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*Canthidium alvarezii* Martínez and Halffter, 1986:  
a remarkable *Ateuchus* Weber, 1801  
(Coleoptera: Scarabaeidae: Scarabaeinae)

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*Canthidium alvarezii* Martínez and Halffter, 1986: a remarkable  
*Ateuchus* Weber, 1801 (Coleoptera: Scarabaeidae: Scarabaeinae)

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**Abstract.** The species *Canthidium alvarezii* Martínez and Halffter, 1986 (Coleoptera: Scarabaeidae: Scarabaeinae) is transferred to the genus *Ateuchus* Weber, 1801, becoming *Ateuchus alvarezii* (Martínez and Halffter), **new combination**. Its relationship with other species in the genus is briefly discussed. The validity and ranking of the genus *Lobidion* Génier, 2010, originally described from a single female, is discussed based on the discovery of male specimens, which lead us to reclassify it as a monotypic subgenus of *Ateuchus*, becoming *Ateuchus (Lobidion)*, **new rank**, with the only included species becoming *Ateuchus (Lobidion) punctatissimus* (Génier, 2010) **new combination**.

**Key words.** Taxonomy, systematics, type specimens, dung beetle, New World.

**Resumo.** *Canthidium alvarezii* Martínez and Halffter, 1986 (Coleoptera: Scarabaeidae: Scarabaeinae) é transferido para o gênero *Ateuchus* Weber, 1801, sob a nova combinação *Ateuchus alvarezii* (Martínez e Halffter). Seu relacionamento com outras espécies no gênero é brevemente discutido. A validade e categorização do gênero *Lobidion* Génier, 2010, o qual foi descrito a partir de apenas uma única fêmea, é discutida com base em machos recém-descobertos, o que nos leva a considerar o táxon como um subgênero monotípico de *Ateuchus*, sendo agora tratado como *Ateuchus (Lobidion)*, **novo status**, com a sua única espécie conhecida se tornando, portanto, *Ateuchus (Lobidion) punctatissimus* (Génier, 2010), **nova combinação**.

**Palavras-chave.** Taxonomia, sistemática, espécimes-tipo, rola-bostas, Novo Mundo.

## Introduction

The megadiverse New World genera *Ateuchus* Weber, 1801 and *Canthidium* Erichson, 1847 (Coleoptera: Scarabaeidae) are currently under investigation respectively by MC and FG. A preliminary assessment of the current species classification for these two genera has shown that several taxa were assigned to the wrong genus, and some should be transferred to different genera (MC, personal observation). The following note results from these observations.

## Materials and Methods

Specimens studied are deposited in the collection of the Canadian Museum of Nature, Ottawa (CMNC); the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (MACN) and the Muséum national d’Histoire naturelle, Paris (MNHN). Methodological details concerning dissections, genitalic preparation, imaging and plate preparation follow Génier and Moretto (2017).

## Discussion

While organizing the insect collection of the Canadian Museum of Nature, one of us (FG) came across a series of one male and four female specimens labeled as paratypes of “*Canthidium superbum* Martínez, 1982”. The name is a *nomen in litteris* and therefore unavailable, but the label data matched the information given for the paratypes of *Canthidium* (*C. alvarezii* Martínez and Halffter, 1986, in the original description. Given that these specimens also match perfectly the description given by Martínez and Halffter (1986) and that the greater part of the Martínez collection is currently housed at the CMNC, these are undoubtedly part of the paratypes studied by Martínez and Halffter (1986). The incongruence between the name appearing on the paratype labels and the actual species name is of little concern as Martínez used to label going-to-be type specimens well before the actual publication of the species descriptions, leading to the existence of several specimens bearing never-published *nomina in litteris* in the Martínez collection (e.g., “*Canthidium violeatae*”, “*Canthon laminatus subandinus*” and “*Canthon virens nordestinus*”). Proper paratype labels, with the name *Canthidium alvarezii*, are now affixed to the five paratypes currently deposited in the CMNC. The holotype male and the allotype female are deposited in the collection of the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (Cupello 2018), while two additional paratypes, male and female, are housed in Gonzalo Halffter’s personal collection, Xalapa, Mexico (Martínez and Halffter 1986).

As pointed out in the original description, this species is outstanding in appearance by its relatively large size (Fig. 1–3) and by the sinuous pronotal lateral edge in males (Fig. 2A). This modification of the pronotal edge is an adaptation to accommodate the disproportionately elongate femora and tibiae in repose position. In addition to the type series deposited in the Martínez collection (CMNC, MACN), three more individuals, two males and one female, correctly identified by Yves Cambefort, were found in the collection of the Muséum national d’Histoire naturelle in Paris. Two of these specimens are from the Henry Walter Bates collection (MNHN) collected on Mount Roraima. The third specimen has a more precise location being from the Guyanese portion of Mount Roraima (MNHN). This new locality data added to the data from the Martínez collection (*viz.* Brazil: Roraima [“Rio Branco”]: Pacaraima: Serra de Marari: Surumú; and Venezuela: Bolívar: Canaima National Park), suggest that this species is restricted to the Tepuis region of the Guyana shield (Fig. 6).

The overall shape, the green metallic color and the elongate prothoracic legs in the male are features seen in some species of the genus *Canthidium*. However, upon closer examination, several characters such as the deeply concave anterior hypomerical depression, which is posteriorly bordered by a complete and well-defined carina, and the elytral apex produced into a transverse bulge (Fig. 2B) place this species in the genus *Ateuchus* Weber as currently defined (Balthasar 1939; Howden and Young 1981; Kohlmann 1997). It should, however, be noted that the most posterior surface of the pronotum possesses a distinct marginal bead on the median third as opposed to the description, which states that the posterior marginal bead is completely lacking. Current observations show that the development of the marginal bead greatly varies in development within the genus as currently defined. Another character, harder to define and never used, the hardness of the integument also places it in *Ateuchus*. In *Ateuchus*, the integument is very hard and will sometimes break when a pin is inserted as opposed to the more flexible integument of the species of *Canthidium*. Consequently, we propose the following nomenclatural change: *Ateuchus alvarezii* (Martínez and Halffter 1986), **new combination**.

To investigate a possible relationship within the genus *Ateuchus*, the internal sac of the aedeagus (Fig. 4) was dissected. The naming scheme for the internal sac sclerites follows Tarasov and Génier (2015). Interestingly, the lamella copulatrix, as well as any heavily sclerotized hooks and spicules positioned medially in the internal sac were missing. Only the distal axial+subaxial (A+SA) sclerites complex and an enlarged frontolateral peripheral (FLP) sclerite were present. A very small sclerite was also present adjacent to the FLP, which might be a vestigial superior right peripheral (SRP) sclerite. A few putative closely related species (*Ateuchus apicatus* (Harold, 1867), *A. myrmecophilus* (Boucomont, 1935), *A. pauperatus* (Germar, 1823), *A. robustus* (Harold, 1868), and *A. subquadratus* (Harold, 1868)), all of which have elongate prothoracic legs in the male and at least one additional external character similar to those found in *A. alvarezii*, were dissected for comparison. None of those species presented the reduction of genitalic sclerites observed in *A. alvarezii*. The only species dissected presenting such reduction is *Lobidion punctatissimum* Génier, 2010 (Fig. 5). At the time of the description of *L. punctatissimum* (Génier

2010), a single female specimen was known. The morphology of this single individual was so odd that a new genus was erected to accommodate it. Subsequent collecting in 2012–2013 by Patrick Arnaud, Fernando Z. Vaz-de-Mello, and one of us (FG), in the same leaf cutter ant nest on Fazenda São Nicolau (Mato Grosso) yielded 14 more specimens including seven males. Our opinion on the validity and ranking of the taxon has now changed with the discovery of males. It is believed that *Lobidion* is simply a highly modified *Ateuchus* as the male head is typical for this genus as presently defined. The compact and more flattened body combined with the greatly enlarged and coarsely striated elytral pseudopipleuron at apex are adaptations to myrmecophily, which are also seen in several other species of *Ateuchus* and other paracoprid genera such as *Ontherus* Erichson, 1847 (Génier 1996) and *Dendropaemon* Perty, 1830 (Génier and Arnaud 2016). For these reasons we lower the rank of *Lobidion* to a monotypic subgenus under *Ateuchus* as *Ateuchus (Lobidion)* **new rank** and consequently establish *Ateuchus (Lobidion) punctatissimus* (Génier, 2010) **new combination**. For differences between *Ateuchus s. str.* and *Ateuchus (Lobidion)* the reader is referred to Génier's (2010) identification key. One of us (MC) is currently working on a comprehensive revision of the genus *Ateuchus* and it is best to wait for those analyses before formally assigning other species of *Ateuchus* to the subgenus *Lobidion*.

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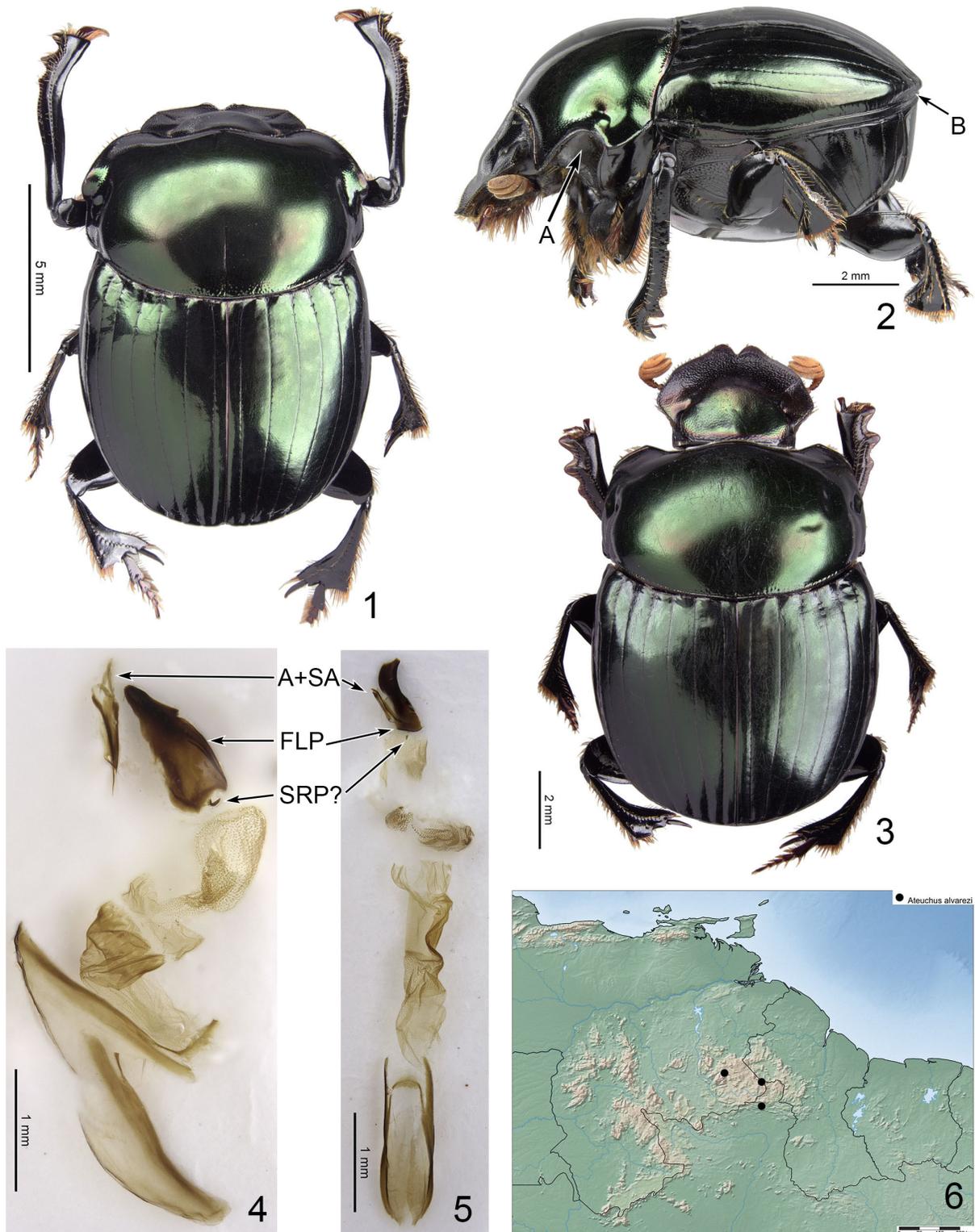
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**Figures 1–6.** *Ateuchus* spp. 1–4) *Ateuchus alvarezii*. 1) Habitus dorsal, male. 2) Habitus lateral, male. 3) Habitus dorsal, female. 4) Internal sac sclerites. 5) *Ateuchus (L.) punctatissimus*, internal sac sclerites. 6) Distribution map of *A. alvarezii*.