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First record of *Micrepeira hoeferi* (Araneae, Araneidae) in the state of Ceará, Brazil

Primer registro de *Micrepeira hoeferi* (Araneae, Araneidae) en el estado de Ceará, Brasil

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Abstract

We report the first two records of *Micrepeira hoeferi* Levi, 1995 from the state of Ceará, Brazil. These records are based on the collection of 19 specimens from two nearby montane, semi-deciduous tropical forests located in the municipalities of Pacoti and Baturité. The specimens were deposited as voucher material in the Natural History Collection of the Federal University of Piauí. This report also represents the highest elevation at which *M. hoeferi* has been recorded (738 m a.s.l.), suggesting that the species is highly adaptable to a range of habitats.

Keywords: distribution, spider, biological record, forest, Neotropic.

Resumen

Reportamos los dos primeros registros de *Micrepeira hoeferi* Levi, 1995 en el estado de Ceará, Brasil. Estos registros se basan en la captura de 19 especímenes en dos bosques tropicales semideciduos montanos ubicados en Pacoti y Baturité. Los individuos fueron depositados como material de referencia en la Universidad Federal de Piauí. Este reporte representa la mayor altitud a la que se ha registrado *Micrepeira hoeferi* (738 m s. n. m.), lo que sugiere que la especie posee una gran capacidad de adaptación a diversos hábitats.

Palabras clave: distribución, araña, registro biológico, bosque, Neotrópico.

Introduction

The family Araneidae, also known as orb-weaver spiders, is the third-largest family of spiders, comprising 3,132 species across 191 genera (World Spider Catalog, 2024). Morphologically, females tend to be bigger than males. These spiders have eight eyes arranged in two rows, with the lateral eye groups widely separated from the center, and their legs possess three claws. These non-cribellate entelegyne spiders build conspicuous, spiral, wheel-shaped webs (with minor modifications in some species) for capturing prey. Araneid species exhibit a high diversity of morphology, ecology, and behavior (Levi, 2002; Luqman et al., 2022; Scharff & Coddington, 1997).

The genus *Micrepeira* Schenkel, 1953 comprises seven species, all of them occurring in Central America and the tropical regions of South America (World Spider Catalog, 2024). In Brazil, *Micrepeira fowleri* Levi, 1995 and *Micrepeira hoeferi* Levi, 1995 have been recorded (Levi, 1995). The genus is distinguished from others by a domed sternum, short legs, and bold white dorsal markings on the opisthosoma, which are absent on the ventral side (Levi, 1995; Schenkel, 1953). The web is easily recognizable by its semicircular shape (Figure 2A) and a centrally located shelter composed of pieces of moss, plant matter, and insect fragments (Figure 2B; Quintero, 1974). Specific details on the web and its construction have only been recorded by Levi (1995) and Quintero (1974). Levi (1995) provided descriptions of males and females, web architecture, a brief natural history, and the distribution of *Micrepeira hoeferi* (see Table 1). However, information on the species remains scarce. *Micrepeira hoeferi* is also mentioned in an identification guide (Levi, 2002) and an occurrence report from Colombia (Tovar-Márquez et al., 2021).

This study reports *Micrepeira hoeferi* for the first time in the State of Ceará, Brazil. These records extend both the geographical and elevational ranges of the species, contributing to the Wallacean and Hutchinsonian shortfalls, respectively (Bini et al., 2006).

Methods

The study was conducted in two areas of montane semi-deciduous tropical forest: the municipality of Pacoti (04°14’02” S, 38°53’26” W, 738 m a.s.l.) and the municipality of Baturité (04°18’06” S, 38°54’40” W, 651 m a.s.l.), both located in the State of Ceará, Brazil (Figure 1A). These areas are particularly notable as remnants of Atlantic Forest within the semi-arid region known as the *Brejos de altitude* (Silvera et al., 2020).

The new records are based on 19 specimens (1 adult male, 4 adult females, and 14 juveniles) collected by hand during a field expedition in January 2022. The specimens were identified by Dr. Leonardo Sousa Carvalho using the identification key provided by Levi (1995, 2002). The distribution map (Figure 1) was updated using ArcMap (Esri, 2014). All specimens collected in the field were preserved in 70% alcohol and deposited in the Natural History Collection of the Federal University of Piauí, Teresina (CHNUFPI; curator L. S. Carvalho).

Table 1. Records of *Micrepeira hoeferi*.

Country	Locality	Latitude	Longitude	Estimated altitude (m)	Reference
Brazil	Parque Nacional Pico da Neblina, Amazonas	0°38'N	66°3'W	116	Levi (1995)
Brazil	Tarumã Mirim, Amazonas (holotype)	2°56'S	60°13'W	51	Levi (1995)
Brazil	Reserva Ducke, Amazonas	2°58'S	59°56'W	94	Levi (1995)
Brazil	Síto Campina, Amazonas	2°19'S	58°38'W	41	Levi (1995)
Brazil	Ilha de Maracá, Roraima	3°22'N	61°42'W	209	Levi (1995)
Brazil	Chapada dos Guimarães, Mato Grosso	15°17'S	55°57'W	509	Levi (1995)
Brazil	Nova Xavantina, Mato Grosso	14°40'S	52°24'W	269	Levi (1995)
Brazil	Pernambuco – Piauí border	8°33'S	41°5'W	599	Levi (1995)
Peru	Zona Reservada Tambopata, Madre de Dios	12°50'S	69°17'W	290	Levi (1995)
French Guiana	Montagnes Kaw, São Jorge do Oiapoque	4°33'N	52°09'W	15	Levi (1995)
Colombia	La Esmeralda, Sucre	9°31'N	75°21'W	200-400	Tovar-Márquez (2021)
Brazil	Pacoti, Ceará	4°14'S	38°53'W	738	New record
Brazil	Baturité, Ceará	4°18'S	38°54'W	651	New record

Results

New records

BRAZIL - Ceará • Pacoti; 04°14'02"S, 38°53'26"W, 738 m a.s.l.; 29.I.2022; L.A. Santiago, L.C. Pereira, A.A.A. Castro, J.C.F. Morales leg; 1♂, CHNUFPI 4130, 3♀, CHNUFPI 4131, 14 juveniles, CHNUFPI 4132, CHNUFPI 4133 • Baturité; 04°18'06"S, 38°54'40"W, 602 m a.s.l.; 29.I.2022; M.C. Sousa leg; 1♀, CHNUFPI 4134.

Identification

Both female and male *Micrepeira hoeferi* have a dark-orange carapace, with darker sides on the thoracic region. Females (Figure 3A) exhibit light-brown chelicerae, and their legs display dark-brown rings (Levi, 1995). Additionally, females can be distinguished from those of *Micrepeira tubulofaciens* and *Micrepeira fowleri* by a less prominent epigynum (Figure 3C; Levi, 1995). In males (Figure 3B), the median apophysis of the pedipalps lacks a lobe like, which is present in other species, and instead bears a spine (Figure 3D; Levi, 2002). The color pattern described by Levi (1995) for *M. hoeferi* closely matches the specimens collected during this study, supporting their identification in the field. The only difference compared to Levi's description is the presence of larger black patches on the dorsum of the abdomen.

Discussion

The orb-weaver spider *Micrepeira hoeferi* has been recorded in Colombia, French Guiana, Peru and Brazil, at elevations ranging from 22 to 551 m a.s.l. (Dierkens, 2012; Levi, 1995; Tovar-Márquez et al., 2021). In Brazil, this species has been reported from the states of Amazonas, Mato Grosso, Pernambuco, and Roraima, occurring across the Amazon Rainforest, Atlantic Forest, and Caatinga biomes. In Amazonas, it has been found at elevations between 50 and 292 m a.s.l.; in Mato Grosso, between 431 and 595 m a.s.l.; in Pernambuco, between 440 and 562 m a.s.l.; and in Roraima, between 114 and 213 m a.s.l. (Levi, 1995). This study extends the known geographic range of *M. hoeferi* to the State of Ceará

Ceará northeastern Brazil and increases its recorded altitudinal range to 738 m a.s.l.

The descriptions and identification keys by Levi (1995) could be updated using the new voucher specimens deposited in the Natural History Collection of the Federal University of Piauí. These specimens may reveal regional variations, as the females collected exhibit slight differences to those originally described by Levi. The shape and specific features of the semicircular web are consistent with Levi's (1995) observations of a population from the Brazilian Amazon, as well as with Quintero's (1974) description of *Micrepeira tubulofaciens* (formerly *Spilasma tubulofaciens*).

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Figure 1. Distribution map of *Micrepeira* hoeferi.

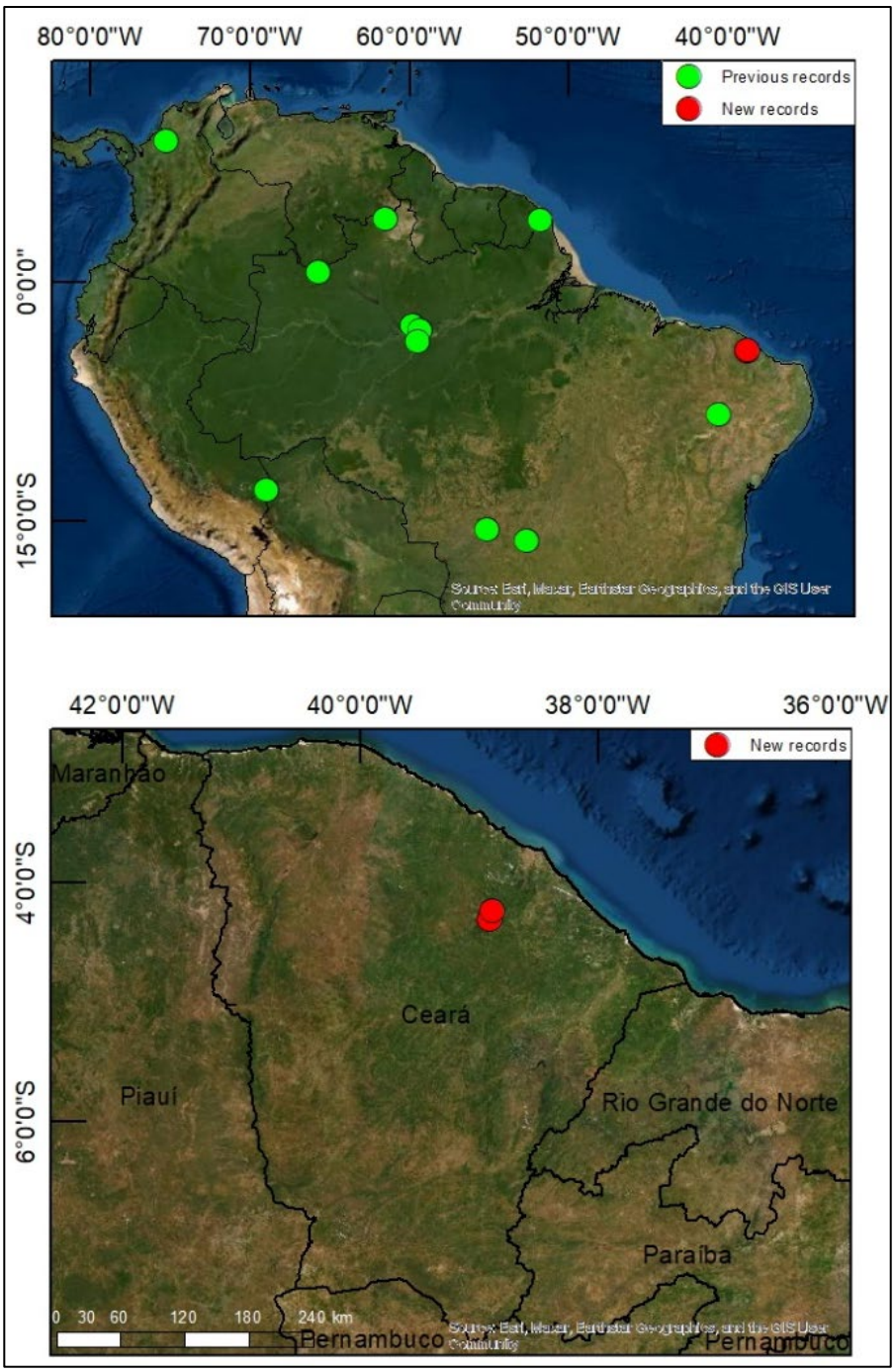
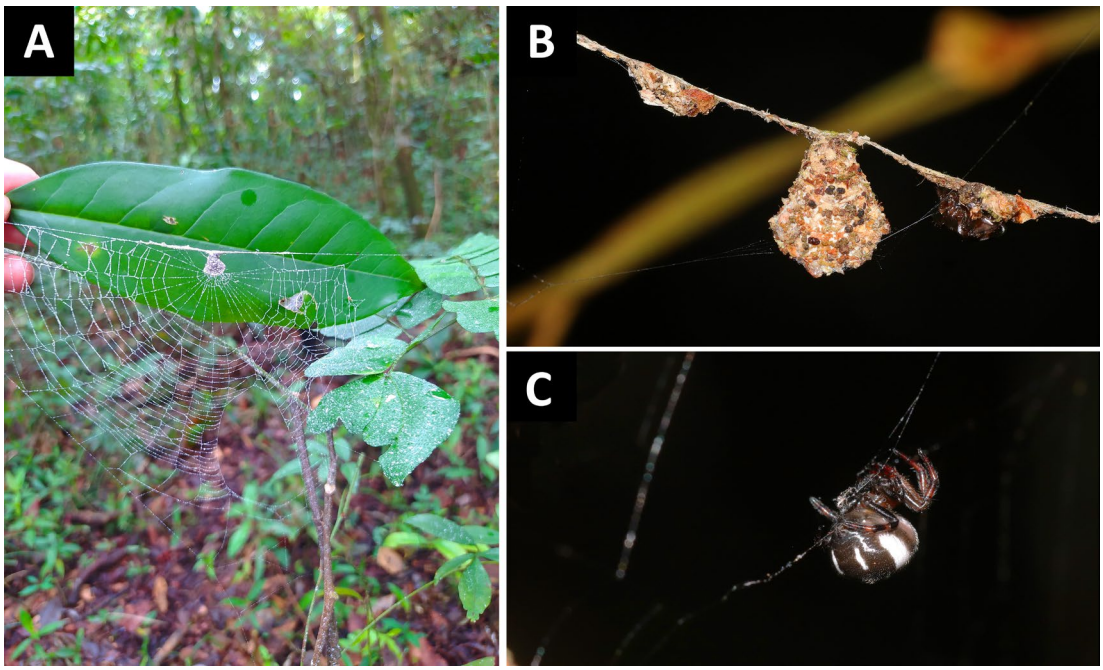
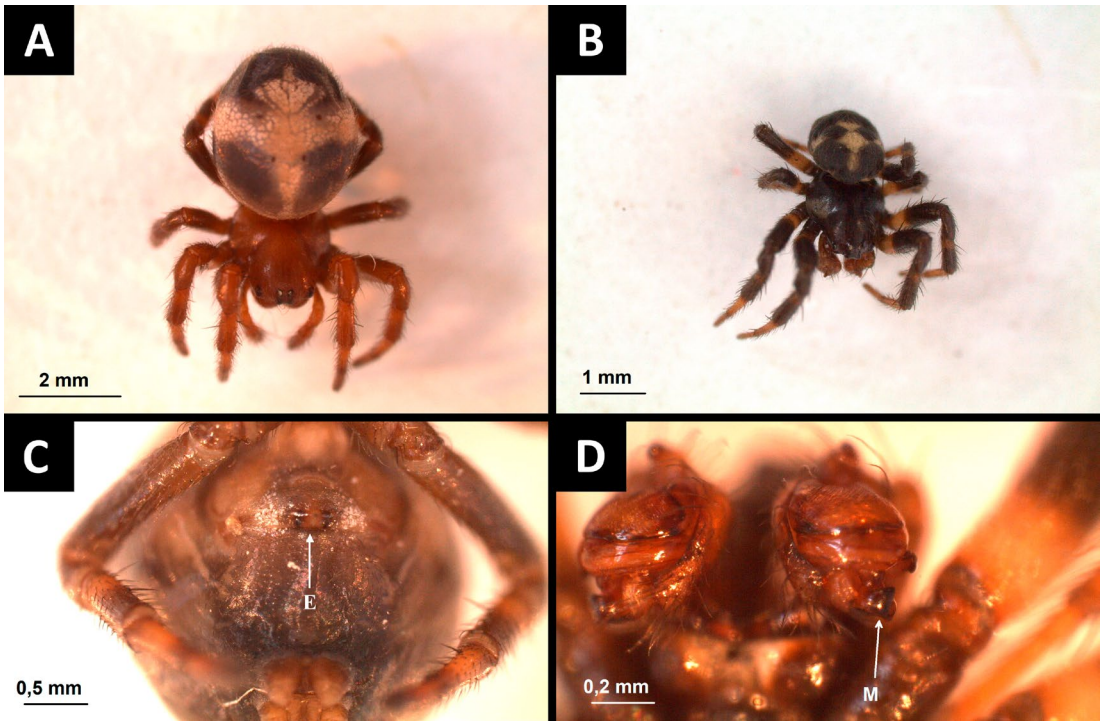


Figure 2. *Micrepeira hoeferi* in the field.



Notes. A) spider web; B) retreat; C) subadult female.

Figure 3. *Micrepeira hoeferi,* genital details.



Notes. There are larger black patches in the dorsum. A) Adult female in dorsal view; B) adult male in dorsal view; C) female genitalia; note the epigynum (E); D) male palp; note the spine on the median apophysis (M).

References

Bini, L. M., Diniz-Filho, J. A. F., Rangel, T. F. L. V. B., Bastos, R. P., & Pinto, M. P. (2006). Challenging Wallacean and Linnean shortfalls: Knowledge gradients and conservation planning in a biodiversity hotspot. *Diversity and Distributions, 12*(5), 475-482. https://doi.org/10.1111/j.1366-9516.2006.00286.x

Dierkens, M. (2012). Contribution à l'étude de divers genres d'Araneidae (Araneae) de Guyane Française. *Bulletin Mensuel de la Société Linnéenne de Lyon, 81*(1-2), 23-33. https://doi.org/10.3406/linly.2012.13818

Esri (2014). *ArcMap* (V. 10.3) [Software]. Environmental Systems Research Institute. https://www.esri.com

Levi, H. W. (1995). Orb-weaving spider *Actinosoma*, *Spilasma*, *Micrepeira*, *Pronous*, and four new genera (Araneae: Araneidae). *Bulletin of the Museum of Comparative Zoology, 154*(3), 153-213.

Levi, H. W. (2002). Keys to the genera of araneid orbweavers (Araneae, Araneidae) of the Americas. *Journal of Arachnology, 30*(3), 527-562. https://doi.org/10.1636/0161-8202(2002)030[0527:KTTGOA]2.0.CO;2

Luqman, L., Saeed, K., Muhammad, K., Ahmad, M. S., Akbar, F., Rasool, A., Israr, M., Jabeen, H., Mehmood, S. A., Ahmed, S., Alam, A., Ullah, S., Saeed, N., Usman, K., Hussain, I., Abd El Halim, H. M., Khan, W., & Shah, M. (2022). Biodiversity of orb-web spiders (Family: Araneidae) of Buner Valley, Pakistan. *Brazilian Journal of Biology, 82*, 1-6. https://doi.org/10.1590/1519-6984.238339

Quintero, D. (1974). The unusual web of *Spilasma tubulofaciens*, with taxonomic notes on the species (Araneae: Araneidae). *Psyche: A Journal of Entomology, 81*, 307-314.

Scharff, N., & Coddington, J. A. (1997). A phylogenetic analysis of the orb-weaving spider family Araneidae (Arachnida, Araneae). *Zoological Journal of the Linnean Society, 120*(4), 355-434. https://doi.org/10.1111/j.1096-3642.1997.tb01281.x

Schenkel, E. (1953). Bericht über einige Spinnentiere aus Venezuela. *Verhandlungen der Naturforschenden Gesellschaft in Basel, 64*, 1-57.

Silvera, A. P., Loiola, M. I. B., dos Santos Gomes, V., Lima Verde, L. W., Oliveira, T. S., Silva, E. F., Otutumi, A. T., Ribeiro, K. A., da Silva Xavier, F. A., Bruno, M. M. A., Souza, S. S. G., & Araújo, F. S. (2020). Flora of Baturité, Ceará: A wet island in the Brazilian semiarid. *Floresta e Ambiente, 27*(4), 1-22. https://doi.org/10.1590/2179-8087.032018

Tovar-Márquez, J., Torres, R. A., & Alvarez-Garcia, D. M. (2021). Diversity of orb-weaving spiders (Arachnida: Araneae) from tropical dry forest in northern Colombia, with eleven new records for the country. *Journal of Natural History, 55*(19-20), 1237-1250. https://doi.org/10.1080/00222933.2021.1943030

World Spider Catalog. (2024). *World Spider Catalog* (Version 25.5). Natural History Museum Bern. https://doi.org/10.24436/2