

SYSTEMATICS, MORPHOLOGY AND PHYSIOLOGY

Notes on the Identity of *Halictus glabrescens* Cockerell and Description of a New Species of *Halictillus* Moure (Hymenoptera, Apidae s.l., Halictinae)

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ABSTRACT - A lectotype is newly designated for *Halictus glabriventris* Friese (a homonym and replaced by *H. glabrescens* Cockerell) and the name transferred from *Halictillus* (Augochlorini) to *Dialictus* (Halictini), where it is a junior synonym of *Dialictus spinolae* (Reed). This placement resolves a long standing confusion involving the association of this name with a nest description from the beginning of the last century. In addition, a new species of *Halictillus* from Chile is described and figured.

KEY WORDS: Halictidae, Neotropical, Andes, *Lasioglossum*, bee nest

The known fauna of Augochlorini from Chile comprises two genera: *Corynura* with 16 attributed species and *Halictillus* with one species (Moure 2007). The latter species is currently referred to as *Halictillus glabrescens* (Cockerell 1926) (a replacement name for *Halictus glabriventris* Friese 1916) and one of its first references was made by Janvier (1926) in a study of its nesting biology. Subsequently, authors have cited this species in revisions or works on halictine nest architecture and lists of Chilean species (see catalog above). Based on interpretations of the original nest drawings (as provided in Michener & Wille 1961) and from examination of material from Chile, the species was transferred to *Halictillus* (Eickwort 1969a). The type series of *H. glabrescens* was formally examined only once and the species was transferred to Halictini as synonym of *Dialictus spinolae* (Moure & Hurd 1987) but little confidence was given to this placement and the name was reallocated to *Halictillus* after the examination of the holotype by F. Koch indicated the species was an augochlorine (Engel 1996).

In the current classification (Engel 2000, Michener 2007, Moure 2007), *Halictillus* has two species, *H. loureiroi* (Moure), the type species, from southern Brazil and *H. glabrescens* from Chile. The genus belongs to an augochlorine subtribe that has other five genera, mostly from the southern Neotropics (Gonçalves 2010). *Halictillus* is very similar in size and overall body ornamentation with *Dialictus* (Halictini) and both are easily confounded (Eickwort 1969b, Engel 2000). Aside from the study of nesting biology made by Janvier (1926) nothing is known about the biology of *Halictillus* species.

The objective of this study is to comment and illustrate the type series of *H. glabrescens* and describe a new species of *Halictillus* from Chile.

Material and Methods

Cited museums and their respective acronyms: American Museum of Natural History, New York, U.S.A. (**AMNH**), Departamento de Zoologia da Universidade Federal do Paraná, Curitiba, Brazil (**DZUP**), Snow Entomological Collection, Division of Entomology, University of Kansas Natural History Museum, Lawrence, U.S.A. (**SEMC**), Museo Regionale di Scienze Naturale, Torino, Italy (**MSNT**), Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (**MZSP**), National Museum of Natural History, Smithsonian Institution, Washington DC, U.S.A. (**USNM**), Museum für Naturkunde, Humboldt-Universität zu Berlin, Berlin, Germany (**ZMB**). The information provided between quotation marks in the “Additional material examined” and “Type Material” sections is an exact transcription of the labels associated with the specimens. The quotation marks indicate the different labels on the same specimen, the inverted bars (|) indicate different lines on the same label. The terminology for the external morphology follows Eickwort (1969b) and Michener (2007), except for the “basal area of propodeum”, here the metapostnotum, and the scutum, referred to as mesoscutum. The terminology for the genital capsule follows Eickwort (1969b).

Genus *Dialictus* Robertson

***Dialictus* Robertson 1902.** *Type species: Halictus anomalus* Robertson by original designation.

***Dialictus spinolae* (Reed)**

Halictus spinolae Reed 1892. Type data: lectotype female

from MSNT, not examined.

***Halictus glabriventris* Friese 1916. Junior primary homonym of *Halictus glabriventris* Crawford. Type data: lectotype female from ZMB, here designated.**

Halictus glabriventris; Herbst (1922: 191), phenology and flower records. *Halictus glabriventris*; Janvier (1926: 194-195, fig 49), notes on nest sites, nest architecture, flower records and parasite.

***Halictus glabrescens* Cockerell. New name for *Halictus glabriventris* Friese 1916 (nec Crawford).**

Halictus glabriventris Friese; Alfken (1926: 153), list.

Halictus glabriventris; Alfken (1932: 18, 19, 20, 21), as synonym of *Chloralictus aricensis* (Schrottky).

Halictus glabriventris; Janvier (1933: 326), notes on parasite.

Halictus glabriventris; Michener & Wille (1961: 1126), as junior synonym of *Lasioglossum (Chloralictus) aricense* (Schrottky), note on nest architecture.

Halictus glabriventris; Sakagami & Michener (1962: 8, 120, 121), as junior synonym of *L. (C.) aricense*, note on nest architecture.

Halictus glabriventris; Michener (1966: 216), as junior synonym of *L. (Dialictus) aricense*, note on nest architecture.

Halictus glabriventris; Sakagami & Moure (1967: 123), as junior synonym of *Dialictus (Chloralictus) aricensis*, note on nest architecture.

"*Halictus*" (= *Halictillus*) *glabriventris*; Eickwort (1969a: 657, 658, 659), note on generic placement and nest architecture.

Halictillus glabriventris; Eickwort & Sakagami (1979: 31, 32, 35), notes on taxonomy and nest architecture.

Dialictus glabrescens; Moure & Hurd (1987: 90, 131) as junior synonym of *Dialictus spinolae*, catalog, notes on previous synonyms.

Halictillus glabrescens; Engel (1996: 108), notes on synonymies, generic placement and type material.

Halictillus glabrescens; Engel (2000: 53), listed.

Halictillus glabrescens; Moure (2007: 799-800), catalog.

Halictillus glabrescens; Gonçalves (in press), phylogeny.

Comments. The application of this name has been of considerable confusion and an extended commentary is useful to clarify the identity of this name. After the original description of *H. glabriventris* the name was shortly replaced by *H. glabrescens* (Cockerell 1926). In that same year Janvier (1926), studying the nests of Hymenoptera in Chile, made a possible misidentification of the studied species with *Halictus glabriventris*, the replacement name remaining obscure until 1987 (see above). It is important to note that at Janvier's time nearly all halictine species were placed under the generic name *Halictus* and so his placement was not itself a mistake, but the use of the specific epithet probably was. In a subsequent study, Alfken (1932) placed this species under *Chloralictus* (= *Dialictus*) and synonymized *H. glabriventris* under *C. aricensis*.

The probable mistake made by Janvier (1926) was noted by Michener & Wille [1961; see also Sakagami & Michener (1962)] based on the discrepancy of the nest architecture of

H. glabriventris with other *Dialictus*; however, these authors did not put in doubt the attribution of the epithet but merely is generic assignment. Following this new interpretation, Eickwort (1969b) suggested that *H. glabriventris* belonged to *Halictillus* Moure in the Augochlorini based on the nest architecture [examining the drawings of Janvier (1926)] and on the examination of material identified as *H. glabriventris* deposited in bee collections. Curiously, the same author did not include this species in his generic revision of Augochlorini (Eickwort 1969a) but later in a separate paper (Sakagami & Eickwort 1979).

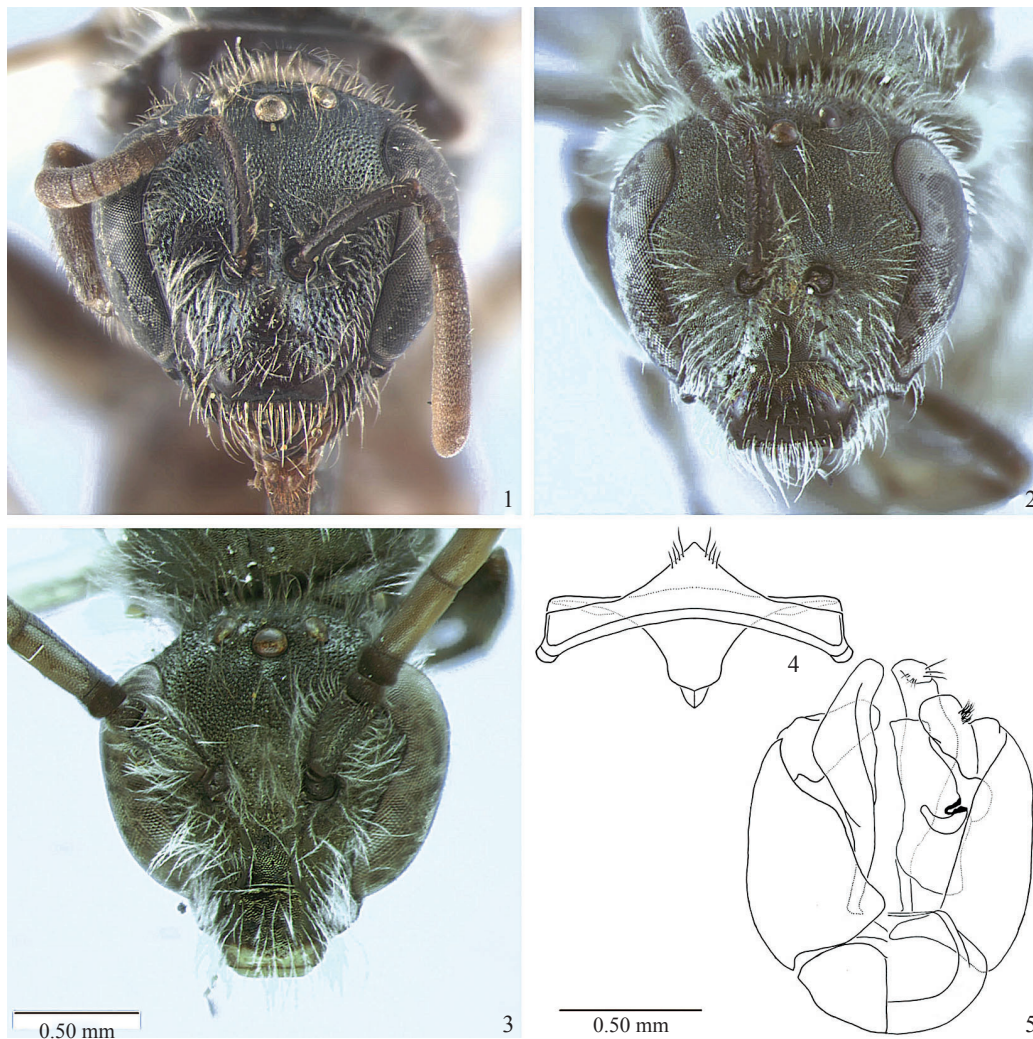
Moure & Hurd (1987) made three important changes on the application of this name. Firstly they removed *H. glabriventris* from synonymy under *Halictus aricensis*; secondly, they cited the new name provided by Cockerell (1926), *Halictus glabrescens*, for *H. glabriventris* (a homonym of *Halictus glabriventris* Crawford); and finally, they established the synonymy of *H. glabrescens* with *D. spinolae* (Reed 1892). Moure & Hurd (1987) did not explicitly indicate that they examined Friese's type material, but among the personal notes of Pe. Moure there are two references to material from USNM and ZMB, and in both notes Moure indicated that *H. glabriventris* belonged to *Chloralictus* (= *Dialictus*).

This synonymy was adopted until the study of Engel (1996) in which *H. glabrescens* was again transferred to *Halictillus* based on an indirect examination of the syntypes on his behalf by F. Koch of ZMB. This most recent interpretation was followed by Engel (2000), Michener (2000, 2007), Moure (2007) and Gonçalves (2010).

The type material of *Halictus glabriventris* studied from Concepcion, Chile, matches well with the original description. The female is in good condition but the male lacks legs and flagellomeres 4-11. Both specimens have the characteristics of Halictini, as the female lacks the medioapical notch of T5 and the pygidial plate is present on T7 of the male. The weakened distal veins and the pubescence of the terga are diagnostic for *Dialictus*. These characteristics undoubtedly reinforce the decisions of Moure & Hurd (1987) on the generic placement of the epithet *glabrescens*. Accordingly, the name *H. glabrescens* should again be considered a junior subjective synonym of *D. spinolae*. I did not study the type of *D. spinolae* and opted to maintain the synonymy as proposed by Moure & Hurd (1987).

The nest studied by Janvier (1926) and cited by many authors seems to belong to an augochlorine owing to the cell clusters surrounded by air spaces that are encountered in most of the studied species (see the revisions of Sakagami & Michener 1979 and Eickwort & Sakagami 1979), but these features are also found in some Halictini (Michener 2007: 348).

Type material. (Fig 1) Lectotype female (ZMB): "CHILE\ CONCEPC.\ [25/10].190[4]3\ P. HERBST", presently designated as lectotype in order to stabilize the taxonomy of the name. Paralectotype male (ZMB): "CHILE\ CONCEPC.\ [8.12].1904\ P. HERBST".



Figs 1-5 1) *Halictus glabrescens*, lectotype female, face; 2) *Halictillus verissimus* n.sp., female face; 3) *H. verissimus* sp.n., male face; 4) *H. verissimus* sp.n., male sterna VII and VIII; 5) *H. verissimus* sp.n., male genital capsule. Figs 1-3 and 4-5 at same scale.

Genus *Halictillus* Moure

Halictillus Moure. Type species: *Chloralictus loureiroi* Moure by original designation.

Diagnosis. *Halictillus* can be distinguished from *Corynura* by the female inner metatibial spur with few pectinate teeth combined with small body size and dull coloration, by the female angulate epistomal angle and the roughened metapostnotum (Eickwort 1969b). From other genera of Corynurina the useful characters are the inner spine on the metatibia, the forewing vein 1m-cu reaching the 2nd submarginal cell close to 2rs-m; and the male F2 two times F1 (Gonçalves 2010). The broad spiculum of S8 of *Halictillus* males differs from other Augochlorini, and the genital capsule is also distinctive with the expanded apical portion of the volsella and gonostylus with only one lobule (Figs 4 and 5).

Comments. The genus lacks a species revision since new

species should occur in southern Brazil and Argentina. Furthermore, a cladistic analysis including species of *Corynura* s.l. is needed in order to understand the evolution of this lineage.

Halictillus verissimus sp. n. (Figs 2-5)

Diagnosis. The females of this species can be distinguished from *H. loureiroi* by the strong micro reticulation of the body, particularly on the parocular area of the face (Fig 2), and on the metasomal terga the reticulation becoming strongly lineolate. Another feature is the metapostnotum with short carinae, restricted to the lateral portions. For males the body micro-reticulation is also distinctive; the supraclypeal area and mesoscutal disc are dull; the antennae has amber coloration on the frontal surface, and the tarsomeres are dark brown. The genitalia of *H. verissimus* sp. n. is similar of *H. loureiroi* except the gonostylus is not strongly expanded at

the apex (see Eickwort 1969b: figs 331-334 for comparisons on genitalia). The wing venation in this species is strong, with brown coloration, by contrast to that of other specimens of *Halictillus*.

Descriptions

Female. Head. Labrum: basal elevation rounded, occupying almost entire labrum transversally. Clypeus: punctures coarse, with some variation on diameter, median portion with punctures separated by two or more puncture diameters, becoming more densely placed elsewhere; distal surface darkened; proximal surface strongly micro-reticulate. Supraclypeal area: punctures diameter similar to clypeal punctures; micro-reticulation very strong, giving a rugulose aspect and not leaving bright areas. Lower parocular area: micro-reticulation strong, not leaving bright areas, punctures as on supraclypeal area. Upper parocular area and frons: micro-reticulation stronger than on lower parocular area, giving a rugulose aspect, intermingled punctures not evident except for those setae arising from them. **Mesosoma.** Mesoscutum: discal punctures separated by two puncture diameters, irregularly spaced; surface densely micro-reticulate. Mesoscutellum: punctures finer than on mesoscutum and separated by one puncture diameter; micro-reticulation very fine, giving a brighter aspect. Metapostnotum: with few and short straight lateral carinae, medially granular, not carinate; reticulation contiguous with propodeum. Lateral surface of propodeum: puncture diameter less than mesepisternal punctures, punctures contiguous, being weakly rugose on posterior portion, without scattered large punctures; micro-reticulation becoming finer on posterior portion. Posterior surface of propodeum: reticulation spaced, leaving bright areas. **Metasoma.** Terga: T1 strongly micro-reticulate, reticulation lineolate; T2-5 punctures more closely associated. **Body color and pubescence.** Apical one-half of clypeus black; head and mesosoma olivaceous green; legs dark brown; metasoma green with few cupreous reflections, tergal posterior margins light brown; coxa, protrochanter and profemur with green highlights; body hairs whitish, some yellow hairs on mesosoma, light brown on terga 4 and 5. **Measurements.** Body length: 6.5 mm, forewing length: 4.1 mm; mesoscutal width: 1.1 mm; face width between compound eye notch: 1.2 mm; head maximum length: 1.5 mm.

Male. Head. Clypeus: punctures with irregular diameter and distribution, strongly micro-reticulate. Supraclypeal and lower parocular areas: punctures very irregularly distributed, but not leaving distinctly non-punctured areas, punctures somewhat inclinate in relation to surface plane, surface strongly micro-reticulate. Upper parocular area and frons: micro-reticulation stronger than on lower parocular area, giving a rugulose aspect, intermingled punctures not evident except for setae arising from them. **Mesosoma.** Mesoscutum: discal punctures separated by two to five puncture diameters, irregularly spaced; surface densely micro-reticulate giving a dull aspect. Mesoscutellum: punctures finer than on mesoscutum and separated by one puncture diameter; micro-reticulation very fine, giving a brighter aspect. Metapostnotum: striae strongly rugulose, not forming straight carinae; striations not reaching posterior margin,

leaving a narrow strip of micro-reticulation. Lateral surface of propodeum: punctures coarser than other areas, giving a rugulose aspect. **Metasoma.** Terga: punctation very fine, micro-reticulations lineolate. Sterna 1-4: posterior margins straight, without patches of specialized setae, S2 longer than S3. Hidden sterna: S7 without median projection, S8 with spicular broad, apical margin fine and bearing few setae on lateral portion (Fig 4). Genital capsule: gonostylus with one lobule, inflated with rounded apex, bearing short setal patch on outer margin (Fig 5). **Body color and pubescence.** Apical one-fourth of clypeus yellow; flagellomeres 2 to 11 amber on frontal surface; head and mesosoma dark olivaceous green; legs with metallic highlights, except for tarsomeres dark brown; metasoma brown with some metallic green reflections, tergae posterior marginal dark to light brown; body hairs whitish, very long over entire body. **Measurements.** Body length: 5.25 mm, forewing length: 3.75 mm; mesoscutal width: 0.95 mm; face width between compound eye notch: 1.05 mm; head maximum length: 1.4 mm.

Etymology. The name is a derivative of Latin *veritas*, meaning "true", in reference to this species being a true *Halictillus* in its current concept.

Type material. Holotype male (AMNH): "CHILE, Ñuble: Chillán\ area, "Shangri la"\ Las Trancas, E. Recinto\ January 19-22, 1979\ 1600m., L. E. Peña". Paratypes: 16 males and four females (AMNH) and one female and one male (MZSP) with same data as holotype.

Additional examined material: (AMNH), one female, "CHILE, Las Cabras,\ mts. in Chilan area,\ S. Chillan Vulcano,\ Nuble Prov., 1500 m,\ I-6-31-1963"; three males and 20 females, "CHILE, Nuble:\ Shangrila, Las\ Trancas, Chillan\ area, SE Recinto\ Dec. 1983 L. Peña"; 31 females, "CHILE, Nuble: Las Trancas, Shangrila\ in Chillan area SE\ Recinto, 1600 m,\ Dec. 14, 1983 L. Peña"; 12 females, " CHILE, Nuble:\ Shangri-la, Las\ Trancas, SE Recinto\ DEC 13/17\ 1500 m, L. E. Peña"; four females, "CHILE, Nuble:\ Shangri-la, Las\ Trancas, SE Recinto\ XII.13-17.83\ 1500 m, L. E. Peña"; one male, "CHILE, Nuble: Chillan\ area, "Shangri la"\ Las Trancas, E. Recinto\ January 20, 1974\ Luis E. Pena"; 17 females, "CHILE, Nuble: Los\ Lleuques, 4 km\ E. Recinto\ Dec. 1982 L. Pena"; 13 females, "CHILE, VIII: Nuble\ Las Trancas, Shangri-la Rd.\ nr. 36°54'28"S 71°28'22"W\ 7 Dec 2004, J. S. Ascher\ A. Y. Kawahara, ca. 1530 m"; three females, "CHILE, Nuble:\ Refugio Shangrila,\ Las Trancas, 1800 m\ January 19-30, 1983\ Luis E. Peña"; four males, "CHILE, Malleco:\ Nahuelbuta\ Feb. I, 1979\ Luis E. Peña"; one male, "CHILE, Malleco:\ Cord. Nahuelbuta,\ 1300 m, January 6-12,\ 1982 Luis E. Peña"; six males and two females, "CHILE, Nuble: Shangrilá\ January 19-22, 1979\ Luis Peña"; 18 females, "CHILE, IX: Malleco\ Vn. Lonquimay, - 1260 m\ 38°29'40"S 71°13'39"W\ 9 Dec 2004, J. S. Ascher\ A. Y. Kawahara, C. Espina"; two females, "CHILE: IX: Malleco\ Tolhuaca, n. Lago\ Malleco - 1160 m\ 13 Dec 2004, J. S. Ascher"; five females, "CHILE: IX: Malleco\ Lonquimay area, Cuesta\ Las Raices, 9 Dec 2004\ J.S. Ascher, A. Kawahara"; one female, "CHILE: Malleco\ Prov. T Rio Blanco\ I-1996 L. Peña"; four males and 21 females, "CHILE,

Malleco:\ Las Raices, Lonquimay area\ Feb. 13-20, 1980\ 1600 m, L. Peña”; seven males and 10 females, “CHILE, Malleco:\ Cord. Las Raices\ Lonquimay area,\ Februry 13-20, 1980\ 1600 m, L. Peña”; four males and two females, “CHILE, Santiago:\ Curacautin\ Rio Blanco\ January 1974\ Luis E. Peña”; one male and 15 females, “CHILE, Malleco:\ Curacautin\ Rio Blanco\ January 1974\ Luis E. Peña”; four males and three females, “CHILE, Malleco:\ between Las Raices\ and Lonquimay,\ Feb. 1979\ Luis E. Peña”; one female, “CHILE, Malleco:\ E. Cord. Las Raices,\ Dec.22, 1976\ L. E. Peña 1700 m”; three females, “CHILE: X: Valdivia\ nr. Alerce Costero, 500 m\ 40°12'22”S 73°23'43”W\ 11 Dec 2004, J. S. Ascher”; one female, “CHILE, Santiago:\ Macul SE Santiago\ Oct. 13, 1974\ L. E. Peña”; (**DZUP**), two females, “Termas Tolhuaca\ ML-20 I 59\ CHILE L. PENA”, three males, “Vn. Callaquen\ CHILE 5-II-59\ LUIZ E. PENA”; (**SEMC**), seven males, “Rio Blanco\ Chile II...54\ 1100 1500MT\ LE Pena”.

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Note added on press: When the present manuscript was already on press, I received a copy of the revision of *Halictillus* from Argentina [González-Vaquero, R A (2010) Revisión sistemática del género *Halictillus* (Hymenoptera: Halictidae: Augochlorini) en la Argentina. Rev Soc Entomol Argent 69(1-2): 65-89]. In this paper, *H. verissimus* sp.n. is referred as '*H. sp.* (Gonçalves, en prensa)'. At this moment six species are recognized to *Halictillus*.