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Redescription of *Anomala eucoma* Bates, 1888 and a description of three new species from Costa Rica (Coleoptera: Scarabaeidae: Rutelinae)

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Abstract

Anomala eucoma Bates, 1888 is redescribed and a lectotype from Guatemala is designated. Three new species from Costa Rica, *A. flavacoma* new species, *A. megaparamera* new species, and *A. pseudoeucoma* new species, are described, and a distribution map is given. The internal sac (endophallus) of the species covered is illustrated, and its use in separating closely related species in this region is discussed. An identification key for morphologically similar species from the Neotropical region is provided.

Key words: aedeagus, distribution, endophallus, identification key, lectotype

Resumen

Se redescrive *Anomala eucoma* Bates, 1888 y se selecciona un lectotipo de Guatemala. Se describen las especies de Costa Rica *A. flavacoma* sp.n., *A. megaparamera* sp. n., y *A. pseudoeucoma* sp. n., con mapas de sus distribuciones. El saco interno de las especies aquí consideradas es ilustrado, y se discute su utilidad para separar especies cercanas. Se proporciona una clave dicotómica para la identificación de especies morfológicamente similares de la región neotropical.

Introduction

The taxonomic complexity of the genus *Anomala* (Coleoptera: Scarabaeidae: Rutelinae: Anomalini) is in part due to its high variability within species, especially in colour patterns, whereas characters used as diagnostic are uniform between species (Morón *et al.* 1997, Morón & Nogueira 2002, Jameson *et al.* 2003). Moreover, most of the descriptions, at least for Neotropical species, are usually based on few specimens and date back a century or so. They include few diagnostic characters, which often turn out to be variable when more specimens are studied, and lead to the synonymization of several species.

With a few exceptions, the genitalia were not described or illustrated in older descriptions, and usually only the aedeagus is illustrated in the few modern publications dealing with this group. Despite several previous encouraging findings on the endophallus of Anomalini (see for example Zorn 2006 for species delimitation and grouping), this suite of characters has only recently been included in taxonomic studies of *Anomala*. Endophallus characters have not been used or illustrated for Neotropical species.

An example of the need for revision and new diagnostic characters is *Anomala eucoma* Bates, 1888, a brown, medium-sized species covered with dense setation. One of the main differences with the similar *A. amphicoma* Bates, 1888, reported in the original description, is the length of the upper branch of the protarsal internal claw, which is subject to wear and varies among individuals. This makes correct identification difficult if no voucher specimens are available.

In this paper, three more species are described from Costa Rica, which closely resemble *A. eucoma* due to their dense setation and colour pattern, showing the value of internal and external male genitalia for delimitating morphologically uniform species.

Moreover, a recent examination of type specimens of *A. eucoma* (seven specimens in total) from the Natural