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A new troglobiotic species of *Hyaella* (Crustacea, Amphipoda, Hyaellidae) with a taxonomic key for the Brazilian species

STELLA GOMES RODRIGUES, ALESSANDRA ANGÉLICA DE PÁDUA BUENO
& RODRIGO LOPES FERREIRA

Universidade Federal de Lavras, Departamento de Biologia, Programa de Pós-Graduação em Ecologia Aplicada, Campus Universitário, 37200-000, Lavras, Minas Gerais, Brasil.

E-mail: stellagomesrodrigues@gmail.com; aapbueno@yahoo.com.br; drops@dbi.ufla.br

Abstract

The freshwater crustaceans from the order Amphipoda occur mainly in cold and temperate climates. However, in the tropics, these animals can be more abundant in subterranean environments, where the temperatures are milder than in surface. Despite being accepted that the number of species of freshwater amphipods in South America is lower when compared to other regions, recent descriptions have shown that its diversity is certainly underestimated. In this study, a new species of the genus *Hyaella* is described for Brazil, the fourth troglobiotic species of *Hyaella* for the country and the sixth in the world. The new species was found on the epikarst of a cave in São Paulo state, Southeastern Brazil. Besides, the new species shows typical characteristics from organisms adapted to the subterranean environments, a pattern also observed in the other troglobiotic species of the genus.

Key words: epikarst, freshwater crustacean, morphological adaptations, troglomorphism

Resumo

Os crustáceos de água doce da ordem Amphipoda ocorrem principalmente em climas frios e temperados. Contudo, nos trópicos, estes animais podem ser mais abundantes em ambientes subterrâneos, onde as temperaturas são mais amenas do que na superfície. Apesar de ser aceito que o número de espécies de anfípodas de água doce na América do Sul seja baixo quando comparado com outras regiões, descrições recentes mostram que sua diversidade é certamente subestimada. Neste estudo, uma nova espécie do gênero *Hyaella* é descrita para o Brasil, a quarta espécie troglóbica de *Hyaella* no país e a sexta no mundo. A nova espécie foi encontrada no epicarste de uma caverna do estado de São Paulo, sudeste do Brasil. Além disso, a nova espécie apresenta características típicas de organismos adaptados aos ambientes subterrâneos, um padrão também observado nas demais espécies troglóbicas do gênero.

Palavras-chave: epicarste, crustáceos de água doce, adaptações morfológicas, troglomorfismo

Introduction

The freshwater species from the order Amphipoda inhabit a wide variety of habitats. They are mainly abundant in cold and temperate climates while exhibiting a low diversity in the tropics. In warmer climates, most species occur in subterranean environments where the temperatures are milder than on surface (Barnard & Barnard 1982; Väinölä *et al.* 2008). Less than 10% of the freshwater species described for the order occurs in the Neotropical region, and the diversity in South America comprises only 10 families, 22 genera and 74 species, although this diversity is certainly underestimated (Fišer *et al.* 2013).

Among the freshwater families of the Neotropics, Hyaellidae have the highest number of species and they are the dominant epigeal organisms, and are also endemic to the New World (Bousfield 1996). This family is only composed of the genus *Hyaella* Smith, 1874, and currently there are 61 species described and Brazil has the greatest diversity, with 18 taxa (Bueno *et al.* 2013; Lowry & Myers 2013).

9	Sternal gills present on segments 2–7	10
–	Sternal gills present on segments 3–7	<i>H. montenegrinae</i>
10	Telson with more than two apical setae	11
–	Telson with only two strong apical setae	<i>H. carstica</i>
11	Gnathopod 2 dactylus shorter than propodus palm	12
–	Gnathopod 2 dactylus as long as propodus palm	13
12	Rami of uropod 3 with only cuspidate setae distally	<i>H. xakriaba</i>
–	Rami of uropod 3 with cuspidate and simple setae distally	<i>H. brasiliensis</i>
13	Peduncle of uropod 3 with four to six cuspidate apical setae	<i>H. curvispina</i>
–	Peduncle of uropod 3 with more than seven cuspidate apical setae	<i>H. castroi</i>
14	Uropod 1 of male with curved seta on inner ramus	15
–	Uropod 1 of male without curved seta on inner ramus	<i>H. pseudoazteca</i>
15	Flanges present only on pleonite 1–2	<i>H. kaingang</i>
–	Flanges present on peraeonite 7 and pleonite 1–3	<i>H. pleoacuta</i>
16	Sternal gills present on segments 3–7	17
–	Sternal gills present on segments 2–7	<i>H. spelaea</i>
17	Antenna 1 longer than antenna 2	18
–	Antenna 1 shorter than antenna 2	<i>H. caeca</i>
18	Posterior lobe of carpus with a row of serrate setae	<i>H. imbya</i>
–	Posterior lobe of carpus with a row of simple setae	<i>H. epikarstica</i> n. sp.

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