



# Record of Lepidoptera and Hemiptera as a food resource of *Acutisoma longipes* Roewer, 1913 (Arachnida: Opiliones) in the Cerrado, Brazil

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**Abstract.** Harvestmen are nocturnal arachnids, commonly found in humid forests, with omnivorous feeding behavior. There are records of different taxa in the diet of these arthropods, but data is still scarce for many species, especially in Cerrado areas. Thus, the objective of the present work is to report Lepidoptera and Hemiptera in the diet of the harvestman *Acutisoma longipes* Roewer, 1913 (Arachnida: Opiliones), in Mata de Galeria in the Cerrado of Minas Gerais, Brazil. The records occurred randomly in the municipality of Luminárias, Minas Gerais, on October 10th and December 4th, 2023. In the first record, the species *A. longipes* was feeding on a moth (Lepidoptera: Erebididae). In the second record, the same species fed on a leafhopper, *Mahanarva* sp. (Hemiptera: Cercopidae). It was not possible to say whether these insects were preyed upon, usurped by other predators or found dead, but any of these hypotheses can be considered. This record contributes to increasing knowledge about the diet of harvestmen, especially in the Cerrado biome, where there is a need for more related studies.

**Keywords:** Erebididae; Cercopidae; diet; harvestmen.

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Harvestmen, also known as goat spiders, stink spiders and bodum, are nocturnal arachnids (Giupponi *et al.* 2017; Rezende *et al.* 2024), commonly occurring in humid forests, such as the Atlantic Forest, which is home to the greatest diversity of the taxon (Pádua *et al.* 2023; Rubim *et al.* 2023a). However, they also inhabit open areas, such as Cerrado and Caatinga (Rubim *et al.* 2023b), found in caves, under rocks, rotten logs or on vegetation (Curtis & Machado 2007).

Unlike most arachnids that are mainly predators, harvestmen are typically omnivores with the ability to chew and ingest solid food (Acosta & Machado 2007). These animals have a generalist diet, with great variation in eating habits (Gnaspini 1996), but they prefer opportunistic carnivorous habits (Gnaspini 1996; Acosta & Machado 2007).

There are records of different taxa as food sources for harvestmen such as Annelida (Halaj & Cady 2000), Gastropoda (Nyffeler & Symondson 2001), Hemiptera (Allard & Yeargan 2005), among others, obtained in different regions of the planet. In Brazil, the records were all carried out in the Atlantic Forest, which showed the presence of social wasps (Rubim *et al.* 2022), lepidopterans, bees, crustaceans and annelids (Sabino & Gnaspini 1999; Rubim *et al.* 2021) in the diet of the harvestmen. However, these data are still scarce, especially outside the Atlantic Forest, and new records are important to better understand the diet of these arachnids. Therefore, the objective of this work is to report Lepidoptera and Hemiptera in the diet of harvestmen in the Cerrado of Minas Gerais, Brazil.

Both records occurred by chance, in Mata de Galeria, Cerrado phytogeography, in the municipality of Luminárias (-21.52385, -44.84580), south of the state of Minas Gerais, during a survey project of insect and arachnid biodiversity. The record of Lepidoptera feeding by the harvestman took place on October 10, 2023, at 10:28 am, at the Mamono waterfall; and the registration of Hemiptera took place on December 4, 2023 in Córrego da Aranha at 8 pm. All these arthropods were collected, the harvestmen conditioned in 70% alcohol and sent for identification by Dr. Adriano Kury (National Museum of Rio de Janeiro); Hemiptera, also in 70% alcohol, and Lepidoptera, packed in an entomological envelope, were identified by Dr. Sinval Silveira Neto (USP-ESALQ, Piracicaba, São Paulo).

In the first record, the harvestman, *Acutisoma longipes* Roewer, 1913 (Opiliones: Gonyleptidae), was on the side of an unidentified tree trunk, covered in moss, approximately 1.8 meters above the ground, feeding on a moth (Lepidoptera: Erebididae), with their chelicerae attached to the upper region of the insect's thorax (Figure 1A). In the second record, the same species of harvestman, *A. longipes*, was handling a leafhopper, *Mahanarva* sp. (Hemiptera: Cercopidae) using its pedipalps and chelicerae, on a rock (Figure 1B).

The record of *A. longipes* feeding on Lepidoptera is unprecedented for the Cerrado biome, but it has already been documented in the Atlantic Forest area (Rubim *et al.* 2021), indicating



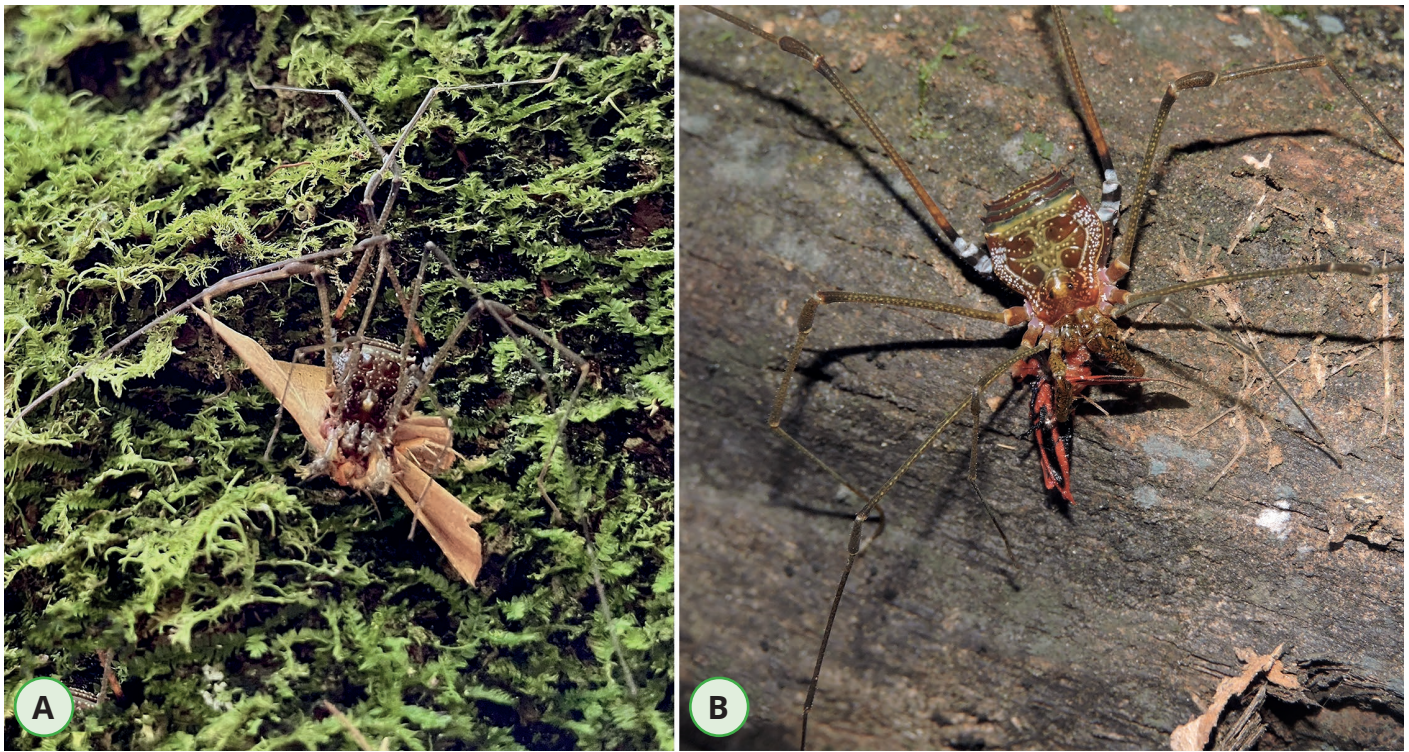
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**Figure 1.** Moth (Lepidoptera: Erebidae) (A) and *Mahanarva* sp. (Hemiptera: Cercopidae) (B) as a food resource for the harvestman *Acutisoma longipes*, in the Cerrado area, municipality of Luminárias, Minas Gerais, Brazil

that this taxon may be frequent in the diet of this harvestman. Hemiptera is the first record in the diet of this species, however it cannot be said that this is occasional or frequent, as harvestmen are opportunistic and exploit different food resources (Acosta & Machado 2007).

It was not possible to determine whether these insects were preyed upon by the harvestman, whether they were usurped by another predator or even found dead in the environment, but it is possible to consider all these possibilities. Sabino & Gnaspini (1999) recorded the harvestman *Goniosoma* cf. *longipes* (Roewer, 1913) (Opiliones: Gonyleptidae) usurping the prey, a species of moth, from a spider, *Enoploctenus cyclothorax* (Bertkau, 1880) (Araneae: Ctenidae) in an area of the Atlantic Forest, a behavior that was defined as kleptoparasitism. Another possible record of this behavior occurred with *Goniosoma inscriptum* Mello-Leitão, 1922 (Opiliones: Gonyleptidae), feeding on a hemiptera wrapped in silk near a web of the spider *Thwaitesia* sp. (Araneae: Therididae), indicating a possible usurpation of the spider (Sabino & Gnaspini 1999). In the present record, this behavior was not observed, as the harvestman was alone feeding on the moth and the leafhopper, but the possibility must be considered.

The hypothesis of active predation must also be considered, as this behavior has already been observed for harvestmen when capturing invertebrates, such as coleopteran larvae in agricultural areas (Drummond et al. 1990) and even vertebrates, as recorded by Menegucci et al. (2020), in which the harvestman *Heteromitobates discolor* (Soerensen, 1884) (Opiliones: Gonyleptidae) preyed on an anuran of the species *Hylodes phyllodes* Heyer & Cocroft, 1986 (Anura: Hylodidae) in the Atlantic Forest. Finally, these arachnids can also be opportunistic, feeding on prey found dead, as observed by Halaj & Cady (2000) in agricultural cultivation.

Information on the eating habits of harvestmen is still scarce and restricted to some species of the Atlantic Forest; therefore, with this work we add information about the diet of these arachnids, mainly in the Cerrado area, where information is scarcer.

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## AUTHORS CONTRIBUTION

MLSS: Investigation, Writing-Original Draft. IRC: Investigation, Writing-Original Draft. FBAF: Investigation, Writing-Original Draft. DSV: Writing-Review & Editing, Visualization; Pictures. GCJ: Conceptualization, Resources, Writing-Review & Editing. MMS: Conceptualization; Resources, Writing-Review & Editing.

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## CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

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