johns Hopkins Univ. Press, Baltimore, 953 p.

- MOURE, J.S. 1945. Contribuição para o conhecimento dos Diphaglossinae, particularmente Ptiloglossa (Hym. - Apoidea). *Arq. Mus. Paranaense* 4 (6), 137–178.
- MOURE, J.S. 1948. Notas sobre algumas abelhas de Tacanas, Tucumán, Argentina (Hymenopt. Apoidea). *Rev. Entomol.* 19(1-2), 313–346.
- MOURE, J.S., GRAF, V., URBAN, D. 1999. Catálogo de Apoidea da Região Neotropical (Hymenoptera, Colletidae). I. Paracolletini. *Rev. Bras. Zool.* 16(Suppl. 1), 1–46.
- MOURE, J.S., GRAF, V., URBAN, D. 2007. Paracolletini Cockerell, 1934. In Moure, J.S., Urban, D., Melo, G.A.R. (Orgs). *Catalogue of Bees (Hymenoptera, Apoidea) in the Neotropical Region*. Sociedade Brasileira de Entomologia, Curitiba.
- SILVEIRA, F.A., MELO, G.A.R., ALMEIDA, E.A.B. 2002. *Abelhas Brasileiras: Sistemática e Identificação*. Author's edition, Belo Horizonte, 253 p.
- URBAN, D., 1967. As espécies do gênero *Thygater* Holmberg, 1884 (Hymenoptera, Apoidea). *Bol. Univ. Fed. Parana, Zool.* 2, 177–309.

Received 13 December 2021

Accepted 17 December 2021

Available Online 20 December 2021

Edited by Rodrigo B. Gonçalves

