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## A new giant species of *Deltochilum* subgenus *Deltohyboma* (Coleoptera, Scarabaeidae, Scarabaeinae) from Colombia, with notes on *D. spinipes* Paulian, 1938

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### Abstract

*Deltochilum* (*Deltohyboma*) *gigante* sp. nov., from Parque Nacional Las Cuevas de los Guácharos, Huila, Colombia is described based on differences in external and genital morphology. Its diagnostic characters are provided and illustrated. Lectotype and paralectotypes for *D. spinipes*, a close relative to the new species, are designated.

**Key words:** *Deltochilum gigante*, Scarabaeinae, new species, diagnosis, taxonomical remarks

### Introduction

The genus *Deltochilum* Eschscholtz, 1822 belongs to the subfamily Scarabaeinae, which includes the insects popularly known as dung beetles (Halffter & Matthews 1966). In the most recent account, the genus included 85 valid species (Génier 2012).

The classification of *Deltochilum* into subgenera is based mainly on elytral carinae (Lane 1946). Kolbe (1893) was the first who classified *Deltochilum* species by splitting the genus into seven subgenera: *Aganhyboma* Kolbe, 1893, *Calhyboma* Kolbe, 1893, *Deltochilum* s. str., *Euhyboma* Kolbe, *Meghyboma* Kolbe, *Paedhyboma* Kolbe and *Telhyboma* Kolbe. Further studies continued development of subgeneric classification of *Deltochilum* that is currently divided into eight subgenera: *Aganhyboma*; *Calhyboma*; *Deltochilum* s. str.; *Deltohyboma* Lane, 1946; *Euhyboma*; *Hybomidium* Shipp, 1897; *Parahyboma* Paulian, 1938 and *Rubrohyboma* Paulian, 1938 (Shipp 1897; Paulian 1938, 1939; Pereira & Martínez 1956; Vulcano & Pereira 1964; Génier 2012).

The subgenus *Deltohyboma*, which includes the new species, has approximately 47 valid species, distributed throughout the Neotropics, ranging from Mexico to Argentina (González *et al.* 2009). The species of this subgenus are characterized by the ninth interstria distinctly carinate; ninth interstitial carina extending at most one-half length of pseudopipleuron; pseudopipleural carina distinctly visible basally; and clypeus bidentate (Vaz-de-Mello *et al.* 2011). Like other dung beetles, most species of *Deltohyboma* are usually necrophagous or coprophagous (Vaz-de-Mello 1999). However, other types of behavior, for example, predation by species of the "valgum" group on diplopods has been recorded (Cano 1998; Génier 2001; Escobar 2003; Halffter 2003; Larsen *et al.* 2009; Silva *et al.* 2012).

Until now, *D. spinipes* Paulian, 1938 has been the largest known species of the genus, with a body length ranging from 18 to 24 mm (Paulian 1938). Examination of the collections at the Natural History Museum, London, and the Muséum National d'Histoire Naturelle, Paris, has revealed a new species of *Deltochilum* that is larger than any hitherto known. In this paper we describe this newly discovered species of the subgenus *Deltohyboma* and provide notes on its probable closest relative *D. spinipes*.

♀4. 1 (white label, printed and bordered in black) Equateur Env. d'Ambato R.P. Irenée Blanc./ 2 (white label, bordered in black) R. PAULIAN Vedit./ 3 (yellow label, printed in black) PARALECTOTYPE./ 4 (white label, handwritten, printed and bordered in black) *Deltochilum spinipes* Paulian PARALECTO. F Vaz-de-Mello des. 2013./ 5 (white label, handwritten, printed and bordered in black) DIFFERENT of *D spinipes* lectot. F Vaz-de-Mello des. 2013.

♀5. 1 (old white label, handwritten) Ecuador Buckley./ 2 (white label, printed and bordered in black) Ex-Musaeo H.W.Bates 1892./ 3 (white label, bordered in black) R. PAULIAN Vedit./ 4 (yellow label, printed in black) PARALECTOTYPE./ 5 (white label, handwritten, printed and bordered in black) *Deltochilum spinipes* Paulian PARALECTO. F Vaz-de-Mello des. 2013./ 6 (white label, handwritten, printed and bordered in black) DIFFERENT of *D spinipes* lectot. F Vaz-de-Mello des. 2013.

### Taxonomic remarks

An identification key for the species of the subgenus *Deltohyboma* is not given here because the subgenus is in need of a taxonomical revision and many of its species cannot be reliably identified at this time. Many of the species were superficially described and/or their type specimens have not been examined. The present situation makes the identification of some species impossible at this moment.

However, the description, diagnosis, and illustrations of male genitalia and somatic morphology provided here give sufficient information for the reliable identification and differentiation of this new species from all others in the genus.

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### References

- Cano, E.B. (1998) *Deltochilum valgum acropyge* Bates (Coleoptera: Scarabaeidae: Scarabaeinae): habitats and distribution. *The Coleopterists Bulletin*, 52, 174–178.
- Escobar, F. (2003) Feeding habitats and distributional records of 11 species of Neotropical Scarabaeinae (Coleoptera: Scarabaeidae). *The Coleopterists Bulletin*, 57, 131–132.  
<http://dx.doi.org/10.1649/642>
- Génier, F. (2001) Note sur les espèces de *Deltochilum* Eschscholtz décrites en 1939 par V. Balthasar (Coleoptera: Scarabaeidae, Scarabaeinae). *Faberies*, 26, 1–8.
- Génier, F. (2012) A new species and notes on the subgenus *Deltochilum* (*Deltochilum*) Eschscholtz, 1822 (Coleoptera: Scarabaeidae: Scarabaeinae: Deltochilini). *Zootaxa*, 3357, 25–36.
- González, F.A., Molano, F. & Medina, C.A. (2009) Los subgéneros *Calhyboma*, *Hybomidium* y *Telhyboma* (Coleoptera: Scarabaeidae: Scarabaeinae: Deltochilum) en Colômbia. *Revista Colombiana de Entomología*, 35, 253–274.
- Halffter, G. (2003) Tribu Scarabaeini. In: Morón, M.-Á. (Ed.), *Atlas de los escarabajos de México. Coleoptera: Lamellicornia. Familias Scarabaeidae, Trogidae, Passalidae y Lucanidae*. Argania editio, Barcelona, pp. 21–43.
- Halffter, G. & Matthews, E.G. (1966) The natural history of dung beetles of the subfamily Scarabaeinae. *Folia Entomologica Mexicana*, 12/14, 1–312.
- Kolbe, H.J. (1893) Beiträge zur kenntniss der mistkafer, Lamellicornia Onthophila. *Stettiner entomologische Zeitung*, 54, 188–202.

- Lane, F. (1946) Sobre os tipos e a sinonímia de alguns Canthonini (Col. Scarabaeidae). *Papéis Avulsos do Departamento de Zoologia*, 7, 171–179.
- Larsen, T.H., Lopera, A., Forsyth, A. & Génier, F. (2009) From coprophagy to predation: a dung beetle that kills millipedes. *Biology Letters*, 5, 152–155.  
<http://dx.doi.org/10.1098/rsbl.2008.0654>
- Paulian, R. (1938) Contribution à l'étude des Canthonides américains. *Annales de la Societe Entomologique de France*, 107, 213–296.
- Paulian, R. (1939) Contribution à l'étude des Canthonides américains. *Annales de la Societe Entomologique de France*, 108, 1–40.
- Pereira, F.S. & Martínez, A. (1956) Os gêneros de Canthonini americanos (Col. Scarabaeidae). *Revista Brasileira de Entomologia*, 6, 91–192.
- Shipp, J.W. (1897) On the synonymy of the genus *Deltochilum*. *Entomologische Nachrichten*, 23, 194–196.
- Silva, F.A.B., Vidaurre, T., Vaz-de-Mello, F. & Louzada, J. (2012) Predatory behaviour in *Deltochilum*: convergent evolution or a primitive character within a clade? *Journal of Natural History*, 46 (21–22), 1359–1367.  
<http://dx.doi.org/10.1080/00222933.2012.658584>
- Tarasov, S.I. & Solodovnikov, A.Y. (2011) Phylogenetic analyses reveal reliable morphological markers to classify mega-diversity in Onthophagini dung beetles (Coleoptera: Scarabaeidae: Scarabaeinae). *Cladistics*, 27, 490–528.  
<http://dx.doi.org/10.1111/j.1096-0031.2011.00351.x>
- Vaz-de-Mello, F. (1999) Scarabaeidae s. str. (Coleoptera: Scarabaeoidea) de um fragmento de floresta amazônica no estado do Acre, Brasil. 1. Taxocenose. *Anais da Sociedade Entomológica do Brasil*, 28, 447–453.  
<http://dx.doi.org/10.1590/s0301-80591999000300009>
- Vaz-de-Mello, F.Z., Edmonds, W.D., Ocampo, F.C. & Schoolmeesters, P. (2011) A multilingual key to the genera and subgenera of the subfamily Scarabaeinae of the New World (Coleoptera: Scarabaeidae). *Zootaxa*, 2854, 1–73.
- Vulcano, M.A. & Pereira, F.S. (1964) Catalogue of the Canthonini (Col. Scarab.) inhabiting the western hemisphere. *Entomologischen Arbeiten aus dem Museum G. Frey*, 15, 569–685.