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A new genus and species in the diverse dung beetle tribe Onthophagini Streubel, 1846 (Scarabaeidae: Scarabaeinae) from South Africa

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Abstract

A new dung beetle genus and species is described and pictured following its recent discovery on a farm in South Africa. *Hathor spinosa* Deschodt, new species belongs to the subfamily Scarabaeinae, tribe Onthophagini Streubel, 1846, it shows a unique set of characters. A map is provided to show the type locality of the new genus and species that has a putative association with ants.

Key words: Putative ant association, dung beetle, Afrotropical region

Introduction

The dung beetle tribe Onthophagini Streubel, 1846 is by far the most species-rich of all the 19 recognised tribes in the subfamily Scarabaeinae, currently comprising 42 valid genera and 2942 valid species names worldwide (Schoolmeesters 2023). The species have radiated across the Afrotropical region into parts of the Palaearctic, Oriental, Neotropical, and Australian regions (Davis *et al*. 2008; Breeschoten *et al*. 2016). They are known to occur globally in all the biomes with specialisation or opportunistic feeding recorded from different food types such as dung (numerous Onthophagini species) (Davis 1994), mushroom (e.g., *Onthophagus kumbaingeri* Matthews, 1972) (Ebert *et al*. 2019), fruit (e.g., *Onthophagus callosipennis* Boucomont, 1930) (Moretto 2010), carrion (e.g., some *Onthophagus* (Cambefort 1991; Krell *et al*. 2003) and *Proagoderus* Lansberge, 1883 species, personal observations) and *Amietina* Cambefort, 1981 (Moretto, personal communication)) and ant-association (*Stiptopodius* Harold, 1871, *Caccobiomorphus* Balthasar, 1964, *Walterantus* Cambefort, 1977 and *Amietina* Cambefort, 1981) (Davis *et al*. 2008). Morphologically, Onthophagini genera are mainly separated by a combination of the following characters: eight vs. nine antennal segments; three versus four external teeth on the protibia; distal margin of the protibia slanted or truncated; body shape oval and round or very elongate and rectangular; whether the first article of the metatarsi is fairly similar or dissimilar to the first article of the mesotarsi; the position of the clypeal ridges / carinas and the shape of the prothorax.

Recently, while hiking on a gravel farm road, a peculiar *Onthophagus*-like specimen was collected walking amongst the widespread ant species *Anoplolepis custodiens* (Smith, 1858). The specimen clearly belongs in the tribe Onthophagini and has four (although the fourth is reduced) teeth on the outside of front the tibia, and the distal margin of the front legs are slanted toward the inner angle. Superficially this would classify the beetle as belonging to the genus *Onthophagus* Latreille, 1802. However, this specimen has only eight antennal segments. There is a small group of *Onthophagus* species known in d'Orbigny's 17th "African" group (d'Orbigny 1913) that has eight antennal segments, but this specimen does not share any other characters like the strange anteromedian process on the pronotum and the uniquely shaped horn on the head with that group (Moretto, personal communication). Superficially it also resembles specimens from the subgenus *Furconthophagus* Zunino, 1979 with characters like the straight prothoracic carina and the fact that there are horns on the clypeus, but at closer inspection it does not resemble *Furconthophagus*. Therefore, we propose this specimen as a new genus and species in the Scarabaeinae tribe Onthophagini.

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It is both surprising and exiting to find a new genus of dung beetle that possibly has an inquiline habit associated with ants. We hope this paper will prompt other Scarabaeologists in Southern Africa to explore this relatively unknown field with more intensity.

Material and Methods

The type specimen is deposited in the Ditsong National Museum of Natural History, Pretoria, South Africa (TMSA). The colour images for the body were made using a Canon 760D camera body mounted with a Canon MPE 65 mm macro lens and a Canon 1.4x extender while the pictures for the antennae were made using a Leica M205C stereo microscope. Image stacking for all pictures was done using the Helicon remote and Helicon focus software packages. Label data is reported verbatim. Separate lines within the label are indicated by a single vertical bar '|'.

Quite extensive searching by examining ant nests and using cattle dung baited pitfalls in the area of the original collection has been conducted, but unfortunately no further specimens have been collected. As this genus is quite distinct in the tribe, we deemed it unnecessary to make a morphological character analysis and for the same reason we decided that it is acceptable to describe the new genus from a single female specimen. The characters described below are considered adequate to distinguish the new genus from any other.

Taxonomy

Hathor Deschodt, new genus

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Figures 1A–D, 2A, 3

Type species: *Hathor spinosa* Deschodt, new species.

Diagnosis. This new genus clearly belongs to the tribe Onthophagini by virtue of the following characters: scutellum not visible from above; body small and convex; short meso and metalegs second article of the labial palps longer than the first. It can be separated from all other Onthophagini genera by the following combination of characters: Antennae with eight segments; protibiae with four external teeth, fourth tooth reduced; distal margin of protibiae slanted and not obtuse. *Hathor* Deschodt, new genus shares some affinities with another known ant associated genus, *Amietina* Cambefort, 1981, as regards the eight antennal segments and oval body shape, but the ends of the front tibiae are truncated in *Amietina* while it also has only three teeth on the outside of the front tibiae. *Hathor* Deschodt, new genus also shares some superficial affinities with other onthophagine species form the subgenus *Furconthophagus* (Fig. 2B) by virtue of the pronotal shape, the vertical prothoracic carina and having horns on the head. However, the different shaped horns and stockier legs and tarsi easily distinguish *Hathor* Deschodt, new genus from *Furconthophagus*.

Description. Female. *Body*: Black, shiny, oval, small, 4.8mm long with head extended forward and 3.0mm at the widest area over the elytra. *Head*: Antennae eight segmented; clypeus extended and narrowing anteriorly, punctate with associated setae; frontoclypeal suture distinct medially, effaced at the sides, curving anteriorly; vertex with distinct horns (Fig. 1D). *Prothorax*: Punctate on horizontal surface with short associated setae; lateral vertical surface with small granules and short associated setae; anterior vertical surface smooth; triangular spine-like process present anteromedially. Ventrally the prothoracic carina is straight. *Elytra*: Surface of interstriae shagreened and with regular punctures; seventh interstriae clearly narrowed anteriorly to accommodate the markedly widened eighth interstriae. *Protibiae*: With four teeth on outside, fourth tooth reduced; ending at a slanted angle. *Mesosternum*: Punctate and very narrow medially. *Metasternum*: Surface smooth; punctate. *Abdomen*: surface smooth with short setae.

Male. Unknown.

Etymology. Hathor was a principal deity in ancient Egyptian faith for music, dance, joy, love, sexuality, and maternal care. She was often portrayed as a woman wearing a headdress of cow horns. The clypeal armour of this new genus superficially resembles those horns. The generic name is feminine.

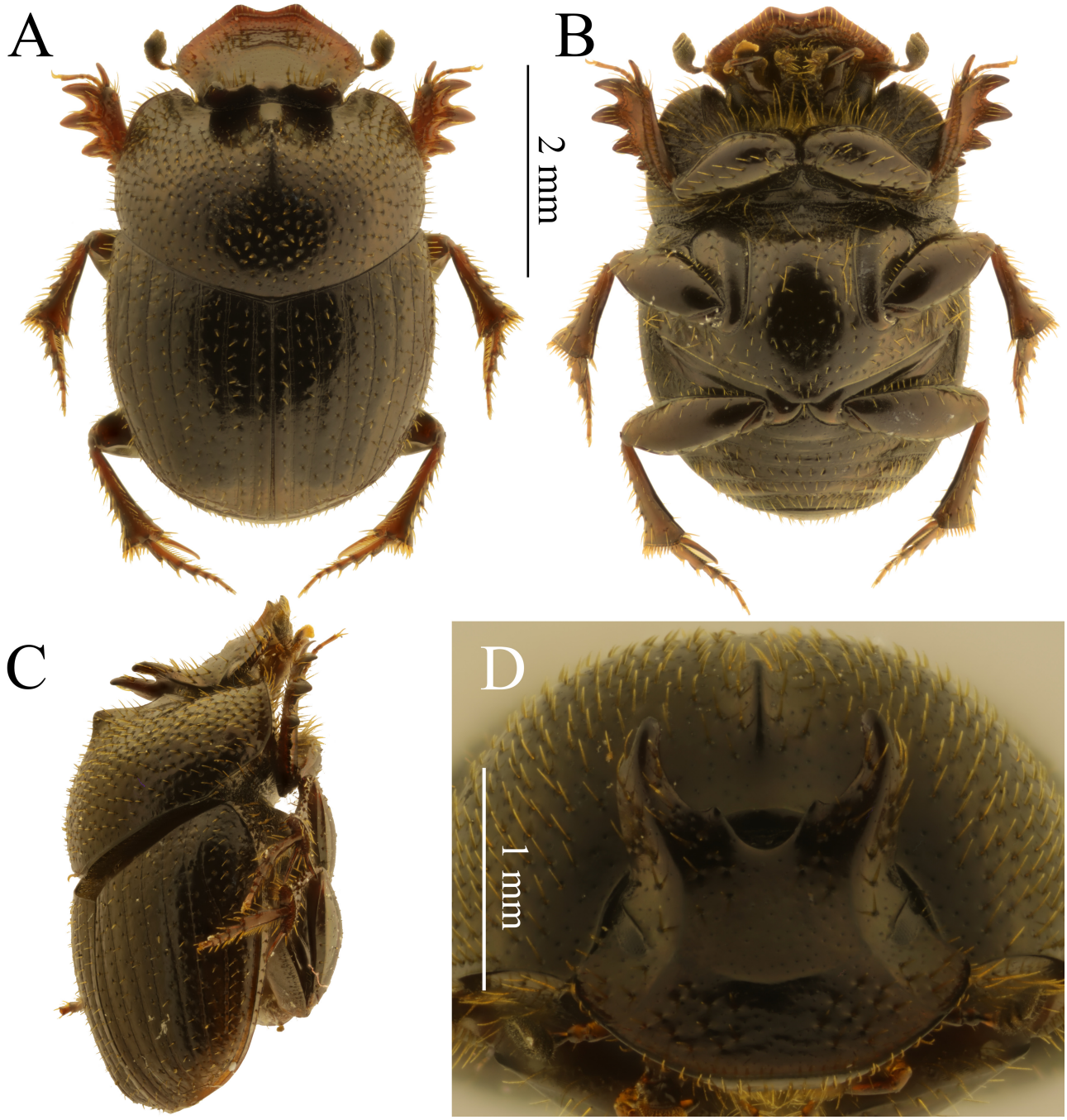

FIGURE 1. *Hathor spinosa* Deschodt, new genus and species. (A) habitus in dorsal view showing the reduced fourth denticle of the protibiae; (B) habitus in ventral view; (C) habitus in lateral view showing the spine on the pronotum and; (D) frontal view showing the characteristic horns on the vertex and the triangular spine-like process situated anteromedially on the prothorax.

Remarks. The type specimen was collected walking amongst the ant species *Anoplolepis custodiens* with no dung present in the vicinity. Possession of eight antennal segments usually characterizes an ant-associated inquiline lifestyle (Davis *et al*. 2008) and as suggested by the field observations some association with those ants is anticipated.

***Hathor spinosa* Deschodt, new species**
Figures 1A–D, 2A, 3

Type material. Holotype, female: Schurveberg | -25.768° 27.964° | 07.i.2023 | C. Deschodt (TMSA).

Description of the holotype (female): *Head*: (Fig. 1A, C and D and 2A) Clypeus extended and narrowing anteriorly, upturned at end, shallowly sinuate; anterior surface of frontoclypeal suture smooth and punctate with associated setae; frontoclypeal suture distinct medially, effaced at the sides, curving anteriorly; vertex with distinct and setate horns. *Prothorax*: Dorsal surface punctate with short associated setae; lateral surface with small granules and short associated setae; anterior vertical surface smooth, prothoracic carina straight.; triangular spine-like process present medially. *Legs*: Protibiae with four teeth on outside, fourth tooth reduced, small denticle present between second and third teeth and between third and fourth teeth; tibiae ending at a slanted angle; first article of the protarsus longer than the next three combined, last protarsus almost as long as the previous three segments combined; meso and metalegs widening distally. *Venter*. (Fig. 1B) Mesometasternal suture distinct and very slightly sinuate; mesosternum narrow, punctate with small punctures that are closer together than their diameters; metasternum surface smooth with small punctures that are about three times their diameters apart. *Abdomen*: surface of ventrites smooth with short setae. *Pygidium*: Surface smooth with medium punctures about one puncture diameter apart; punctures with thin associated setae.

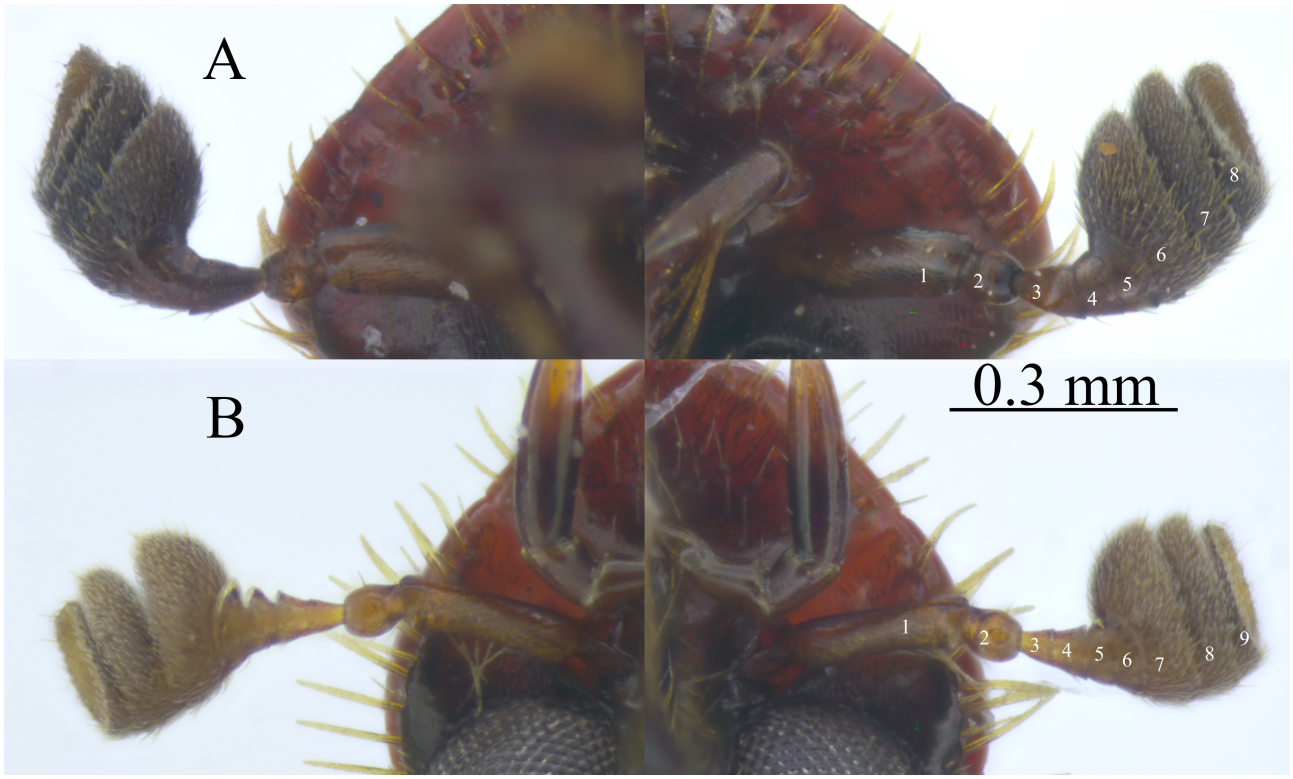

FIGURE 2. Head in ventral view and number of antennal segments. (A) *Hathor spinosa* Deschodt, new genus and species with eight segments; (B) *Onthophagus suffuses* Klug, 1855 with nine segments.

Etymology. The specific epithet is feminine in gender and refers to the triangular spine-like process that is seen on the front of the prothorax.

Remarks. As it was found in putative association with the very widespread and commonly found ant species *Anoplolepis custodiens*, the potential distribution of *Hathor spinosa* Deschodt, new genus and species might be most of Southern Africa and further to the north east.

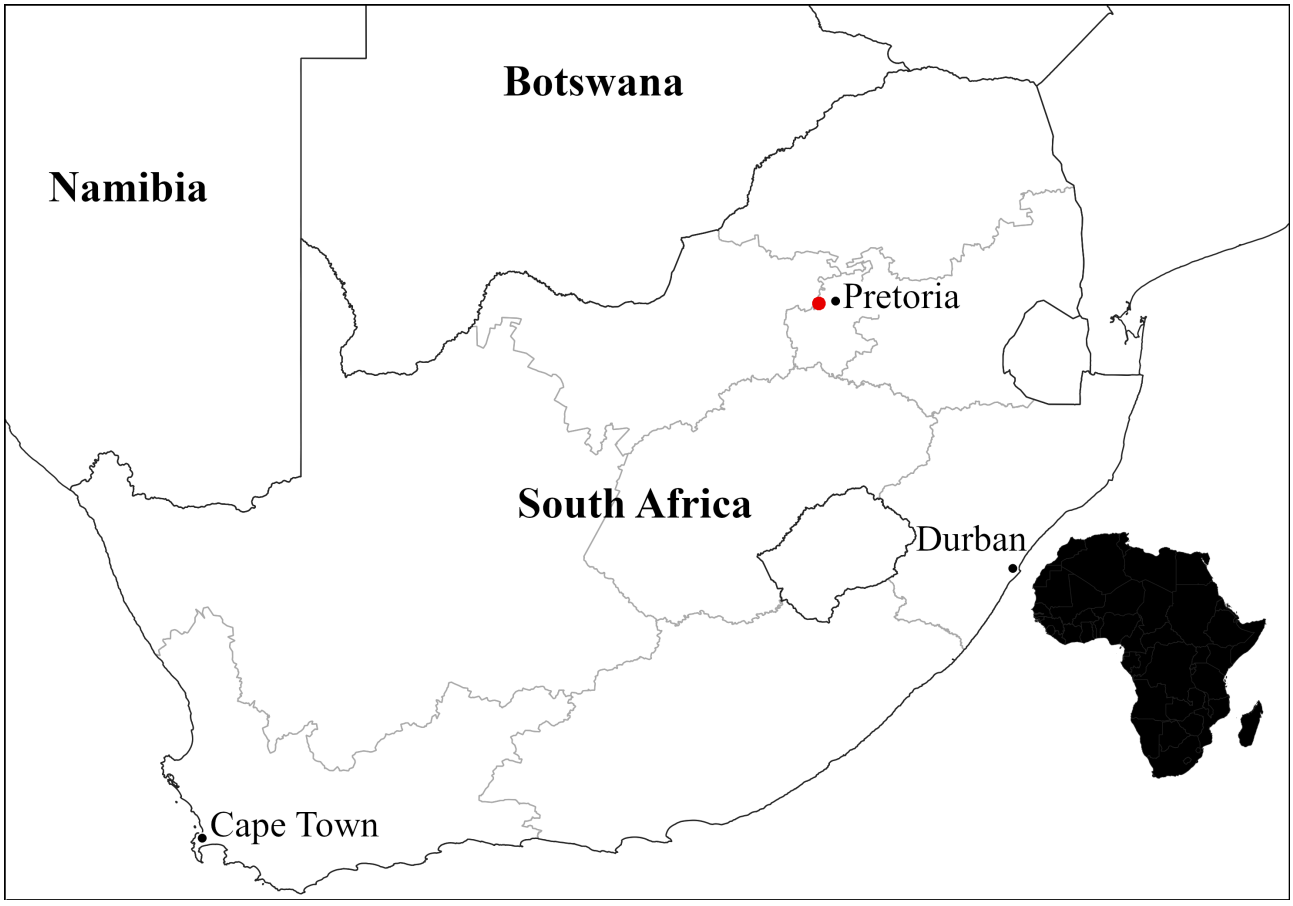

FIGURE 3. Map of South Africa showing the type locality of *Hathor spinosa* Deschodt, new genus and species (red dot west of Pretoria).

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