

# A new species of the spider genus *Aculepeira* Chamberlin & Ivie (Araneae: Araneidae) found in nests of *Trypoxylon* (*Trypargilum*) *lactitarse* Saussure (Hymenoptera: Sphecidae) from Minas Gerais, Brazil.

Éder S. S. Álvares<sup>1,2</sup>, Rafael D. Loyola<sup>3</sup> & Mário De Maria<sup>4</sup>

<sup>1</sup> Depto. de Zoologia, Instituto de Biociências, Universidade de São Paulo, São Paulo, SP, Brazil

<sup>2</sup> Laboratório de Artrópodes, Instituto Butantan, São Paulo, SP, Brazil E-mail: essalvares@yahoo.com.br

<sup>3</sup> Laboratório de Ecologia e Comportamento de Insetos, Depto. Biologia Geral, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil; *Current Address*: Laboratório de Interações Insetos-Plantas, Instituto de Biologia, Depto. de Zoologia, Universidade de Campinas, Campinas, SP, Brazil, E-mail: avispa@gmail.com

<sup>4</sup> Laboratório de Aracnologia, Depto. de Zoologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil, e-mail: demaria@icb.ufmg.br

Correspondence to: Laboratório de Aracnologia, ICB/UFMG, Av. Antonio Carlos, n. 6627, Pampulha, CEP 31.270-901, Belo Horizonte, MG, Brazil.

## Abstract

*Aculepeira angeloi* sp. n. is described based on specimens found in nests of *Trypoxylon* (*Trypargilum*) *lactitarse* Saussure from the Ecological Station of the Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil.

**Keywords:** *Aculepeira*, Araneidae, Neotropical, Taxonomy, *Trypoxylon*.

## Introduction

The genus *Aculepeira* Chamberlin & Ivie, 1942 includes 21 species and four sub-species of orb-weaver spiders. Eight species and four sub-species are present in the Palearctic region, 11 species in the New World and two in the Holarctic region (Platnick, 2005). Levi (1977) reviewed the North American species and, subsequently (1991), those from Mexico and South America, describing as new six of the 21 known species of *Aculepeira*. As stated by him (1991), *Aculepeira* can be diagnosed by the epigynum with a pointed scape, male palpus with a median apophysis bearing two flagellae on its proximal end and the boat-shaped to disc-shaped conductor.

*Trypoxylon* (*Trypargilum*) *lactitarse* Saussure, 1867 is a solitary wasp, which occurs from Canada to Argentina (Coville, 1981). Females of this species construct cells that are subdivided by mud partitions, provide each cell with various paralyzed spiders and ovoposit on the dorsum of the abdomen of one of the last spiders collected (Coville, 1981; Camillo et al., 1993).

Here, a new species of *Aculepeira* found in nests of *T. lactitarse* is described.

## Material and methods

The spiders were obtained from nests of *T. lactitarse*, collected in the Ecological Station of the Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil (for a description of the area, see Álvares *et al.*, 2004). Description and terminology follow Levi (1991). Measurements are in millimeters. As the abdomen of all specimens were dry and wrinkled, the total length was not measured. The acronyms for the collections in which the examined material is deposited are (curators in parenthesis): IBSP, Laboratório de Artrópodes, Instituto Butantan, São Paulo (A. D. Brescovit); LAMG, Laboratório de Aracnologia, Instituto de Ciências Biológicas, UFMG, Belo Horizonte (M. De Maria).

### *Aculepeira angeloi* sp. n.

Figures 1-3

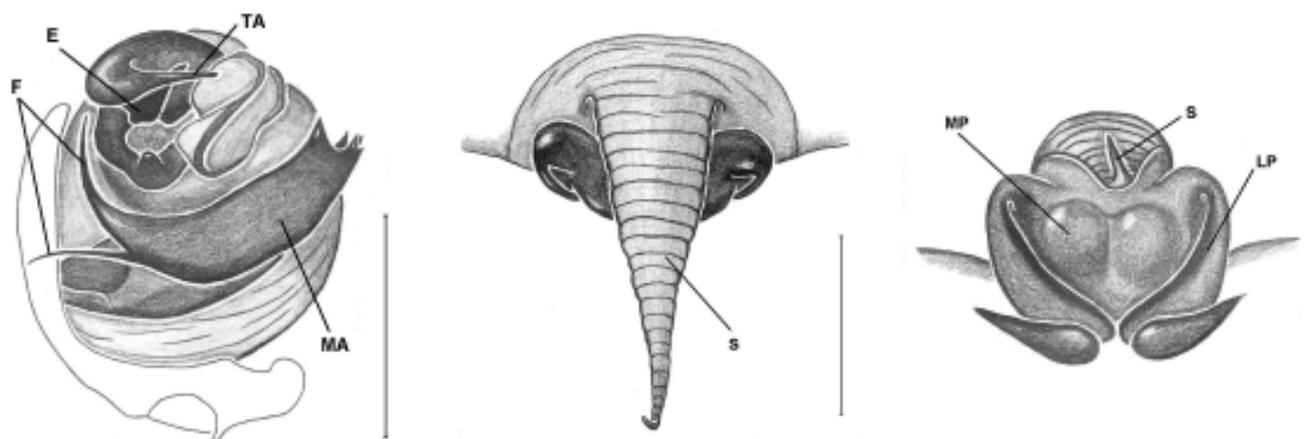
**Types.** Male holotype from the ecological station of UFMG, Belo Horizonte, Minas Gerais, Brazil, in nest of *T. lactitarse*, 08.IX.2004, R. D. Loyola col. (LAMG 1572). Paratypes: with same data as holotype, 1 male and 3 female, deposited in IBSP 52102, and 1 male and 7 female deposited in LAMG 1569-1571 and LAMG 1573.

**Male.** Carapace yellow with brown cephalic region. Sternum black with a median white line. Coxae, labium and endites

Received: 07.VI.2005

Accepted: 08.IX.2005

Distributed: 04.XI.2005



**Figures 1-3** - *Aculepeira angeloi* sp. n. 1. Male palpus, mesal view. 2. Epigynum, ventral view. 3. Epigynum, posterior view. Lines represent 0.05 mm. (E, embolus; F flagella of median apophysis; LP, lateral plate; MA, median apophysis; MP, median plate; S, scape; TA, terminal apophysis).

yellowish. Chelicerae black with yellow apices. Legs yellowish with dark rings. Abdomen brown dorsally, with dark and white patches; cardiac area black; ventrally, black with light marks on each side. Eyes: anterior median 0.17, anterior lateral 0.13, posterior median 0.13, posterior lateral 0.11. Anterior median eyes 0.74 their diameter apart. Posterior median eyes 0.80 their diameter apart, one diameter apart from anterior medians. Carapace 2.05 long; 1.82 wide. Length of legs: leg I: femur 2.73/ patella 1.09/ tibia 2.64/ metatarsus 2.36/ tarsus 1.09/ total 9.91; leg II: 2.64/ 0.91/ 2.00/ 2.00/ 0.91/ 8.46; leg III: 1.75/ 0.47/ 0.95/ 1.09/ 0.45/ 4.71; leg IV: 2.45/ 0.73/ 1.00/ 1.09/ 0.64/ 5.91. Palpus (Fig. 1) with terminal apophysis large and curved, and small triangular embolus; median apophysis elongate, with dentate retrolateral end, and with two flagella inserted at its prolateral end.

**Female.** Coloration as in males. Eyes: anterior median 0.21, anterior lateral 0.14, posterior median 0.20, posterior lateral 0.11. Anterior median eyes one diameter apart from each other. Posterior median eyes 0.80 their diameter apart, 0.80 diameters apart from anterior medians. Carapace 3.36 long; 2.73 wide. Length of legs: leg I – femur 4.00/ patella 1.55/ tibia 3.36/ metatarsus 3.14/ tarsus 1.36/ total 13.41; leg II – 3.82/ 1.55/ 3.05/ 2.91/ 1.09 / 12.41; leg III – 2.45/ 1.00/ 1.73/ 1.73/ 0.86/ 7.77; leg IV – 3.73/ 1.27/ 2.55/ 2.64/ 0.91/ 11.09. Epigynum (Figs. 2-3) with large scape, pointed at tip; median plate large, rounded; lateral plate divergent dorsally.

**Diagnosis.** Males of *A. angeloi* can be distinguished from all other known males of Neotropical *Aculepeira* by the shape of the flagella of the median apophysis, with a distal flagellum much larger than the basal one, by the small embolus and by the wide and curved terminal apophysis (Fig. 1). Females have the epigynum resembling those of *A. travassosi* (Soares & Camargo) and *A. vittata* (Gerschman & Schiapelli) (see Levi, 1991: figs. 543, 544, 548-550) for the shape of the scape, but differ from these by the larger median plate and by the lateral plates which are very divergent dorsally (Figs. 2-3).

**Variation.** Male (n = 2): carapace length, 2.00-2.44, femur I,

2.63-2.86. Female (n = 6): carapace length 2.77-3.68, femur I, 2.27-4.00.

**Etymology.** The specific name is given in honor of Dr. Angelo Barbosa Monteiro Machado, emeritus professor of Entomology of the Instituto de Ciências Biológicas, UFMG.

**Distribution.** Known only from the type-locality.

**Natural history and discussion.** Although the habits of *A. angeloi* are unknown, this species, as other known *Aculepeira*, probably spins orb-webs on the vegetation, where they are located and captured by the wasps. In one nest of *T. lactitarse* in the ecological station of UFMG, one male and six females of *A. angeloi* and one unidentified Araneidae were found in a same cell; in another cell of the same nest, there were four females of *A. angeloi* and two salticids. In other nest, only one male of *A. angeloi* was found and, in a third nest, there was another male plus two unidentified species of Araneidae. The specimens of *A. angeloi* collected by *T. lactitarse* represented more than 90% of all adult araneids collected in 53 nests of this wasp in the ecological station of UFMG. On the other hand, *A. angeloi* was never captured in previous spider surveys carried out at this same site (Azevedo et al., 2002; Álvares et al., 2004). According to Camillo & Brescovit (1999), it is not unusual to find undescribed species of spiders in wasp nests. This is because foraging wasps look for prey in microhabitats not easily accessed by man and this is one reason why spider species rare in samples collected by man may be captured in high numbers by solitary wasps.

#### Acknowledgements

We are grateful to FAPESP (grant number 02/11275-6) and CAPES for financial support. Lourdes A. Soares helped in laboratory work and Elder F. Morato identified the *Trypoxylon* species. Thanks are also due to A. D. Brescovit for revising the manuscript and to Rogério P. Martins for receiving the second author in his laboratory and providing interesting discussion on wasp ecology and behavior.

### References

- Álvares, E. S. S.; Machado, E. O.; Azevedo, C. S. & De Maria, M. 2004. Composition of the spider assemblage in an urban reserve in Southeastern Brazil and evaluation of a two method protocols of spider richness estimates. **Revista Ibérica de Aracnología**, **10**: 185-194.
- Azevedo, C. S.; Machado, E. O.; Álvares, E. S. S. & De Maria, M. 2002. Comparison of spider soil communities in six differing habitats in the ecological station of Universidade Federal de Minas Gerais, Brazil. **Bios**, **10**: 47-53.
- Camillo, E. & Brescovit, A. D. 1999. Spiders (Araneae) captured by *Trypoxylon (Trypargilum) lactitarse* (Hymenoptera: Sphecidae) in southeastern Brazil. **Revista de Biología Tropical**, **47**: 151-162.
- Camillo, E.; Garófalo, C. A.; Muccillo, G. & Serrano, J. C. 1993. Biological observations on *Trypoxylon (Trypargilum) lactitarse* Saussure in southeastern Brazil (Hymenoptera: Sphecidae). **Revista Brasileira de Entomologia**, **37**: 769-778.
- Coville, R. E. 1981. Biological observations on three *Trypoxylon* wasps in the subgenus *Trypargilum* from Costa Rica: *T. nitidum schultessi*, *T. saussurei* and *T. lactitarse* (Hymenoptera: Sphecidae). **Pan-Pacific Entomology**, **57**: 332-340.
- Levi, H. W. 1977. The orb-weaver genera *Metepeira*, *Kaira* and *Aculepeira* in America north of Mexico (Araneae, Araneidae). **Bulletin of the Museum of Comparative Zoology of Harvard**, **148**: 185-238.
- Levi, H. W. 1991. The Neotropical and Mexican species of the orb-weaver genera *Araneus*, *Dubiepeira*, and *Aculepeira* (Araneae: Araneidae). **Bulletin of the Museum of Comparative Zoology of Harvard University**, **152**: 167-315.
- Platnick, N. I. 2005. **The World Spider Catalog, Version 6.0**. American Museum of Natural History, New York. Available online at <http://research.amnh.org/entomology/spiders/catalog/index.html>. (last accessed in August 08, 2005).