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Brasileirinidae, a new isopod family (Crustacea: Isopoda) from the cave in Bahia (Brazil) with a discussion on its taxonomic position

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Abstract

The aquatic troglobiont *Brasileirinho cavaticus* (Crustacea: Isopoda: Calabozoidea), new genus and species is described from the karst cave of the State of Bahia, Brazil. Based on its unique pleonal features i.e. the total absence of female pleopods I–II, uniramous male pleopods I–II, minute, uniramous respiratory pleopods III–V in both sexes and pleotelson not exceeding 45% of the pleon length, a new family, Brasileirinidae, is created. Some biological, ecological and behavioral data for the species are provided together with the nature conservation issues. Additionally, an assignment of the new species to the suborder Calabozoidea is discussed through comparison with the other two calabozoid species, *Calabozoa pellucida* and *Pongycarcinia xiphidiourus*. For the latter species, some previously missing morphological details, as well as a new locality record, are provided. According to the updated morphological evidence, the previously assumed relationships of Calabozoidea are discussed and, consequently, the diagnostic characters of some taxa emended.

Key words: *Brasileirinho cavaticus* sp. nov., gen. nov., fam. nov., morphology, biology, Calabozoidea, nature conservation, troglobiont

Introduction

Recently, the first aquatic troglobiotic isopod was found within a ca. 191.300 km² large Brazilian karst region. The new isopod from the State of Bahia (Messana *et al.* 2002) supplemented the species list of aquatic troglobiotic crustaceans comprising only seven amphipods, two spelaeogriphaceans and three decapods (*Aegla* spp.; Trajano & Bichuete 2009).

Together with the erection of the new genus *Pongycarcinia* for the Bahian isopod, Messana *et al.* (2002) suggested a slight modification of Van Lieshout (1983) diagnosis of the suborder Calabozoidea. They used *Pongycarcinia xiphidiourus* Messana, Baratti & Benvenuti, 2002 to discuss two main hypotheses about the suborder's position, as the phylogenetic position of Calabozoidea had been controversial, based exclusively on the morphological traits of the Venezuelan *Calabozoa pellucida* Van Lieshout, 1983. Since both genera are presently monotypic, we are using the genera names further in the text.

Van Lieshout (1983) suggested possible affinities of *Calabozoa* to both the Asellota and Oniscidea, but she laid greater stress upon the reduction of the first two pleonites and the presumed origin of the respective male pleopods, acknowledging a closer relationship between Calabozoidea and Asellota. Wägele (1989; p. 58, fig. 30) treated latter suborders as sister-groups on the basis of: 1) the reduced telsonic part, terminal anus and subterminally inserted uropods, 2) very small endopodite of male first pleopod, 3) male pleopod II without appendix masculina, with endopodite formed as small gonopodium without swimming setae, 4) female pleopod I smaller than pleopod III and 5) female pleopod II with endopodite smaller than exopodite. He also stated that "...the Oniscidea have a large number of autapomorphies that are absent in *C. pellucida*". Brusca and Wilson (1991) on the other hand, argued that *Calabozoa* appears to possess no asellotan synapomorphies either; antennal peduncle is not 6-articulate and has no scale, pleonites III–V are free, not fused with the pleotelson, male pleopod II doesn't have endopod transformed into an elongate geniculate gonopod and exopod modified to work with the latter in sperm transfer as