

Scientific Note

Back from the dead: a thanatosis report in *Pseudoleptodesmus rubescens* (Gervais, 1836) (Diplopoda: Polydesmida, Chelodesmidae)

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Abstract. The intriguing thanatosis was observed for the second time for a member of the family Chelodesmidae. This behavior was recorded for the species *Pseudoleptodesmus rubescens* (Gervais, 1836), in the municipality of Magé, state of Rio de Janeiro, Brazil.

Keywords: Atlantic Forest, Tonic Immobility, millipede, Neotropical region, behavior.

The term "Thanatosis" refers to Thanatos, the Greek god of death (Toledo et al. 2010). Thanatosis was commonly referred to as death-feigning, however, was more appropriately called as Tonic Immobility (TI). Thanatosis is a fascinating anti-predator strategy adopted by diverse prey late on in the predation sequence, and frequently following physical contact by the predator, despite being taxonomically and ecologically widespread. TI is thought to inhibit further attack by predators and reduce the perceived need of the predator to subdue prey further (Rogers & Simpson 2014; Humphreys & Ruxton 2018). As stated by Humphreys & Ruxton (2018) this behavior is probably present in more taxa than is currently described as pointed.

Chelodesmidae Cook, 1895 is a highly diverse family within the class Diplopoda, comprising approximately 176 genera and nearly 800 species (Hoffman 1980; Means et al. 2023). The currently accepted classification of the group divides Chelodesmidae into two subfamilies, Chelodesminae Cook, 1895 for the Neotropical species, and Prepodesminae Cook, 1896 for the Afrotropical and Palearctic taxa (Hoffman 1980). Although the chelodesmid species have been extensively studied, primarily in the Neotropics, many aspects of their biology remain largely unknown. To date, only the species *Thanatomimus enghoffi* Hoffman & Reid, 1990, from southeastern Nigeria, is the sole chelodesmid for which thanatomimy has been reported (Hoffman & Reid 1990).

Pseudoleptodesmus Brölemann, 1902 is a monotypic genus described to accommodate the species *Pseudoleptodesmus rubescens* (Gervais, 1836), known only from the state of Rio de Janeiro, Brazil (Brölemann 1902; Attems 1938; Schubart 1945; 1951). According to Schubart (1945), the species is common in urban areas, occurring associated with rotten trunks and tree bark. Thus, this is the first report of *P. rubescens* exhibiting thanatomimy, and the second case in entire Chelodesmidae.

The municipality of Magé, located in the state of Rio de Janeiro, Brazil, is highlighted for its biodiversity and geodiversity, presenting an altitudinal range of 0 to 2,200 m and remnants of twelve phytogeographical regions in good state of conservation (Amador 2012; IBGE 2023). The record reported here was observed in the locality of Santo Aleixo, district of Magé, on a road that cuts through an area of late secondary Submontane Dense Ombrophilous Forest ("Floresta Ombrófila Densa Submontana secundária tardia"), about 150 m altitude, within the Suruí Protected Area ("APA Suruí") and close to the

limits of the Serra dos Órgãos National Park (PARNASO).

The observation was recorded on September 2nd of 2023, in the early evening (7:21 p.m.), without wind or precipitation. An individual of *P. rubescens* (Fig. 1A) was observed walking along the ground on the road, close to the forest edge. When the specimen was handled, it immediately entered a posture similar to that of a dead animal, with a slightly bent body, arched legs and shrunken head, very similar to the appearance of a dead and dehydrated individual of the species (Fig. 1B, 1C). At the same time, the individual eliminated a considerable amount of feces (Fig. 1C). The individual remained motionless even when it was moved within the hand and its legs were touched, and it remained in this posture for about three minutes after being released on the forest floor. Upon leaving the posture, it began to move quickly, looking for shelter in the leaf litter.

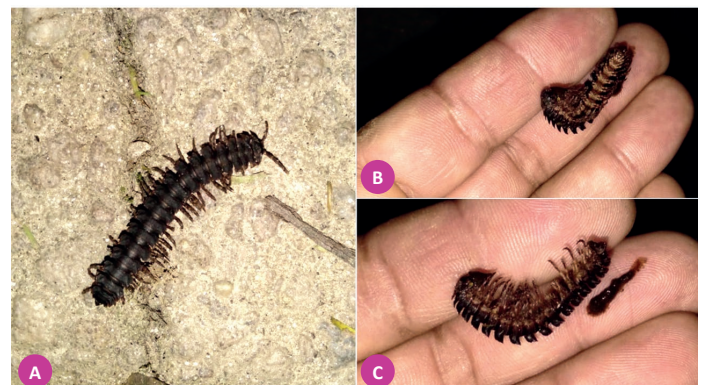


Figure 1. *Pseudoleptodesmus rubescens* (Gervais, 1836) (Diplopoda: Polydesmida, Chelodesmidae). A) Living specimen; B-C) Same specimen exhibiting thanatosis, with feces eliminated.

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Authors' Contributions

All authors wrote the manuscript, discussed the data, and contributed to its final version. RSB and LFMI contributed to the literature review; EAR produced the images of the species.

Conflict of Interest Statement

The authors declare that there is no conflict of interest related to the publication of this manuscript.

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