On the identity of *Melipona torrida* Friese (Hymenoptera, Apidae)

Gabriel A. R. Melo

1Laboratório de Biologia Comparada de Hymenoptera, Departamento de Zoologia, Universidade Federal do Paraná. Caixa Postal 19020, 81531-980 Curitiba-PR, Brazil. garmelo@ufpr.br

**ABSTRACT.** On the identity of *Melipona torrida* Friese (Hymenoptera, Apidae). *Melipona marginata* var. *torrida* Friese, 1916, described from three workers putatively collected in Costa Rica, never had its identity properly recognized. Since its original description, no additional specimens have ever been collected in Costa Rica. It is argued here that *Melipona torrida* was based on mislabeled specimens and corresponds to *Melipona marginata obscurior* Moure, 1971, a form known only from southern Brazil, Argentina and Paraguay. A lectotype is designated for *Melipona torrida* and notes on the type material of *Melipona marginata obscurior* are provided. Other known examples of species described from mislabeled specimens in Friese’s *Zur Bienenfauna von Costa Rica* are discussed. It is pointed out that additional names proposed in this work, based on material from Costa Rica, might turn out to correspond to South American taxa. Also, the date of publication of this Friese’s paper is discussed.

**KEYWORDS.** Insecta; Meliponini; Neotropical; taxonomy.

Despite its importance in basic studies on bee biology, the genus *Melipona* still lacks a modern revisionary treatment of its constituent species. Schwarz’s (1932) revision is long outdated and only isolated contributions have been published after his monograph. Among the 74 species currently treated as valid in *Melipona* (Camargo & Pedro 2012), there are a few names that apply to taxa with doubtful identity. *Melipona torrida*, proposed by Friese (1916) as a variety of *M. marginata* Lepeletier, 1836, was described based on three workers putatively collected in Costa Rica. After its original description this species has not been found again in Costa Rica. Despite the uncertainties involving it, *M. torrida* continued to be considered as belonging to the fauna of Central America (e.g. Roubik 1992; Camargo & Pedro 2007, 2012) and never had its identity reevaluated by previous authors. It is argued here that *Melipona torrida* was based on mislabeled specimens and corresponds to the form from southern Brazil, Argentina and Paraguay described by Moure (1971) as *Melipona marginata obscurior*.

**Melipona torrida** Friese, 1916


Study of the lectotype of *Melipona torrida* (Figs. 1–4), deposited in the Museum für Naturkunde (ZMB), and of another worker, deposited at the American Museum of Natural History (AMNH) (Figs. 5–6), revealed that this species corresponds to a form known to occur only in southern Brazil (Mato Grosso do Sul, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul), northern Argentina (Misiones) and Paraguay (Caaguazu). This form had been described previously by Moure (1971) as *Melipona marginata obscurior*, here treated as junior synonym of *M. torrida*. Indeed, Moure (1971:195) called attention to the close resemblance between his new form and *M. torrida*, and that despite their parallelism in color and structure they should not be treated as the same entity, taking into consideration their supposedly widely disjunct distributions. Moure (1971) also stated that he had not directly examined any specimen of *M. torrida* and that his comparisons were based on Schwarz’s (1932) revision.

Considering that no additional specimens of *M. torrida* have ever been collected in Costa Rica, despite intensive collecting during the recent decades, the most likely hypothesis is that the material studied by Friese has been mislabeled. A similar case was argued recently by Gonzalez & Griswold (2011) who also found out that *Michanthidium albitarsete*, described from San José, Costa Rica by Friese (1916), corresponds to a species found only in southern Brazil and northern Argentina (Misiones). This anthidion bee also occurs in Paraguay (new record: one male, in DZUP, from Cordillera, Piribeuy, 25°32’S 57°03’W, 3-8.ii.1996, B. Garcete). A third known case of mislabeled specimens involves the type series of Friese’s (1916) *Parapsaenithia flavescens*, described from San José, Costa Rica and from Villarrica, Paraguay. It is a junior synonym of *Eulonchopria psaeynithioides* Brèthes, 1909, a species found only in southern South America (Moure et al. 2007).

These three known cases of species described by Friese (1916) from mislabeled specimens all involve material supposedly collected in San José, Costa Rica, by Schmidt (likely Heinrich Julius Schmidt; C. Rasmussen, pers. comm.). Among the 105 new taxa proposed by Friese (1916), 80 have as type locality either only San José (62 taxa) or this Costa Rican locality plus other places (18 taxa), including a few...
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Taking into account that the species involved in the three cases mentioned here all occur in Paraguay, it seems likely that part of the specimens obtained from that country (collected by Schrottky and Burgdorf) might have received wrong labels from San José. Material from both Schmidt and Burgdorf was sold through natural history dealer Alexander Heyne, in Berlin, and the mislabeling could have happened there or after reaching Friese (C. Rasmussen, pers. comm.). It is possible that additional names proposed by Friese (1916), based on material from Costa Rica, will turn out to correspond to South American taxa.

Regarding the status of *M. torrida*, whether or not it should be given species status separate from *M. marginata* proper is a matter that needs further investigation. Only three species of *Melipona* occur in the southern portion of the Atlantic forest, including the inland forests of the Parana river basin. The southern populations of all three species exhibit differences from their northern counterparts and have traditionally been treated as separate subspecies: *M. quadrifasciata quadrifasciata* Lepeletier, 1836, *M. bicolor schencki* Gribodo, 1893 and *M. marginata obscurior*. Camargo & Pedro (2007) raised Moure’s subspecies to species status, but maintained the other two taxa as subspecies. The morphological differences between *M. marginata* s.str. and *M. torrida* are relatively subtle, with *M. torrida* lacking yellow marks in the mesoscutum, axilla and scutellum and possessing longer pubescence on the terga, most notably in the tergum 2 (see detailed comparison in Moure (1971)). Moure (1971), however, calls attention to intermediate specimens between the two forms, an indication that they might hybridize in their contact zone. Hybridization zones have been documented between the different forms of *M. quadrifasciata* (Batalha-Filho et al. 2009).

**Examined material.** One of the syntype workers of *Melipona marginata* var. *torrida* is deposited in the ZMB collection and was examined through photographs (Figs. 1–4)

(images courtesy of Volker Lohrmann). It bears the labels “Costa Rica/San José”, “M. marginata/v. torrida [worker symbol] 1915 Friese det. Fr.”, “Type” (Fig. 4) and it is here designated as lectotype.

Another specimen attributed to this taxon, deposited in the AMNH collection, was also examined through photographs (Figs. 5–8). This is one of the two specimens studied by Schwarz (1932:437). Judging from the labels, it apparently cannot be considered as part of the type series. Schwarz mentions a second specimen, according to him bearing a type label, which currently is apparently missing from the AMNH collection (H. Go, pers. comm.).

The type material of *Melipona marginata obscurior* deposited in the collection of the Department of Zoology of the Universidade Federal do Paraná (DZUP) is represented by the worker holotype, 11 worker paratypes and the male allotype. The specimen labeled as holotype by Moure (Figs. 9–12), the allotype and nine paratypes are from Nova Teutônia, and not from Curitiba, as stated in the publication. The other two worker paratypes are from Puerto Iguazu, in Misiones, Argentina. This discrepancy could be attributed to a lapsus by Moure, considering the relatively long time elapsed between the labeling of the specimens (1962) and the publication of the description (1971). Alternatively, he might have changed his mind and decided to choose specimens from Curitiba to serve as type material. However, no specimens from Curitiba have been found either in Moure’s work collection or in DZUP’s main collection. According to Art. 72.4.1.1 of ICZN’s 4th edition (see also Art. 73.1.2), “For a nominal species or subspecies established before 2000, any evidence, published or unpublished, may be taken into account to determine what specimens constitute the type series.” Therefore, the material mentioned here is considered the true type series of *Melipona marginata obscurior*.

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REFERENCES


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Appendix. On the date of publication of Friese’s *Zur Bienenfauna von Costa Rica*.

Friese’s article *Zur Bienenfauna von Costa Rica* appeared in the second issue (Heft II) of volume 77 of the journal *Stettiner Entomologische Zeitung*. This volume corresponds to the year 1916, and the article in question has traditionally been referred under this date of publication. Apparently Moure & Hurd (1987), in their catalog of the New World halictine bees, were the first bee systematists to consider Friese’s paper as dating from 1917, instead of 1916. There is no indication in their work justifying this change, but it is possible that they might have taken into consideration the issuing date, March 1st, 1917, printed on page 373, the last numbered page of the issue. A digitalized version of this issue is available at the Biodiversity Heritage Library. This revised publication date has been adopted by some subsequent authors, as for example Rasmussen & Ascher (2008) and Gonzalez & Griswold (2011). However, I want to argue here that Friese’s paper might have been distributed earlier as a reprint, perhaps still in 1916.

In one of Moure’s bound volumes containing papers by Friese, there is what could be considered a reprint of Friese’s *Zur Bienenfauna von Costa Rica*. Its last two pages, numbered 349 and 350, contain an index to Friese’s paper (Fig. A1). In the published issue, however, page 349 is the first page of the article that follows Friese’s paper (Fig. A2), while the index to Friese’s paper appears in the last two pages of the issue (Fig. A3). This discrepancy in pagination between the putative reprint and the published issue suggests that separates of Friese’s paper were produced ahead of the production of the entire issue. The inclusion of the index to Friese’s paper at the end of the published issue indicates that the error was detected before the issue went to the printer, allowing for correction of the mistake. It should also be pointed out that the index to Friese’s paper was listed in the table of contents (on page 365) of the entire volume 77. Considering that Friese described 105 new taxa in this paper, its date of publication is a matter of great importance and should be investigated in more detail by someone with access to correspondence and documents that might have survived from that period.