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Homocopris Burmeister, 1846 (Coleoptera: Scarabaeidae):
lectotype designation for *Copris torulosus*
Eschscholtz, 1822, and correction on the geographic
distribution of the two Chilean species

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Homocopris Burmeister, 1846 (Coleoptera: Scarabaeidae):
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Abstract. *Homocopris* Burmeister, 1846 (Coleoptera: Scarabaeidae) is a small genus of South American dung beetles composed of four species distributed in Argentina, Brazil, and Chile. Recently, a neotype was designated for *Copris torulosus* Eschscholtz, 1822 (currently *H. torulosus*) based on the assumption that the original type series had been lost. However, this designation is invalid for failing to comply with articles 75.2, 75.3, 75.3.1, and 75.3.4. of the International Code of Zoological Nomenclature. Furthermore, even if it had been nomenclaturally valid, the neotype now loses its type status because we found a syntype in the material of the Johann Friedrich Eschscholtz collection, preserved in the collection of Zoological Museum, Moscow Lomonosov State University, Moscow, Russia. We present evidence supporting the recognition of this specimen as a syntype and **newly designate it as the lectotype**. Photographs of the lectotype and its labels are provided. Additionally, the geographic distributions of *H. punctatissimus* (Curtis, 1844) and *H. torulosus* (Eschscholtz, 1822) in Chile are corrected.

Key words. Dung beetles, Homocoprini, nomenclature, syntypes.

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Introduction

Homocopris Burmeister, 1846 (Coleoptera: Scarabaeidae: Scarabaeinae) is a small genus of South American dung beetles recently placed in the tribe Homocoprini. It contains four described species, two of them distributed in the Andes of Argentina and Chile and two species endemic to the montane Atlantic Forest in southeast and south Brazil (Génier and Darling 2024).

This taxon was recently revised by Génier and Darling (2024), and a neotype was designated for the name *Copris torulosus* Eschscholtz, 1822, the type species of *Homocopris*. However, this designation is invalid because it fails to comply with articles 75.2, 75.3, 75.3.1, and 75.3.4. of the International Code of Zoological Nomenclature (ICZN 1999) and because a syntype was located in the Zoological Museum, Moscow Lomonosov State University, Moscow, Russia (ZMUM), the collection that houses most of the type series of the species described by Eschscholtz (Horn et al. 1990). Consequently, a lectotype is designated from the syntype housed at ZMUM. The lectotype designation is necessary to clarify the correct application of the name.

Materials and Methods

Specimen. A female syntype was found in the entomological collection of the Zoological Museum, Moscow Lomonosov State University, Moscow, Russia (ZMUM) by the curator A.A. Gusakov in response to a request from the second author (FZVM) as part of the latter's studies of the New World scarabaeine types housed in European museums (see Vaz-de-Mello and Cupello (2018) for more details). Photographs of the specimen and its labels were forwarded to FZVM and subsequently shared with the first author. Our results are based on the examination of these images.

Recognition and designation of the type specimen. In order to provide nomenclatural stability, the lectotype of *Copris torulosus* is designated in accordance with article 72 of the International Code of Zoological Nomenclature (ICZN 1999). This preserves current usage, as the lectotype belongs to the species called *Homocopris torulosus* in recent literature (Mondaca 2023; Génier and Darling 2024).

Eschscholtz (1822) expressly mentioned the examination of multiple specimens for the original description of *C. torulosus*: “The three specimens I have seen are all identical. I can't decide if it belongs to a male (or maybe a female?), since I don't know any external distinguishing features of *Copris*” (translated from German). The inability of Eschscholtz to differentiate the sex of the three specimens studied is probably because all of them were females since the males of this species have an evident clypeal-frontal horn, an anterior pronotal depression and an elevated ridge with a set of tubercles varying in size.

In the absence of a holotype designation or any equivalent fixation of a single specimen as the name-bearing type, these three specimens referred to by the author are the syntypes of *C. torulosus*.

Based on label data and writing style, we are confident that the female specimen examined is one of the Eschscholtz syntypes and fully valid for designation as the lectotype. The design and size of the original label carried by the lectotype coincide perfectly with those carried by other Chilean Scarabaeoidea type specimens described and labeled by the author (i.e., *Trox brevicollis* Eschscholtz, 1822, *Melolontha palpalis* Eschscholtz, 1822 and *Megathopa villosa* Eschscholtz, 1822; Fig. 4–9).

Verbatim label data are given below in quotation marks (“ ”). A single slash (/) indicates a break between lines on the same label, and lowercase letters (a, b) indicate different labels. Text in brackets [] provides additional explanations that are not part of the label.

The photos of the syntypes of *C. torulosus* and *M. villosa* are by K.V. Makarov and those of the lectotypes of *M. palpalis* and *T. brevicollis* are by A.B.T. Smith.

Results

Homocopris torulosus (Eschscholtz, 1822)

(Fig. 1–3)

Copris torulosa Eschscholtz 1822: 29 (original combination). Type locality: “Chili, Conception.”

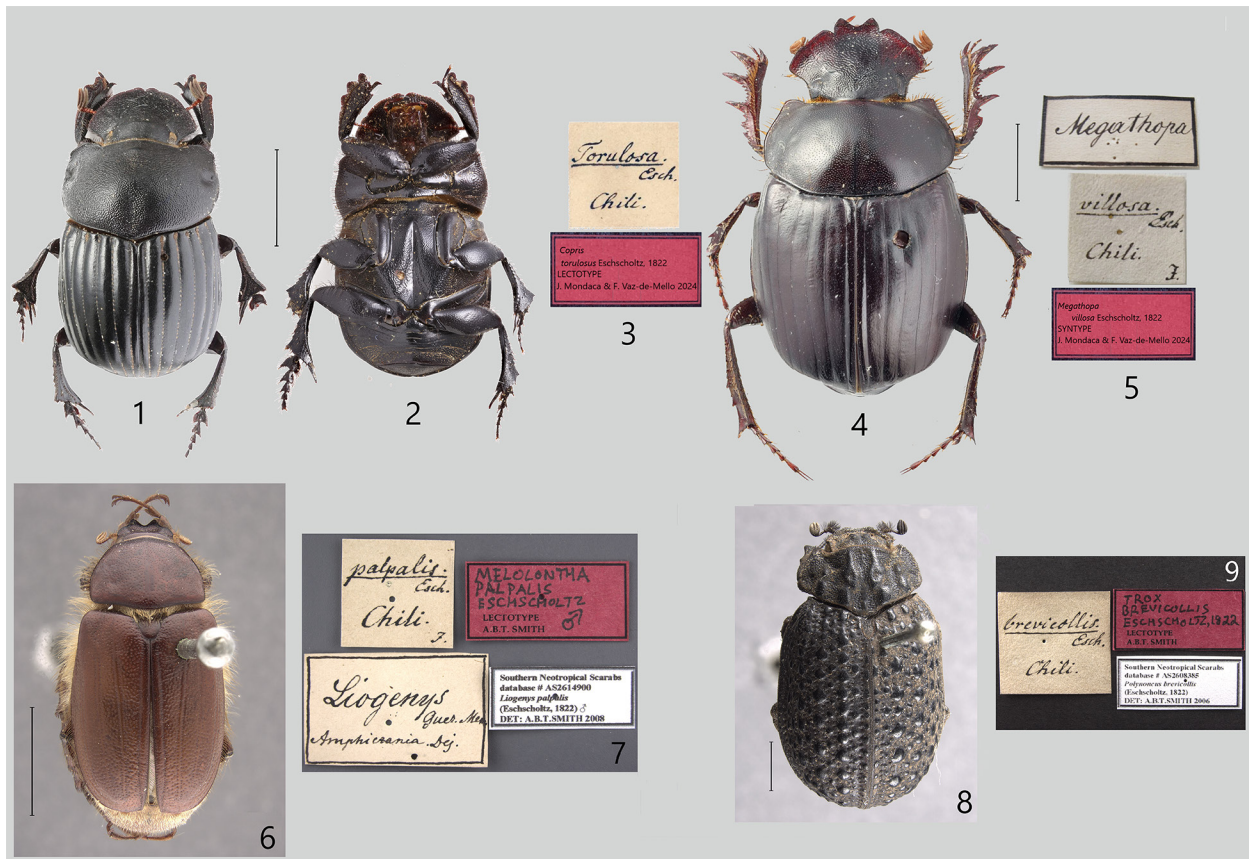
Copris valdivianus Philippi 1859: 661 (junior subjective synonym)

Pinotus torulosus var. *minor* Luederwaldt 1925: 68 (junior subjective synonym)

Pinotus dahli Landin 1955: 5 (junior subjective synonym)

Type material examined. Lectotype female (**here designed**) at ZMUM [examined through photographs], labeled as (Fig. 1–3): a) “*Torulosa*. / *Esch.* / Chili.” [handwritten], b). “*Copris / torulosus* Eschscholtz, 1822 / LECTOTYPE / J. Mondaca & F. Vaz-de-Mello 2024” [typeset, red label, double black margin] (ZMUM).

Remarks. The lectotype of *C. torulosus* is the only specimen in the ZMUM collection whose labels (see Fig. 3 up) relate to the original Eschscholtz specimens (curator Aleksey A. Gusakov, pers. comm.). The whereabouts of the other two original syntypes and their sex are unknown. Horn et al. (1990) mentioned that part of Eschscholtz's collection was divided and ended up in the Dorpat Museum (Estonia) and Helsinki Museum (Finland), the latter via the Mannerheim collection. Another part went to Berlin (Germany) and St. Petersburg (Russia); according to Papavero (1971: 52), the specimens collected during the Russian Rurick expedition were split between these two museums.



Figures 1–9. Eschscholtz primary types. 1–3) *Copris torulosus* Eschscholtz, female lectotype. 1) Dorsal view. 2) Ventral view. 3) Lectotype labels. Scale: 5.0 mm. 4–5) *Megathopa villosa* Eschscholtz. 4) Male syntype, dorsal view. 5) Syntype labels. Scale: 5.0 mm. 6–7) *Melolontha palpalis* Eschscholtz. 6) Male lectotype, dorsal view. 7) Lectotype labels. Scale: 5.0 mm. 8–9) *Trox brevicollis* Eschscholtz. 8) Lectotype, dorsal view. 9) Lectotype labels. Scale: 2.0 mm.

The first author searched for the other two syntypes without success in the collections of the Finnish Museum of Natural History, Helsinki, Finland (via Conrad Gillett) and at the Zoological Institute of the Russian Academy of Science, St. Peterburg, Russia (via Andrey Frolov). It is unknown whether these specimens are present in the collections of the Dorpat or Berlin Museum.

The original labels of the Eschscholtz types are unique and characteristic due to their square shape, the names of the species are written in handwriting and underlined, and the surname of the descriptor appears abbreviated. In these, only the country of collection is indicated and not the specific location mentioned in the original description (see Fig. 3, 5, 7, 9). This mismatch between the specimen and the original description does not affect the individualization and designation of the specimen bearing the name.

Discussion

Génier and Darling (2024) revised the genus *Homocopris* and designated a neotype for the species-group name *C. torulosus*. However, these authors apparently were not aware that the majority of the specimens studied by Eschscholtz are preserved in the ZMUM collection. Also, there is no evidence that the neotype selected by them agrees with what is known of the name-bearing type and the type locality mentioned in the original description (Concepción, Chile). Based on the non-compliance with articles 75.2, 75.3, 75.3.1, and 75.3.4 (ICZN 1999),

and because a syntype specimen of this species was located in the ZMUM collection, we invalidate the neotype designation.

We examined photographs of one of the three specimens from the original type series and we confirm that it belongs to the species named *H. torulosus* in the recent literature (Mondaca 2023; Génier and Darling 2024). The arrow-shaped metaventral depression, extending into the anterior portion of the median metaventral lobe almost reaching the anterior margin, is a characteristic that is diagnostic for this species (Fig. 2). We designate the lectotype so there is a single, name-bearing specimen. None of these actions change the nomenclature currently in usage for the species of *Homocopris*.

Distribution of *Homocopris* species in Chile. *Homocopris punctatissimus* and *H. torulosus* are two species of dung beetles that inhabit only southern South America. *Homocopris punctatissimus* is endemic to Chile and inhabits the regions of La Araucanía and Los Lagos. *Homocopris torulosus* has a broader distribution, living in Argentina and Chile. In Chile, *H. torulosus* is distributed further north in the country, occupying open areas near forests (native and introduced) and grasslands (natural and anthropized) located between the Maule and Los Lagos regions (Mondaca 2023). The localities in the center of the country in Santiago (Santiago Metropolitan Region) and Valparaíso (Valparaíso Region) given by Génier and Darling (2024) for both taxa are erroneous and should be removed from the known distribution for these two species because they are based on mislabeled specimens. These localities are far from the rest of the known distribution area for these species, and actually, are not suitable for the survival of *Homocopris* populations. This is mainly due to the drastic modification of the natural landscape as a result of urban development, agricultural exploitation, the indiscriminate use of pesticides, the absence of natural grasslands, lower winter rainfall and low soil humidity during the summer, in addition to the poor availability of manure due to the absence of large native mammals and scarce presence of livestock.

The northernmost species of *Homocopris* in Chile is *H. torulosus*, whose northern limit of distribution is the locality of El Coigo, Curicó in the Maule Region. The locality of Concepción, also given by Génier and Darling (2024) for *H. punctatissimus*, is doubtful and must be confirmed through future collections.

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