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Scarabaeidae: Scarabaeinae: Coprini) in Belize, a new country
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Gillett, Conrad P. D. T., "*Dichotomius maya* Peraza and Deloya, 2006 (Coleoptera: Scarabaeidae: Scarabaeinae: Coprini) in Belize, a new country record for this Central American dung beetle" (2009). *Insecta Mundi*. 593.

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INSECTA MUNDI

A Journal of World Insect Systematics

0064

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Date of Issue: January 30, 2009

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Insecta Mundi 0064: 1-4

Published in 2009 by

Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 U. S. A.
<http://www.centerforsystematicentomology.org/>

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As of 2007, **Insecta Mundi** is published irregularly throughout the year, not as quarterly issues. As manuscripts are completed they are published and given an individual number. Manuscripts must be peer reviewed prior to submission, after which they are again reviewed by the editorial board to insure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

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Printed Copy	ISSN 0749-6737
On-Line	ISSN 1942-1354
CD-ROM	ISSN 1942-1362

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Abstract. *Dichotomius maya* Peraza and Deloya, 2006 is reported for the first time from Belize. New biological and distributional data are presented and the species is illustrated for the first time.

Résumé. *Dichotomius maya* Peraza and Deloya, 2006 est signalé pour la première fois de Bêlize. Nouvelles données sur sa biologie et repartition sont présentées et cette espèce est illustrée pour la première fois.

Key words/Mots clefs. Scarabaeinae, Neotropical, new record, Belize

Introduction

Dichotomius Hope, 1838 is an exclusively New World genus of scarabaeine dung beetles comprising approximately 160 currently recognized species (ScarabNet Global Taxon Database 2008), which are distributed from the northeastern United States to central Argentina. The genus is especially diverse in South America, where the majority of species are to be found. *Dichotomius maya* Peraza and Deloya, 2006 belongs to the carolinus species group as defined by Lüderwaldt (1929) which contains five Central and North American species: *D. carolinus* (Linnaeus, 1767), *D. colonicus* (Say, 1835), *D. amicitiae* (Kohlmann and Solís, 1997), *D. annae* (Kohlmann and Solís, 1997), and *D. maya*. The main morphological character that diagnoses the carolinus group is the distinct gradual widening of the first three (mostly in males) or five (mostly in females) elytral striae in the apical third of each elytron. These widened and deepened striae often appear to be filled with soil or dung and it has been suggested that they exude some kind of secretion (Lüderwaldt 1929). Kohlmann and Solís (1997) describe them as having the consistency of felt. Members of this species group are particularly bulky beetles, being amongst the largest representatives of the genus. Unfortunately it is difficult to assign certain taxa to particular species groups and the genus is in need of a complete revision (presently in process by F. Z. Vaz-de-Mello and F. Génier, pers. comm.).

The Central American species of the carolinus group were treated briefly by Peraza and Deloya (2006) who described *D. maya* from the Mexican states of Yucatán and Quintana Roo. They also provided a key to identify only the males of the carolinus group. However, there is some confusion in the work because the lateral view of the pronotum of *D. maya* clearly shows only a single tooth on the lateral keel, whereas the description stated that there are actually two.

During the last week of May 2006, while undertaking fieldwork in Belize as a student of Imperial College London, several *D. maya* specimens were collected using pitfall traps baited with human dung. Although fieldwork was undertaken at two sites in the Cayo District of western Belize, *D. maya* was only present at one site: Pook's Hill Lodge (approximately 17°09'04N 88°50'58W) at an altitude of about 85m above sea level in an area of lowland tropical forest which has received some human disturbance. The species was collected both in open clearings (Figure 1) and in forested areas (Figure 2). It appeared to be active preferentially at dusk or during the night as the majority of specimens collected were those picked out of the traps in the early morning. Further evidence for this was that few specimens of *D. maya* were collected at a mercury vapor light at night.

Discussion

Pook's Hill is a private reserve with a rich scarab dung beetle fauna consisting of members of the tribes Phanaeini, Coprini, Canthonini, Ateuchini, Eurysternini and Onthophagini, with over 25 species



Figure 1-4. 1-2. Pook's Hill, Cayo district, Belize, where *D. maya* was collected. 1) Open clearing area. 2) Forested path area. Photos by CPDT Gillett. 3-4. *Dichotomius maya* from Pook's Hill, Belize, dorsal view. 3) Male, length 27mm. 4) Female, length 26mm. Photos by Phil Hurst of the Natural History Museum Photographic Unit.



Figure 5-8. *Dichotomius maya* from Pook's Hill, Belize. **5)** Oblique anterior view male, length 27mm. **6)** Dorsal close-up view of male head and pronotum. **7)** Oblique anterior view of female, length 26mm. **8)** Dorsal view of male aedeagus. Scale line = 2 mm. Photos by Phil Hurst of the Natural History Museum Photographic Unit.

collected during a single week. *Dichotomius maya* occurs at this site with the more abundant *D. amplicollis* (Harold, 1869) and the less abundant *D. satanas* (Harold, 1867).

Interestingly, no specimens of *D. maya* were collected at the other collecting site, Las Cuevas Research Station (approximately 16°44'N 88°59'W) although both *D. amplicollis* and *D. satanas* were present there. This field station is located 50km to the south of Pook's Hill, in the Maya Mountains at an altitude of about 580m above sea level in a vast expanse of pristine forest. It seems unusual that *D. maya* was not encountered at Las Cuevas, despite a greater collecting effort (more than two weeks and many more traps), and considering the habitat at the Pook's Hill reserve is comparatively more disturbed. *Dichotomius maya* may be a uniquely lowland species, which may explain its absence from Las Cuevas. Alternatively, *D. maya* may thrive where man has altered the environment by creating small clearings in the forest, such as at Pook's Hill. It may share this potentially advantageous competitive/survival ability with the species *D. colonicus*, which is reported as being able to rapidly invade recently cleared areas (Kohlmann 2003). This also appears to be the case in my experience with another dung beetle species *Phanaeus haroldi* Kirsch, 1871 in Amazonian Ecuador where it is apparently restricted to disturbed and cleared areas, or at least is restricted to utilizing dung in the cleared areas (C.P.D.T. Gillett, unpublished data). It appears that no specimens of *D. maya* have been collected at Las Cuevas on numerous previous collect-

ing expeditions by students and staff of the Natural History Museum, London (BMNH), who managed the field station until 2004 (e.g. Inward 1997). Nor were any specimens of *D. maya* deposited in the BMNH collections until now. The Maya mountains are separated from the region in which Pook's Hill is located by the Mountain Pine Ridge, an upland area of predominantly pine forest with north temperate floral and faunal affinities (Inward 1997). This ridge could act as a significant barrier to the southward dispersal of *D. maya*.

Hitherto, the habitus of *D. maya* has not been illustrated, although in the original description, diagrams of the head and pronotum were presented (see above). Photographs of typical male and female specimens of *D. maya* from Belize are shown here in dorsal and oblique views (Figure 3-7) and the male aedeagus is shown in Figure 8.

Specimens collected in Belize were identified as *D. maya* using the original key of Peraza and Deloya (2006) and they match the description exactly. Fernando Z. Vaz-de-Mello (Brazil), who studied the type series, kindly checked my photographs to confirm the identification. Representative specimens of *D. maya* from Pook's Hill are deposited at the BMNH and the Hope Entomological Collections of the Oxford University Museum of Natural History.

In conclusion, the dung beetle *D. maya* is recorded here for the first time from Belize. Not only is this a new country record, but it also represents a significant southern extension in the range of the species. Whether Pook's Hill represents the southern limit in the distribution of *D. maya* remains to be seen, hence it will certainly be of interest to undertake further collecting at localities in Belize and neighboring Guatemala to ascertain this.

Acknowledgments

I am grateful to Ray, Vicki and Jake Snaddon (Belize), who were very kind hosts at Pook's Hill. I thank Fernando Vaz-de-Mello (Cuiabá, Brazil) for confirming the identification of specimens from photographs, for interesting comments about the carolinus group and for his review of the paper. I also thank Brett C. Ratcliffe (Lincoln, NE, U.S.A.) for his helpful comments and detailed review. Darren Mann (Oxford, U.K.) and François Génier (Ottawa, Canada) generously helped me with the manuscript. Finally, I thank Phil Hurst of the photographic unit at the Natural History Museum for the excellent photographs of specimens.

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Received October 23, 2008; accepted December 18, 2008.