

Spider preying on ticks in a Brazilian cave

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The order Ixodida, which includes ticks, is made up of three families, Nuttalliellidae, Ixodidae and Argasidae⁶. In Brazilian caves, there are observations on the presence of species of the genera *Ixodes* (Ixodidae), *Ornithodoros* and *Antricola* (Argasidae). The family Argasidae presents a wide distribution, having been recorded in caves from 13 Brazilian states (Alagoas, Bahia, Ceará, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Pernambuco, Rondônia, Sergipe and São Paulo)^{1,2,4,5,7,8,9}.

Works reporting the presence of ticks in caves of Brazil involve the description of new species and new locality records, but seldom their biology or ecology in the subterranean environments^{1,2,4,5,9}. Thus, the objective of this work is to present an undocumented predator-prey relationship of spiders, species *Smeringopus pallidus* Blackwall, 1858 (Araneae: Pholcidae), preying on argasid ticks *Ornithodoros (Alectorobius)* spp., in a cave called Fim do Morro, located in the municipality of Paripiranga, Bahia State (UTM E623890 N8823540, Zone 24L).

Fim do Morro is a limestone cave in the semi-arid Brazilian savanna. The interior is dry with no visible water, but with considerable epigean plant debris and guano from hematophagous bats.

During our visit to Fim do Morro cave a thorough invertebrate collection was made. Two species of *Ornithodoros* were observed, both belonging to the subgenus *Alectorobius*³. Further identification of adults to species level is difficult in absence of immature stages, due to uncertain taxonomic placements within

this group. Ticks were abundant and widespread, being present on the floor, the walls and the ceilings of the cave. All tick specimens collected during this study are deposited in the Underground Invertebrate Collection (ISLA) of the Federal University of Lavras, Brazil.

During our January 2010 fieldwork in the Fim do Morro cave, two interactions between spiders and ticks were observed. In both observations, the spiders, *Smeringopus pallidus*, already had the ticks, *Ornithodoros (Alectorobius)* sp., immobilized, wrapped in silk and held by the chelicerae. Other ticks were actively crawling on the walls and ceilings of the cavity, probably in search of microhabitats where they can wait for their hosts. During this activity, some tick individuals may eventually contact spider webs, leading to predation as observed here.

Figures 1 and 2 show a captured tick *Ornithodoros (Alectorobius)* sp. wrapped in silk. The red arrows close to the legs of the tick, demonstrate how the wrapping silk immobilizes the prey (Fig. 2).



Figure 1. *Smeringopus pallidus* observed capturing an *Ornithodoros (Alectorobius)* sp.

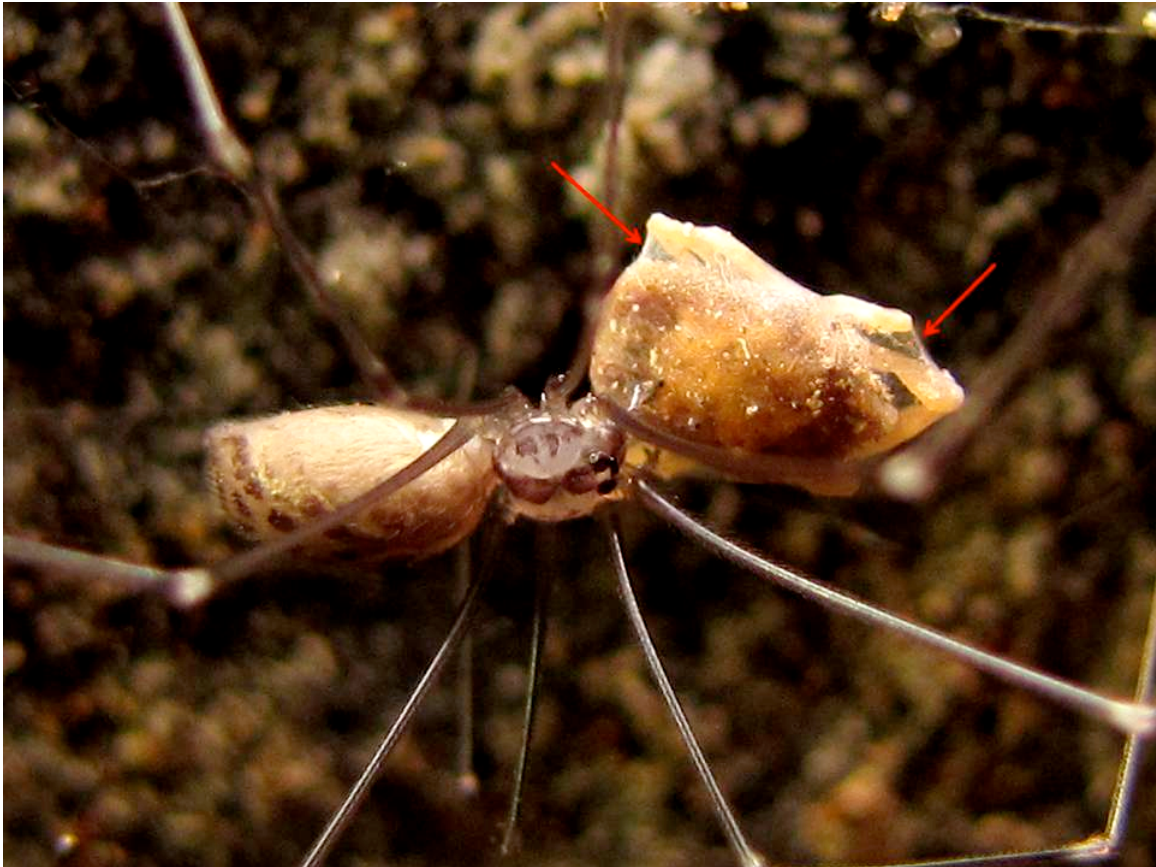


Figure 2. Detail of the capture of *Ornithodoros (Alectorobius)* sp. by *Smeringopus pallidus*. The arrows indicate the sites where the web is entangling the prey.

Works dealing with ecological aspects related to tick predation are rare, and principally center on short descriptions of these behaviors. Further, the majority of these studies are published in relatively inaccessible sources, such as regional journals or proceedings of scientific meetings. An extensive review on tick predator arthropods¹⁰ found no literature reference to predation on ticks in caves. Moreover, this note reports the first observation of tick capture by a spider of the family Pholcidae.

Studies on cave-dwelling mites and ticks in Brazil remain limited². Short-term observational studies can add new insights to our current understanding of the ecological relationships in the little-explored cave environments.

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