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The first troglobitic *Pseudonannolene* from Brazilian iron ore caves (Spirostreptida: Pseudonannolenidae)

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Abstract

Pseudonannolene spelaea **n. sp**. is the first strictly cave-dwelling species described for the family Pseudonannolenidae. It is found in iron ore caves in the Brazilian Amazon. The family Pseudonannolenidae is exclusively Neotropical and frequently found in caves of Brazil, from which 20 species are known. The new species is compared with its congeners and with related cave-dwelling species. The family Pseudonannolenidae is discussed, and comments are presented on the conservation status of the caves where the species is found, which potentially may be the target of anthropogenic impacts resulting from iron ore extraction.

Key words: Neotropics, Brazil, troglobitic, conservation, iron ore

Introduction

The family Pseudonannolenidae Silvestri, 1895 has a wide distribution in South America, with species known from Argentina to the Guianas (Pocock 1910; Mauriès 1987; Adis 2002). In Brazil, the genus *Pseudonannolene* Silvestri, 1895 is the most representative, having 20 described species, 8 of which are considered troglophiles (populations established in the subterranean environment as well as the externalon the surface) (Brölemann 1909; Trajano *et al*. 2000; Fontanetti 2000). The distribution of the genus covers a large part of the national territory, including the states of Amazonas, Mato Grosso, Mato Grosso do Sul, Tocantins, Goiás, Ceará, Sergipe, Bahia, Minas Gerais, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul (Silvestri 1902; Pinto-da-Rocha 1995; Trajano *et al.* 2000; Pinto-da-Rocha *et al*. 2001; Golovatch *et al.* 2005; Souza-Silva & Ferreira 2009; Zampaulo & Ferreira 2009; Bento 2011; Donato 2011). Although it is a genus of wide distribution, its relationships still remain obscure. The family is, usually allocated placed in the suborder Epinannolenidea of the order Spirostreptida, which is distributed in part of Central America, southern Africa, southwest and southeast Oceania (Shelley & Golovatch 2011).

Regarding the restriction to the subterranean environment, there is no known species of the family that is restricted to these environments, although the spirostreptidan suborder Cambalidea has at least three troglobite species in the New World: *Cambala speobia* Chamberlin, 1953 and *Cambala reddeli inornatus* Causey, 1964 both from gypsite caves in Texas (USA) and *Mexicambala russelli* Causey, 1964 found in caves in Mexico (Causey 1964; Reddell 1994, White & Culver 2012). Depigmentation, reduced number of ocelli (*Cambala speobia* and *Mexicambala russeli* are anophthalmic) and increased body size have been considered as troglomorphic characters in these species (Causey 1964). Another specialization feature correlated with the subterranean environment is the elongation of appendages (including sensory) (Golovatch & Kime 2009), and in their respective descriptions only the elongation of the antennae and tarsal claws were cited in *Mexicambala russelli* (Causey 1964).

This work describes the species *Pseudonannolene spelaea* **n. sp**., found in ferruginous caves the state of Pará (Brazilian Amazon). The species stands out due to its troglomorphic characteristics, therefore being considered the first troglobite species of the family Pseudonnanolenidae.

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