

Research Article

The species of the bee genus *Centris* Fabricius (Hymenoptera: Apidae) described by Giovanni Gribodo

Las especies de abejas del género *Centris* Fabricius (Hymenoptera: Apidae)
descritas por Giovanni Gribodo

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ZooBank: urn:lsid:zoobank.org:pub: 1AEFD6D6-AD31-4131-9D97-977BEC5AD334
<https://doi.org/10.35249/rche.46.1.20.07>

Abstract. In this paper the primary types of *Centris* bees described by the Italian entomologist Giovanni Gribodo were studied. The type specimens of *C. citrotaeniata*, *C. deiopieia*, *C. denudans* var. *rubida*, *C. proserpina*, *C. quartinae*, *Anthophora plumigera*, and *A. virgo* were analyzed, providing notes on their current status and depository. To stabilize the application of the name *C. citrotaeniata* it was designating a lectotype for the species. Notes and photographs of the primary types are also provided.

Key words: Anthophila, Centridini, Neotropical Region, solitary bees, taxonomy.

Resumen. En este trabajo los tipos primarios de las abejas del género *Centris* descritas por el entomólogo italiano Giovanni Gribodo fueron estudiados. Los especímenes tipo de *C. citrotaeniata*, *C. deiopieia*, *C. denudans* var. *rubida*, *C. proserpina*, *C. quartinae*, *Anthophora plumigera* y *A. virgo* fueron analizados, proporcionando notas sobre su estatus actual y lugar de depósito. Para estabilizar la aplicación del nombre *C. citrotaeniata*, fue designado un lectotipo para esta especie. Notas y fotografías de los tipos primarios también son proporcionadas.

Palabras clave: Anthophila, abejas solitarias, Centridini, Región Neotropical, taxonomía.

Introduction

Giovanni Gribodo (1846-1924) was an Italian civil engineer, architect and entomologist. As an architect he was part of the Art Nouveau architectural movement, while as an entomologist, he was an important contributor to the global knowledge of the Aculeata (Hymenoptera), excluding Formicidae, of the world (Penati & Mariotti 2015). In his more than forty articles published he described 377 new taxa of that order, which approximately two hundred are considered valid (Penati & Mariotti 2015).

His contribution to the knowledge of the global Hymenoptera is of great value. In addition to the numerous new taxa he proposed, his acute and detailed descriptions became one of the main characteristics of his publications. These features place Gribodo between the elite of the all-time hymenopterological community (Penati & Mariotti 2015).

Between 1873 and 1896, Gribodo published a large number of papers, even though with two short periods of “inactivity” (1876-78, 1885-91). Despite his busy life as architect

Received 9 January 2020 / Accepted 20 January 2020 / Published online 31 January 2020

Responsible Editor: José Mondaca E.

and engineer, he always dedicated time and effort in increasing his own insect collection either collecting or buying specimens from explorers and professional insect dealers (Penati & Mariotti 2015).

The Gribodo's collection

His large collection was purchased by the Museo Civico di Storia Naturale Giacomo Doria, Genova, Italy (MSNG) in 1924, where it is still housed (Penati & Mariotti 2015). This collection is of great scientific value. First by the hundreds of primary types not only of the species described by him, but also for several contemporary or previous hymenopterologists (Penati & Mariotti 2015); and second, by the huge number of specimens, including some rare species hard to find in other collections. Nowadays, the Gribodo's collection consists of about 150 entomological boxes housed in two wooden cabinets (Penati & Mariotti 2015).

The *Centris* bees described by Gribodo

The first contribution to the knowledge of the bee genus *Centris* Fabricius, 1804 made by Gribodo was the descriptions of *C. proserpina* Gribodo, 1891 from Brazil; *C. deiopeia* Gribodo, 1891 from Colombia, and *C. quartinae* Gribodo, 1891 and *C. denudans* var. *rubida* Gribodo, 1891 from Venezuela.

After that, he described *C. citrotaeniata* Gribodo, 1893a from Panama, and *Anthophora virgo* Gribodo, 1893b, and *A. plumigera* Gribodo, 1893b from Argentina. Despite these last two species were described in the genus *Anthophora* Latreille, 1803, they are actually members of *Centris*.

The first treatment on the Neotropical bee species described by Giovanni Gribodo was published by Moure (1960) who provided notes and comments on the species proposed by him. However, the most important article is undoubtedly the catalogue of all taxa described by Gribodo published by Penati & Mariotti (2015). That publication includes a list for all published names, details on the type series, type locality and collector, present status based on literature, all data labels, relevant references and remarks.

The purpose of this article is to study taxonomically the species of *Centris* bees described by Gribodo. For this, their taxonomic status is evaluated, providing information on the condition and depository of the primary types used by him to describe each taxon.

Material and Methods

All labels are yellowish white (due the effect of time) and rectangular, and the data contained on them is black, handwritten or printed, unless otherwise indicated. The specific features of the labels, like coloration or type of writing are presented in squared brackets ([]). According to Penati & Mariotti (2015) the Gribodo's article published in 1891 was released on 27.ii.1892, and that of 1893 on 15.i.1894. Despite this information, I am citing the date that appears in Gribodo's papers. The copyright of the photographs belongs to the MSNG.

Results

Recognition of Gribodo's primary types of *Centris* bees

The primary types of the *Centris* bees described by Gribodo were recognized from their labels compared to the original descriptions, along with the information on the

species of Neotropical bees described by Gribodo published by Moure (1960) and the monograph on hymenopterous insects described by him published by Penati & Mariotti (2015). All the primary types here studied are housed in the MSNG.

Systematics

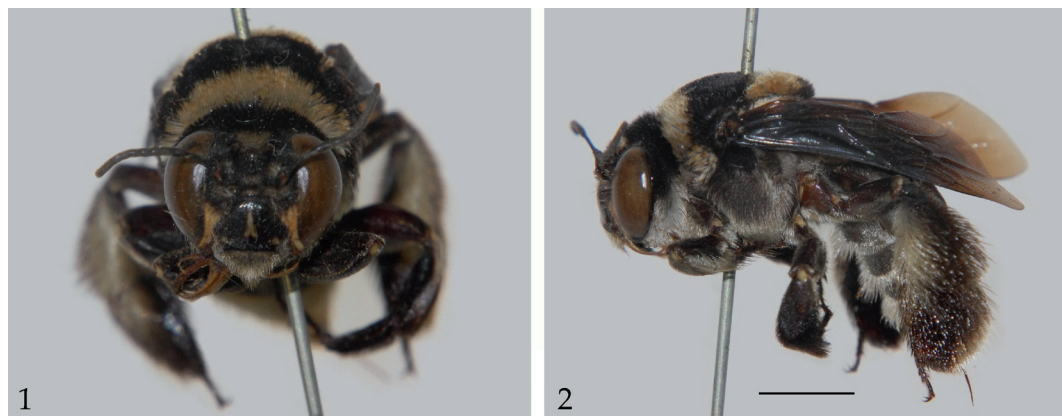
Genus *Centris* Fabricius, 1804
***Centris* (*Centris*) Fabricius, 1804**
***Centris citrotaeniata* Gribodo, 1893**
(Figs. 1, 2)

Centris citrotaeniata Gribodo, 1893a: 268, 269. Junior synonym of *C. flavifrons* (Fabricius, 1775) (Lutz & Cockerell 1920).

Type data. This species was described based on two females collected in Chiriqui, Panama. Moure (1960) mentioned he examined the holotype of this species, without indicating any feature that could help in recognize the specimen he studied. One of the syntypes was now studied being designated the lectotype of the species. The specimen has the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Chiriqui [handwritten] D [printed in green] \ *Centris citrotaeniata* Grib ♀ Tipo D. Gribodo [handwritten] (MSNG). The current depository of the paralectotype is unknown.

Type locality. Panama: Chiriqui province.

Comments. Moure *et al.* (2007) mentioned the existence of a holotype following Moure (1960). Friese (1901) wrote he received specimens from Chiriqui identified by Gribodo as *C. citrotaeniata* but they were of *C. flavifrons*. Despite this comment, he did not formally synonymize both species, which was done by Lutz & Cockerell (1920). In 1945, Moure proposed again the synonymy between those species. However, in 1960, he revalidated the name and in 1969 he treated it as a subspecies of *C. flavifrons*. Snelling (1984) commented on the taxonomy of *C. flavifrons*, citing *C. citrotaeniata* as a junior synonym of the former species. Photographs of both sexes of this species can be found in Vivallo & Zanella (2012).



Figures 1-2. *Centris citrotaeniata* Gribodo, 1893a (lectotype female). 1. Habitus, frontal view. 2. Habitus, lateral view. Scale: 5 mm.

Centris (Melanocentris) Friese, 1901
Centris proserpina Gribodo, 1891
(Figs. 3, 4)

Centris proserpina Gribodo, 1891: 111, 112. Junior synonym of *C. dorsata* Lepeletier, 1841 (Moure 1960).

Type data. Gribodo proposed this species based on a single female that he found in the collection of the French entomologist Félix Édouard Guérin-Méneville (1799-1874). The holotype has the following data label: *Centris* Bresil [handwritten] \ Coll. Guerin [handwritten] \ *Centris proserpina* Grib Tipo ♀ D. Gribodo. [handwritten] (MSNG).

Type locality. Brazil.

Comment. The type locality cannot be further narrowed down than to Brazil.



Figures 3-4. *Centris proserpina* Gribodo, 1891 (holotype female). 3. Habitus, frontal view. 4. Habitus, lateral view. Scale: 5 mm.

Centris quartinae Gribodo, 1891
(Figs. 5, 6)

Centris quartinae Gribodo, 1891: 110, 111. Junior synonym of *C. obsoleta* Lepeletier, 1841 (Moure *et al.* 2007).

Type data. This species was described based on four females collected in Mérida, northwest Venezuela. Moure (1960) cited a holotype and paratype housed at MSNG, providing a redescription of the former specimen. According to the International Code of Zoological Nomenclature (ICZN henceforth) Article number 74.6 this mention can be treated as a valid lectotype designation. The specimen has the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Merida [printed] D [printed in green] \ *Centris quartinae* Grib ♀ Tipo D. Gribodo [handwritten] (MSNG). The paralectotype has the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Merida [printed] D [printed in green] (MSNG). The current condition and depository of the remaining paralectotypes is unknown.

Type locality. Venezuela: Mérida state.

Comments. Gribodo (1891) named this species in homage to his late wife. According to Penati & Mariotti (2015) only three of the four females of the type series are present in Gribodo's collection. Friese (1901) suspected about the synonymy between *C. obsoleta* and *C. quartinae* based on specimens identified by Gribodo. In 1960, Moure considered both as valid species, but Moure *et al.* (2007) cited *C. quartinae* as junior synonym of *C. obsoleta*. Photographs of both sexes of this species can be found in Vivallo & Zanella (2012).



Figures 5-6. *Centris quartinae* Gribodo, 1891 (lectotype female). 5. Habitus, frontal view. 6. Habitus, lateral view. Scale: 5 mm.

Centris (Ptilocentris) Snelling, 1984
***Centris deiopieia* Gribodo, 1891**
(Figs. 7, 8)

Centris deiopieia Gribodo, 1891: 112, 113.

Type data. *Centris deiopieia* was described based on one female and eight males collected in Antioquia, northwest Colombia. In the description Gribodo referred primarily to the female specimen, mentioning the males for comparative purposes. This could be interpreted as the female being the primary type (holotype), although Gribodo did not explicitly indicate it. Apparently Moure (1960) followed the same reasoning, citing the female as the holotype and the males as paratypes. According to the ICZN Article number 74.6 this mention can be treated as a valid lectotype designation. The specimen has the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Antioquia [handwritten] D [printed in green] \ *Centris deiopieia* ♀ typus Grib. D. Gribodo [handwritten] (MSNG). Paralectotype male with the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Antioquia [handwritten] D [printed in green] \ *Centris deiopieia* ♀ typus Grib. D. Gribodo [handwritten] (MSNG). According to Penati & Mariotti (2015) only four males of the type series are still present in Gribodo's collection.

Type locality. Colombia: Antioquia department.

Comments. This is a rare and poorly known species. Nothing is known about its distribution range or bionomy.



Figures 7-8. *Centris deiopeia* Gribodo, 1891 (lectotype female). 7. Habitus, frontal view. 8. Habitus, lateral view. Scale: 5 mm.

Centris (Ptilotopus) Klug, 1810
***Centris denudans rubida* Gribodo, 1891**
(Figs. 9, 10)

Centris denudans var. *rubida* Gribodo, 1891: 111. Junior synonym of *C. dimidiata* (Olivier, 1789) (Vivallo 2016).

Type data. This variety of *C. denudans* Lepeletier, 1841 was proposed based on a single female specimen collected in Caracas, northern Venezuela. The holotype has the following data label: [light green label] Caracas. [handwritten] \ [light green label] *Centris denudans* Lep. var. *rubida* Grib ♀ D. Gribodo (MSNG).

Type locality. Venezuela: Distrito Federal: Caracas.

Comments. This species occurs only in northern South America, with distribution records in northern Brazil (Amazonas, Pará and Rondônia states), Suriname (Sipaliwini district) (Vivallo 2016), and Colombia (Casanare and Norte de Santander departments) (Vélez & Vivallo 2018). Photographs of both sexes can be found in Vivallo (2016).



Figures 9-10. *Centris denudans rubida* Gribodo, 1891 (holotype female). 9. Habitus, frontal view. 10. Habitus, lateral view. Scale: 5 mm.

Centris (Wagenknechtia) Moure, 1950
Centris plumigera (Gribodo, 1893)
 (Figs. 11, 12)

Anthophora plumigera Gribodo, 1893b: 391. Junior synonym of *C. muralis* Burmeister, 1876 (Moure 1960).

Type data. Gribodo described this species using a single female specimen that has the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Patagones [handwritten] D [printed in green] \ *Anthophora plumigera* Grib. Tipo ♀ D. Gribodo [handwritten] (MSNG).

Type locality. Argentina: Buenos Aires province: Carmen de Patagones ("Patagones").

Comments. Gribodo (1893) cited the type locality as "Punta Arenas (Tierra del Fuego)". However, in the label of the holotype is indicated Patagones. Punta Arenas is the most austral city of Chile, while Patagones (Carmen de Patagones) is in the Buenos Aires province in central east Argentina. According to Vivallo (2013) *Centris muralis* has never been recorded in Chile, only in Argentina, thus the information of the original description must be erroneous. This is also de case for *Anthophora virgo* (see below). Photographs of both sexes can be found in Vivallo (2013).



Figures 11-12. *Anthophora plumigera* Gribodo, 1893b (holotype female). 11. Habitus, frontal view. 12. Habitus, lateral view. Scale: 5 mm.

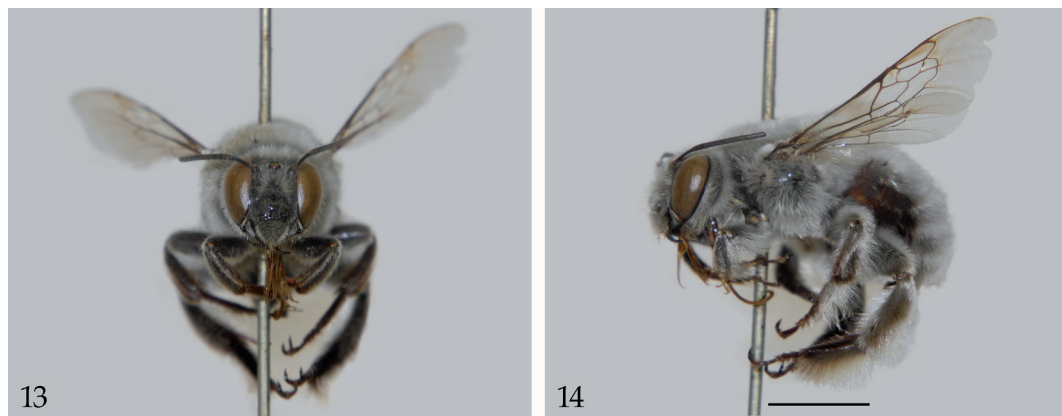
Centris virgo (Gribodo, 1893)
 (Figs. 13, 14)

Anthophora virgo Gribodo, 1893b: 390. Junior synonym of *C. muralis* Burmeister, 1876 (Moure 1960).

Type data. This species was described based on a single male specimen that bears the following data label: [light green label with green rim] Coll. Gribodo [printed in green] Patagones [handwritten] D [printed in green] \ *Anthophora virgo* Grib. Tipo ♂ D. Gribodo [handwritten] (MSNG).

Type locality. Argentina: Buenos Aires province: Carmen de Patagones ("Patagones").

Comment. Same as commented on *C. plumigera*.



Figures 13-14. *Anthophora virgo* Gribodo, 1893b (holotype male). 13. Habitus, frontal view. 14. Habitus, lateral view. Scale: 5 mm.

Discussion

Six of the seven taxa described by Gribodo in the genus *Centris* are junior synonyms, being *C. (Ptilocentris) deiopaea* the only currently considered valid. As mentioned before, this is a very rare species hard to find in collections. Despite Gribodo did not mention any additional information about the type locality, the type series of this species was probably collected in a mountainous area in the Colombian Andes because the species of *C. (Ptilocentris)* are distributed exclusively in high altitudes, from Mexico to Peru (Moure *et al.* 2007).

The descriptions made by Gribodo are in general quite complete, except for *C. denudans* var. *rubida* making relatively easy to recognize the species that he proposed. All primary types, except of *C. proserpina*, are in excellent condition which demonstrates the care that Gribodo had with his specimens, as well as the good work made by the subsequent curators of Gribodo's collection.

Acknowledgments

I thank Maria Tavano (MSNG) for taking the images of the primary types and the anonymous reviewers for their help. Financial support was provided by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq, grant 444320/2014-8), Brazil. This paper is part of the SIGMA project N°21565 MN/UFRJ and contribution number 37/49 from the HYMN.

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