



Entomologia

A Journal on Insect Diversity and Evolution

www.rbentomologia.com

Systematics, Morphology and Biogeography

Rediscovery of *Bothynus cribrarius* (Fairmaire) (Coleoptera, Melolonthidae, Dynastinae, Pentodontini): description of the male and precise location data



Paulo R.M. Duarte*, Paschoal C. Grossi

Universidade Federal Rural de Pernambuco, Departamento de Agronomia, Área de Fitossanidade, Recife, PE, Brazil

ARTICLE INFO

Article history:

Received 10 November 2015

Accepted 4 July 2016

Available online 22 July 2016

Associate Editor: Lúcia Massutti de Almeida

Keywords:

Atlantic forest

Brazil

Itatiaia

New record

Taxonomy

ABSTRACT

Bothynus cribrarius (Fairmaire) was rediscovered after studying the MNRJ and FIOC collections. The male is described and illustrated for the first time. Accurate location data is presented after 130 years since its species description.

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Introduction

The genus *Bothynus* Hope, 1837 (Melolonthidae, Dynastinae) is restricted to the New World (Endrödi, 1985). All species are present in South America, with two related species extending northward into Central America: *B. quadridens* (Taschenberg, 1870) and *B. complanus* (Burmeister, 1847) (Ratcliffe, 2003). Brazil has the largest assemblage of *Bothynus* species with currently 20 known species (Krajcik, 2005; Dechambre, 2006).

Currently, *Bothynus* contains 28 species and is distinguished from other genera of the New World Pentodontini by bi- or tridentate mandibles extending laterally beyond the clypeus; clypeus strongly contracted to a bidentate or rarely quadridentate apex; protibia tridentate or quadridentate; pronotum with a subapical tubercle followed by a concavity; propygidium usually extended posteriorly so that the pygidium is shortened and with a discal, transverse stridulatory area; and apex of metatibia truncate with numerous small bristles (Dechambre, 1981, 2006; Ratcliffe, 2010).

Bothynus cribrarius (Fairmaire, 1878) was described as *Scapophilus* Burmeister, 1847 by Fairmaire (1878) and transferred to

Bothynus Hope, 1837 by Arrow (1937). To date, this is the only known female specimen, deposited at MNHN (Muséum National d'Histoire Naturelle, Paris, France) (Fairmaire, 1878). However, Endrödi (1969) cited another female specimen from NHM (Natural History Museum) and also as a lectotype, what caused confusion, as he is the same paper designated the specimens of MNHN as the lectotype. Furthermore, the labels of these specimens present no precise location data, and only Brazil is mentioned on the label data.

In this contribution, we describe for the first time the male of *B. cribrarius* (Fairmaire) and present new collecting data based on three specimens found in the collections of MNRJ and FIOC, both in Rio de Janeiro municipality.

Material and methods

Specimens were examined and dissected under an Olympus SZX12 stereomicroscope. Images were captured with a Nikon D90 digital camera using the Software Helicon Remote[®] and assembled with Combine ZP software. All the material studied was loaned from the MNRJ (Universidade Federal do Rio de Janeiro, Museu Nacional do Rio de Janeiro, Rio de Janeiro – Marcela L. Monné) and FIOC (Fundação Instituto Oswaldo Cruz, Rio de Janeiro – Jane M. Costa) and studied in the MNHN (Muséum National d'Histoire Naturelle, Paris, France – Olivier Montreuil).

* Corresponding author.

E-mail: duartepaulo85@gmail.com (P.R.M. Duarte).

Results

B. cribrarius (Fairmaire, 1878)

Scaptophilus cribrarius Fairmaire, 1878: 266

Description: Male. Total length: 20.0–21 mm. Width across humeri 10.5–11.0 mm. Color in dorsal view dark brown, opaque; ventral view darker, densely setose (Figs. 1–3). Head: Clypeus triangular, strongly rugopunctate, apex contracted to 2 small teeth, sides slightly reflexed. Frontoclypeal suture weak, almost obsolete in smaller male. Frons transverse, moderately arched, strongly

rugopunctate, and with 2 setose areas laterally. Mandibles tridentate, apical and middle teeth acuminate, basal tooth smaller, rounded. Ocular canthi slightly rounded, with scattered setae beneath. Mentum short, transverse, triangular, base concave. Pronotum: Shape transverse, about twice as wide as long, surface strongly convex. Pronotal fovea moderately concave, extending to about a third of anterior pronotal width and strongly and transversely wrinkled with some punctures on sides. Surface uniformly punctate, moderate on disk, and dense on sides, with larger, setose punctures; sides rounded, slightly raised. Apical tubercle large, conical, base transverse. Elytra: Surface opaque, moderately and



Figs. 1–9. *Bothynus cribrarius*. 1–3, male in dorsal, lateral and ventral views respectively; 4–6, female in dorsal, lateral and ventral views respectively; 7–8, parameres and aedeagus in caudal and lateral views respectively (arrow indicates ventral tooth); 9, male anterior right claws. Scale bars (Figs. 1–6 = 0.5 cm; Figs. 7–9 = 2 mm).

uniformly punctate; punctures setose, moderate in size, some coalescent, becoming denser laterally. Striae distinctly punctate; sutural striae present, removed from suture by about 3–4 puncture diameters. Interstriae indistinct. Apical umbone smooth. Scutellum subtriangular, apex rounded, surface sparsely punctate. Legs: Femora densely setose, setae long, light reddish brown. Protibiae tridentate, apical tooth curved and more acute than others, middle tooth wider, basal tooth smaller. Protarsi with claws different in shape and size; inner claw strongly curved, incised, longer, incision deeply bifurcated (Fig. 9), outer claws simply curved. Meso- and metatibiae with 2 transverse carinae on external surface; mesotibiae distinctly shorter than metatibiae; apex of meso- and metatibiae with 25–40 spinules. Venter: Surface densely setose, setae almost covering thoracic sternites; metathorax with center longitudinally concave, shallow. Abdominal sternites weakly setose on disk, denser on sides; fifth sternite with C-shaped punctures, denser than previous segments; sixth sternite emarginated at apex, surface densely punctate; punctures fine, coalescent. Propygidium completely setose except on disk where punctures coalesce and form weak ridges; stridulatory area confined to disk. Pygidium setose, slightly convex, with strong, transverse, coalescent punctures. Aedeagus: Parameres symmetrical strongly contracted to apex, apex dilated (Fig. 7). In lateral view with a carina. Surface weakly rugose mainly at middle; basal half with ventral tooth in lateral view; phallobase about 2 times longer than parameres (Fig. 8).

Female. Differs from male in the following aspects: Pronotal surface less punctate; apical tubercle about 1/2 smaller; fovea almost obsolete, flattened, and simply punctate, punctures ocellate. Legs with protarsi simple, claws similar in shape, not incised nor strongly curved. Pygidium less convex, nearly flat and more setose. Metathorax with narrower; abdominal sternites more distinctly punctate, sixth sternite parabolic, completely setose (Figs. 4–6).

Material examined

Holotype female (MNHN). Examined, labeled: “Brésil”. Endrödi (1969) designated a lectotype for this species, but this was incorrect because Fairmaire (1878) specifically stated that there was only one specimen. Article 74.2 (ICZN, 1999) stipulates that a unique specimen is to be regarded as a holotype. Although Endrödi (1969) just below his lectotype designation mentioned another female specimen from NHM and also as a lectotype what was another mistake that must be disregarded. The holotype identification labels are available at the following site: <http://coldb.mnhn.fr/catalognumber/mnhn/ec/ec7107>.

Additional material. BRASIL, Rio de Janeiro: Resende, Serrinha do Alambari, ii.2010, U. Caramaschi & H. Niemeyer legs. [1♂ MNR]. Itatiaia, 20.iv.1933, ♂, Col. J. F. Zikán, [1♂ FIOC]; Itatiaia, Parque Nacional do Itatiaia, Casa do Pesquisador, 27.ii-01.iii-2012, 750 m, M. Cupello leg. [1♀ MNR].

Discussion

This species is unique in having the dorsal body surface opaque, not shining as in all remaining species of the genus, and this

condition is due to the microreticulated integument (best observed at high magnification, 90×). The ventral surface is extremely setose, and these features together are useful to distinguish *B. cribrarius* from other *Bothynus* species. In certain light condition, a somewhat bluish reflection may appear; Fairmaire (1878) stated that some kind of mercury compound could have affected the specimens he was describing. Curiously, the places where the specimens were collected are all well-collected by entomologists, and the fact that *B. cribrarius* remained without new data collections until now is intriguing. Only five specimens (2 males and 3 females) are currently known. This species is similar to *B. cylindricus* Arrow, 1937, but the opaque surface and ventral pilosity of *B. cribrarius* are enough to distinguish both species. In addition, the shape of pronotal fovea is narrower in *B. cribrarius*, and the parameres are less punctate and with a ventral tooth near the base in *B. cribrarius* versus distinctly punctate parameres and a ventral tooth near the middle in *B. cylindricus*. Lastly, the bifurcations of the inner claw of the protarsi are the same size in *B. cribrarius* while in *B. cylindricus* the basal bifurcation is stronger and longer.

Conflict of interest

The authors declare no conflict of interest.

Acknowledgments

We thank all the curators and collection managers who made the material available to us. The curator of the MNHN, Antoine Mantilleri by the data available online. Dr. Brett C. Ratcliffe (University of Nebraska State Museum) is thanked for his comments and suggestions that improved an earlier version of this paper. PRMD was supported by a CNPq grant, process number 130370/2015.

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