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The scarab beetle tribe Pentodontini (Coleoptera: Scarabaeidae: Dynastinae) of Colombia: taxonomy, natural history, and distribution

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Abstract

Pentodontini is the most diverse tribe of Dynastinae (Coleoptera: Scarabaeidae), and most of the genera are restricted to a single biogeographic region. In this work, the taxonomic composition of the Pentodontini in Colombia was determined, and genera and species were diagnosed based on external morphology and male genitalia. Records of 1,580 specimens from 31 departments and 398 localities in Colombia were obtained from 24 species in the genera *Bothynus* Hope, *Denhezia* Dechambre, *Euetheola* Bates, *Hylobothynus* Ohaus, *Oxyligyrus* Arrow, *Parapucaya* Prell, *Pucaya* Ohaus, and *Tomarus* Erichson. *Oxyligyrus cayennensis* Endrödi, *Tomarus cicatricosus* (Prell), and *T. pullus* (Prell) are reported for the first time from Colombia. *Pucaya punctata* Endrödi is reduced to synonymy with *Pucaya pulchra* Arrow. Possible changes in the classification of *Denhezia* Dechambre are discussed. Dichotomous keys are provided for Colombian genera and species. Taxonomic descriptions and distribution maps are included for all species.

Key words: Scarabaeoidea, pentodontines, Neotropics, keys, faunistic survey, biodiversity

Introduction

Pentodontini is the most diverse tribe of Dynastinae and contains about 100 genera and 550 species worldwide (Endrödi 1985; Ratcliffe 2003). Most genera are each restricted to a single biogeographic region. The Palearctic is the poorest region with only 20 species and 11 genera (Endrödi 1985), whereas the largest diversity of the tribe occurs in the Neotropics with about 25 genera and 100 species (Ratcliffe & Cave 2006). The highest generic richness is found in Brazil (11 genera), Mexico, Peru, and Colombia (7–8 genera) (Gasca-Álvarez & Amat-García 2010; Cave & Ratcliffe 2012; Ratcliffe *et al.* 2013). Although the highest specific richness occurs in Mexico, Guatemala, and Belize with 43 species (Ratcliffe *et al.* 2013), South America has been one of the least studied areas, and there is still a need to quantify the diversity of pentodontines.

Pentodontines are characterized by generally having the head with carinae or tubercles, the pronotum sometimes with a subapical tubercle and a small fovea, and minimal sexual dimorphism. The antennal club is small in most of the species. The protibia of males is not longer than those of females, the protarsus is rarely enlarged, and the apex of the metatibia is truncate or slightly crenulate. The body is elongate, never round as in Hexodontini, with the elytra slightly convex, usually with distinctive double rows of punctures (Endrödi 1985; Ratcliffe & Morón 1997; Ratcliffe *et al.* 2002). Although sexual dimorphism is inconspicuous, sometimes the protarsi of males are enlarged, and the frontal or pronotal tubercles are more prominent than those of females. Males have the apex of the eighth sternite emarginate, which is arcuate or entire in females (Ratcliffe & Cave 2006).

For more than 150 years, there has been no consensus on the position of the Pentodontini in the Scarabaeidae. The group has been treated as a family, subfamily, and tribe by different authors. Mulsant (1842) proposed Pentodonaire and Oryctésaires as separate groups. Burmeister (1847) placed these groups at the family level, using the name Pentodontidae. Bates (1888) considered Pentodontinae as a subfamily grouping some Central American genera such as *Tomarus* (as *Ligyris*), *Bothynus*, and *Euetheola*. Casey (1915) redefined the group as a tribe, while Blackwelder (1944) placed the species of Pentodontini in the Oryctini. Since Endrödi (1969), these tribes have been treated separately, without a strong criterion or evaluation of their diagnostic characters. Some authors have suggested the lack of evidence for monophyly of Pentodontini (Ratcliffe 2003; Gasca-Álvarez & Ratcliffe 2011).

Pentodontines are probably related to the tribe Oryctini, and there are transitional characters between both groups (Endrödi 1985). Although they can be separated by the shape of the apical border of the metatibia (truncate or crenulate in the Pentodontini and toothed in the Oryctini), this character state is sometimes variable or present in a transitional form and is therefore not reliable to differentiate the tribes (Gasca *et al.* 2008). The slight sexual