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Description of a new species of *Bothynus* Hope from Argentina and Bolivia (Coleoptera: Scarabaeidae: Dynastinae)

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A new species of *Bothynus* Hope, 1837 (Coleoptera: Scarabaeidae: Dynastinae: Pentodontini) is described from the eastern Andes in South America. The new species is unique in the genus for having the elytra and part of the pronotum covered with small setae.

The genus *Bothynus* Hope, 1837 (Coleoptera: Scarabaeidae: Dynastinae: Pentodontini) currently has 28 species distributed from Mexico to southern South America, making it one of the largest genera of Pentodontini (Lopez-Garcia *et al.* 2016). *Bothynus* species are characterized by having a contracted, triangular clypeus with two, sometimes four, teeth; mandibles visible with two or three teeth; protibiae with three or four teeth; pronotum with apical tubercle and fovea; metatibiae apically truncate with many small spinules; and pygidium short. The genus is also sexually dimorphic with the male having a more-or-less distinct pronotal fovea and with enlarged protarsae with or without an incised inner claw. The male genitalia, even if occasionally similar, are reliable to differentiate the species in the genus. Almost nothing is known about their life cycle and habitat preferences except that they are attracted by light at night and for a recent paper about the natural history of *Bothynus medon* (Germar, 1824) (Pereira *et al.* 2013). Examination of the Pentodontini material from the Canadian Museum of Nature (CMNC) revealed an undescribed species. This paper describes a new species of *Bothynus* from South America unique by having the elytra and pronotum covered with setae.

Label from the specimens are quoted verbatim, and different lines of a label are indicated by a diagonal slash (/) and separate labels by a double slash (//). Specimens in the type series have a red printed label for the holotype and allotype and yellow printed label (numbered 1–9) for the paratypes. The term allotype used in this paper is for a designated specimen amongst the paratypes of the opposite sex to the holotype as proposed by Santiago-Blay *et al.* (2008). The distribution map for the species was prepared with SimpleMappr (www.simplemappr.net). All images were taken with a Leica Z16 APOA system and images stacked with the LAS software at the Canadian Museum of Nature. Length measurements are from the anterior margin of the clypeus to apices of the elytra.

Acronyms of cited collections as follows (curator in parentheses):

ACM—American Coleoptera Museum, San Antonio, Texas, United States of America (James E. Wappes)

CERPE—Coleção Entomológica da Universidade Federal Rural de Pernambuco, Recife, Pernambuco, Brazil (Paschoal C. Grossi)

CMNC—Canadian Museum of Nature, Ottawa, Ontario, Canada (François Génier)

MAHC—Martin Hardy collection, Quebec City, Quebec, Canada

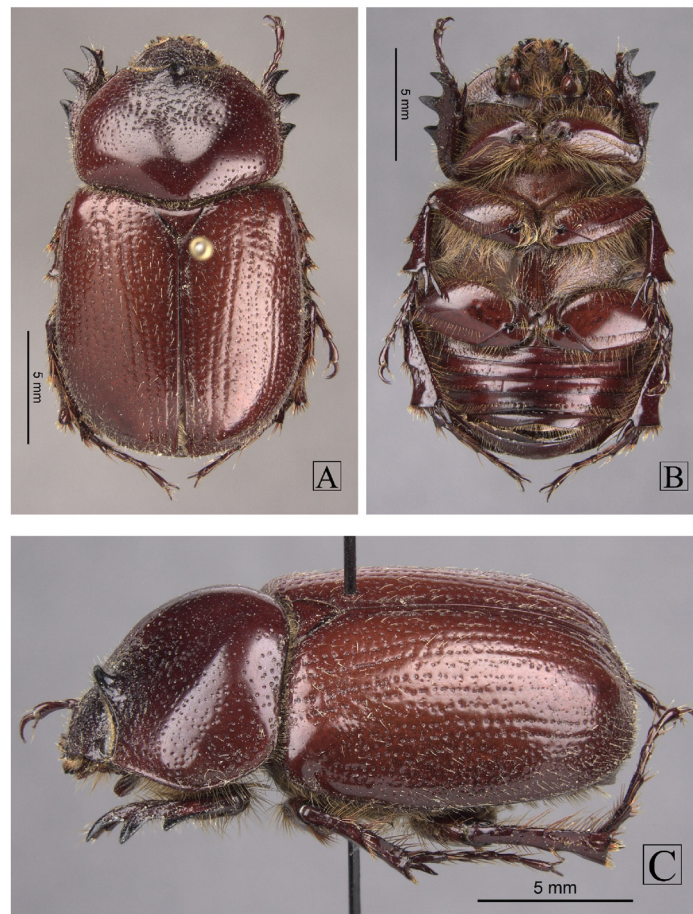
RFMC—Roy F. Morris collection, Lakeland, Florida, United States of America

***Bothynus thrix* Hardy, new species (Figs. 1–5)**

Type material. Holotype male, allotype female, 5 males paratypes, and 4 females paratypes. Holotype male (CMNC) labeled "ARGENTINA / Salta / Dpto. San Martín / Pocitos / coll. Martínez / Feb. 1964", // "Howden coll. Ex. / A. Martínez coll.". Allotype female (CMNC) labeled "BOLIVIA / Dpto. Sta Cruz / Pua. Ichilo / Buena Vista / coll. Martínez / Feb. 1950", // "Howden coll. Ex. / A. Martínez coll.". Paratypes: one male (MAHC) and one female (MAHC) labeled "BOLIVIA: Santa Cruz / Buena Vista vic. / Flora&Fauna Hotel / 17-20/X/00. R. Morris". Paratype: one female (CERPE) labeled "BOLIVIA Santa Cruz / 4-6k SSE Buena Vista / F&F Hotel 14-16 Oct. / 2000 Wappes & Morris". Paratype: two males (ACM) labeled "BOLIVIA Santa Cruz / 4-6k SSE Buena Vista / F & F Hotel Nov 1-8 / 2002 J.E. Wappes". Paratype: one male (RFMC) and one female (RFMC) labeled "BOLIVIA: Santa Cruz / Buena Vista vic. / Flora&Fauna

Hotel / 22-26/X/02, Morris / Wappes". Paratype: one male (CERPE) labeled "BOLIVIA: Santa Cruz / 5k ESE Warnes, Hotel / Rio Selva, 20-21/X/00 / Morris/Wappes". Paratype: one female (CMNC) labeled "ARGENTINA / Salta / Dpto. San Martin / Dique Itiyuro / coll. Martinez / Dic. 1970", // "Howden coll. Ex. / A. Martinez coll."

Description of holotype (Figs. 1A–C). Male. Length 19.5 mm; width at elytra humeri 10.5 mm. Color reddish brown, the pronotum and head slightly darker.



FIGURES 1A–C. *Bothynus thrix* new species, holotype male. A, habitus, dorsal view; B, habitus, ventral view; C, habitus, lateral view.

Head: Clypeus triangular, sides straight and weakly carinate, apex with anterior margin slightly emarginate, anterior angles bidentate with both teeth broadly separated and weakly reflexed. Clypeus and frons coarsely rugopunctate, punctures on frons setose. Frontoclypeal ridge weakly marked, feebly elevated not reaching sides of eyes. Interocular width equals 4 transverse eye diameters. Ocular canthus small, rounded. Antenna with 10 antennomeres, club slightly longer than antennomeres 2–7 (funicle without scape), club round. Mandibles tridentate, the 2 anterior teeth pointed, third tooth rounded on the side.

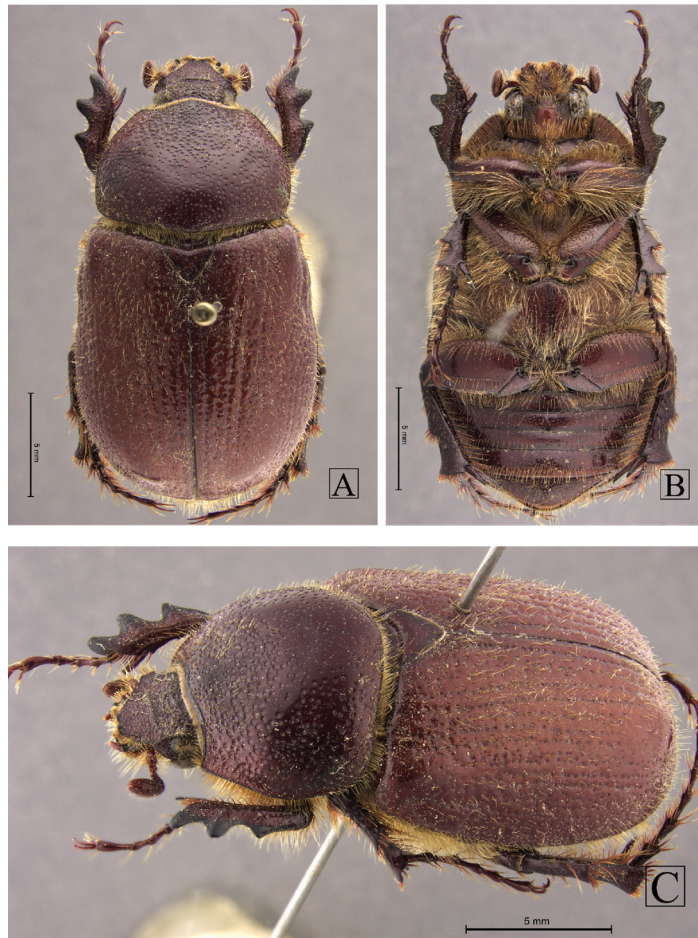
Pronotum: Anterior angles acute, posterior angles very obtuse, rounded. Marginal bead completes anteriorly and laterally, incomplete basally. Anterior two thirds of pronotum with a transversally declivous area, almost flat, not delimited on side; behind anterior margin with a strong, pointed tubercle. Surface covered with large rounded punctures, dense and equally spaced, smaller on posterior third; punctures behind tubercle, in anterior angles and on sides setose. Row of setae also present on the basal margin.

Elytra: Surface shiny, with indistinct row of small to moderate punctures, ocellate; covered with long, pale setae. Sutural stria indistinct, marked with small punctures equal in size. Intervals flat.

Propygidium: Surface finely and transversely rugose on sides, with a large stridulatory band in the middle, completely covered with small setae.

Pygidium: Surface completely finely rugopunctate, less on disc; covered with small setae, longer on sides. Convex in lateral view.

Legs: Protibia tridentate, teeth equally spaced; protarsis not thickened, claws elongate and equal in size; inner claw not incised. Metatibia with apex truncate, with 32 small bristles.



FIGURES 2A–C. *Bothynus thrix* new species, allotype female. A, habitus, dorsal view; B, habitus, ventral view; C, habitus, lateral view.



FIGURES 3A–C. *Bothynus thrix* new species, male parameres. A, caudal view; B, lateral view; C, oblique view.

Venter: Metasternum rugopunctate and densely setigerous, setae long. Prosternal process short, rounded, densely covered with numerous setae.

Parameres: In caudal view (Fig. 3A), enlarge at base then slightly tapering, apex dilated; in lateral and oblique views (Figs. 3B–C) with a distinct, small tooth at middle.

Variation. Allotype female (Figs. 2A–C): length 20.5 mm; width at elytra humeri 10 mm. Female allotype as holotype except in the followings characteristics. **Head:** Antenna club the same size as antennomeres 2–7. **Pronotum:** Tubercle behind anterior margin absent, reduce to a low gibbosity. Surface covered with larger and denser punctures, becoming confluent on disc. **Elytra:** Setae more abundant over entire surface. **Pygidium:** Pilosity longer and denser on disc. Flat in lateral view. Paratypes: length 19.5–22.0 mm. Characters similar to holotype male and allotype female.

Etymology. This species name is based after the Greek adjective *thrix*, meaning hairy or pilose, referring to the pubescence covering the elytra and part of the pronotum.

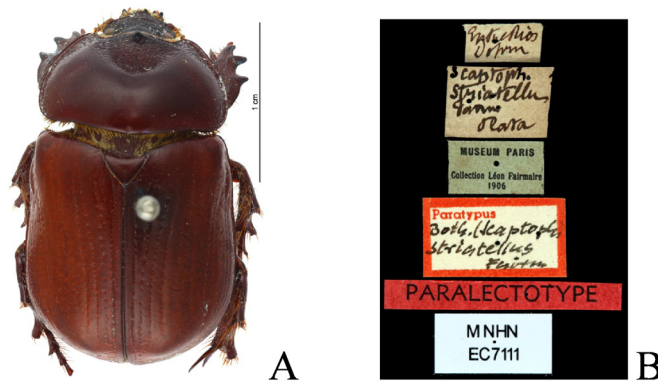
Distribution (Fig. 5). *Bothynus thrix* is known from the northern part of Argentina in Salta Province and from the Department of Santa Cruz in Bolivia.

Temporal data. February (2), October (6), November (2), December (1); these dates coincide with the beginning of the rainy season in October.

Diagnosis. *Bothynus thrix* will key to the couplet 37(36) for *B. striatellus* (Fairmaire, 1878) in Endrödi (1985), although it is easily distinguished from it based on the combination of characters listed in Table 1.

TABLE 1. Characters to differentiate *Bothynus thrix* and *Bothynus striatellus*.

Character (male)	<i>B. thrix</i>	<i>B. striatellus</i> (Figs. 4A–B)
Body size and form	Length 19–22 mm, body more slender	Length 19–25 mm, body broader
Clypeus	Apical teeth broadly spaced, feebly upturned	Apical teeth closer, strongly upturned
Pronotum	No distinct fovea, only declivous, punctate in center	Distinct fovea, surface wrinkled
Elytra	Indistinct striae, not furrowed; surface setose	Striae punctate, finely furrowed; surface glabrous
Pygidium	Finely reticulate, setose	Finely punctate, glabrous
Metatibiae	Apex with 32 spinules	Apex with 22–25 spinules
Parameres	Longer, with small tooth visible in lateral view	Shorter, no tooth on lateral side



FIGURES 4A–B. *Bothynus striatellus* (Fairmaire, 1878), holotype male. A, habitus, dorsal view; B, labels. Photographs courtesy of A. Mantilleri, Muséum national d’Histoire naturelle, Paris, France.



FIGURE 5. Distribution map showing currently known localities in South America for *Bothynus thrix* (black dots).

The genital structure of males of *Bothynus* species is reliable for species identification even if some general similarities are sometimes observed between some species. The parameres of the new species are similar to those of *Bothynus striatellus* (Fairmaire, 1878), but they are shorter and have no visible tooth on the side, whereas they are more elongate and with a distinctive lateral tooth in *B. thrix* (Figs 3B–C).

Given the particular appearance of this new species of *Bothynus*, (the only species with such abundant setae on the elytra and part of the pronotum), it is surprising that *B. thrix* has remained unknown until now. This eastern part of the Bolivian and Argentinean Andes from which the specimens originate are known for their high endemism and biodiversity (Swenson *et al.* 2012).

Acknowledgments

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