ENTOMOLOGICAL Communications

Entomological Communications, 6, 2024: ec06037
doi: 10.37486/2675-1305.ec06037
e-ISSN: 2675-1305
Open Access Full Text Article

Scientific Note

First report of *Acutaspis oliveirai* (Lepage & Giannotti, 1942) (Hemiptera: Diaspididae) in Central Brazil: occurrence on *Myrsine guianensis* (Aubl.) Kuntze (Primulaceae) in the Brazilian Cerrado

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Edited by: Talita Roell

Received: October 18, 2024. Accepted: December 19, 2024. Published: December 30, 2024.

Abstract. Recent research shows that the Cerrado has a great diversity of scale insects (Insecta: Hemiptera: Coccomorpha) in association with native plants. This work aimed to report the occurrence of *Acutaspis oliveirai* (Lepage & Giannotti, 1942) (Hemiptera: Diaspididae) found for the first time in Central Brazil and in plants of *Myrsine guianensis* (Primulaceae), a common species in the Brazilian Cerrado, that has potential for use in landscaping and the recovery of degraded areas. This is the first report of the occurrence of *A. oliveirai* in a native plant of the Cerrado biome and in the Central Brazil. *Acutaspis oliveirai* individuals were found on the leaf surface of *M. guianensis* leaves in two locations in the Federal District, Brazil, causing irregular yellowing and chlorotic spots throughout the leaf blade.

Keywords: Biodiversity, forest entomology, scale insects.

The Brazilian Cerrado biome is the second largest biome in extension, second only to the Amazon. It has a high degree of endemism, composed of species of plants and animals that occur exclusively in this biome, in addition to housing a rich diversity of microorganisms and insects, many of which have not yet been identified and cataloged (Damasco et al. 2018). Recent research shows that the Cerrado has a great diversity of scale insects (Insecta: Hemiptera: Coccomorpha) in association with plants native to this biome (Castro et al. 2020; 2022), highlighting the relevance of this type of study and the survey of these important insects, especially as phytophagous and as potential transmitters of phytopathogens (Grazia et al. 2024). Among the tree species typical of the cerrado *stricto sense*, *Myrsine guianensis* (Aubl.) Kuntze (Primulaceae) is a common tree in several Brazilian states, especially in Goiás, Minas Gerais and the Federal District (Carvalho 2014).

Myrsine guianensis, also known as *Rapanea guianensis* Aubl., is a species that occurs in the "cerradão", "campo cerrado" and mainly in the "cerrado *stricto sensu*", and has great potential for use in recovery projects for degraded areas and in urban landscaping (Silva Júnior et al. 2012). Furthermore, its wood is of good quality for firewood and charcoal (Carvalho 2014). Few studies have been carried out on the entomofauna associated with *M. guianensis* in Brazil, and those that have been carried out are concentrated on defoliating caterpillars (Diniz et al. 2001). Outside Brazil, four species of scale insects have been described in association with *M. guianensis* so far: *Milviscutulus mangiferae* (Green, 1889) (Coccidae), *Paratachardina pseudolobata* Kondo & Gullan, 2007 (Tachardiidae (= Kerriidae)), *Phalacrococcus howertoni* Hodges & Hodgson, 2010 (Coccidae), and *Russellaspis pustulans* (Cockerell, 1892) (Asterolecaniidae) (Garcia-Morales et al. 2016).

This work aimed to report the occurrence of a species of scale insect from the Diaspididae family found for the first time in Central Brazil and on *M. guianensis* plants.

Scale insects associated with *M. guianensis* was collected in May and June 2024 in two cerrado *stricto sensu* fragments at Federal District, Brazil: Parque Nacional de Brasília (15°73'45.16"S; 47°92'81.38"W), and Floresta Nacional de Brasília (15°74'27.84"S; 47°97'26.77"). The plants were identified using the manual elaborated by Silva Júnior et al. (2012) and the species description by Carvalho (2014). Leaf samples containing diaspidids were stored in a Falcon tube containing 70% alcohol until identification. Slides were mounted for subsequent analysis under an optical microscope, according to the methodology described by Wolff et al. (2014). Specimens were identified using the key to genus and species description (Lepage & Giannotti 1942; Claps & Wolff 2003).

The slides containing the diaspidids are deposited on the "Coleção Entomológica do Museu Ramiro Gomes Costa (MRGC)". Material was collected under the Brazilian government official authorization conceded to M. T. Castro by Chico Mendes Institute for Biodiversity Conservation (ICMBio), Ministry of Environment (MMA) (collection permit No. 57418-4).

The scale insect observed on *M. guianensis* in both locations was identified as *Acutaspis oliveirai* (Lepage & Giannotti, 1942) (Hemiptera: Diaspididae). The infected leaves contained hundreds of individuals of the species, especially in the leaf surface (Fig. 1A), showing irregular yellowing and chlorotic spots throughout the leaf blade, damaging the plant's photosynthesis process. Adult females of *A. oliveirai* have a body covered by a semicircular shield (= scale) with a grayish or black color, on which two, more or less central, black exuviae overlap (Fig. 1B, 1C). The macroscopic characteristics of species from the Diaspididae family are not sufficient to determine the species, making it necessary to observe the microscopic morphological characters of the specimens.

The microscopic morphological characters of the adult female specimens examined are: rounded body measuring approximately 1 mm, at the height of the posterior stigmas it presents a small sclerotized tubercle on the lateral margins; the acute pygidium with three pairs of marginal lobes, the median lobes (Lm) being rounded and with a small notch on the outer margins, the second pair of lobes (L2) wider than Lm with two outer notches and the third pair of lobes (L2) wider than Lm with two outer notches and the third pair of lobes (L3) with crenulated margin, after L3 five sclerotized projections with serrated margin. Seven pairs of paraphyses, two pairs being longer and

five shorter, arranged on each side of the midline: a short pair in the internal basal angle of the Lm, a long pair in the external angle of the Lm, one pair in each basal angle of the L2 (internal and external), a long one in the third interlobular space between L2 and L3, a pair of short paraphyses in each basal angle (internal and external) of L3. Dorsum of the pygidium with long and thin unibarred ducts, with openings in rows between the interlobular spaces, mainly between L2 and L3. Anus close to the base of the pygidium. In the ventral region there are four groups of perivulvar glands with few pores. These characters are sufficient for the identification of *A. oliveirai* and match the description and drawing of the species described in Lepage & Giannotti (1942).

The genus *Acutaspis* Ferris, 1941, has 20 described species (Garcia-Morales et al. 2016), eight of which were recorded in different Brazilian states (Peronti et al. 2024), as can be seen in Tab. 1. *Acutaspis* species are generally referred to as intense sap suckers and normally cause irregular yellowing of the leaves (Imenes et al. 2002), damaging the development of the plant and, in the case of ornamental plants, depreciating the value of the product to be sold. *M. guianensis* plants observed in this study showed these same symptoms, as can be seen in Fig. 1.

Acutaspis oliveirai is possibly a Brazilian native species that has been reported in association with *Licania rigida* (Chrysobalanaceae) in Ceará, Brazil, a plant endemic to the Caatinga, and in the State of São Paulo (Peronti et al. 2024). This is the first report of the occurrence of *A. oliveirai* in a plant native of the Cerrado biome, expanding the host range of this species and its geographic distribution in Brazil. This work highlights the importance of cataloging and identifying the scale insect's species that occur in the Cerrado, expanding knowledge of the entomofauna associated with plant species native to Brazilian biomes.

Table 1. Species of *Acutaspis* recorded in Brazil (Peronti et al. 2024).

Species	Host (s)	State (s)	Reference (s)
Acutaspis albopicta (Cockerell, 1898)*	*Cocos nucifera* (L.) (Arecaceae)	Rio de Janeiro	Rosen & DeBach (1979)
Acutaspis aliena (Newstead, 1901)**	Unknown	Unknown	Nakahara (1982)
Acutaspis litorana Lepage, 1942	*Anthurium andraeanum* Linden ex Andre (Araceae)	São Paulo	Imenes et al. (2002)
Acutaspis oliveirai (Lepage & Giannotti, 1942)	*Licania rigida* Benth. (Chrysobalanaceae)	Ceará and São Paulo	Lepage & Giannotti (1942); Vernalha (1953)
Acutaspis paulista (Hempel, 1900)	*Annona* sp. (Annonaceae), *Artocarpus heterophyllus* Lam. (Moraceae), *Begonia* sp. (Begoniaceae), *Camellia* sp. (Theaceae), *Cattleya* sp. (Orchidaceae), *Citrus* sp. (Rutaceae), *Cocos* sp. (Arecaceae), *Cycas* sp. (Cycadaceae), *Dictyosperma* álbum *(Bory)* H.Wendl. & Drude ex Scheff (Arecaceae), *Eugenia* sp. (Myrtaceae), *Ficus retusa* L. (Moraceae), *Ficus* sp. (Moraceae), *Hedera* sp. (Araliaceae), *Ilex* sp. (Aquifoliaceae), *Jasminum* sp. (Oleaceae), *Laelia* sp. (Orchidaceae), *Laurus* sp. (Lauraceae), *Licania tomentosa* (Benth.) Fritsch (Chrysobalanaceae), *Ligustrum japonicum* Thunb. (Oleaceae), *Malus* sp. (Rosaceae), *Mangifera indica* L. (Anacardiaceae), *Musa* sp. (Musaceae), *Myrsine umbellata* Mart. (Primulaceae), *Olea europea* L. (Oleaceae), *Psidium cattleyanum* Sabine (Myrtaceae), *Rhodendron arboreum* Sm. (Ericaceae), *Rosa* sp. (Rosaceae), *Spondias mombin* L. (Anacardiaceae)	Minas Gerais, Paraná, Pernambuco, Rio Grande do Sul, Rio de Janeiro, and São Paulo	Peronti et al. (2024)
Acutaspis perseae (Comstock, 1881)	*Cecropia pachystachya* Trec. (Cecropiaceae), *Eugenia uniflora* L. (Myrtaceae), *Evonymus* sp. (Celastraceae), *Magnolia* sp. (Magnoliaceae), *Malpighia emarginata* DC. (Malpighiaceae), *Myrcianthes pungens* (O.Berg) D.Legrand (Myrtaceae), *Persea americana* Mill. (Lauraceae)	Espírito Santo, Rio Grande do Sul, and Rio de Janeiro	Claps et al. (2001); Martins et al. (2022)
Acutaspis scutiformis (Cockerell, 1893)	*Artocarpus heterophyllus* (Moraceae), *Citrus* sp. (Rutaceae), *Ficus* sp. (Moraceae), *Ilex* sp. (Aquifoliaceae), *Licania tormentosa* (Chrysobalanaceae), *Musa* sp. (Musaceae), *Olea europea* (Oleaceae), *Persea americana* (Anacardiaceae), *Prunus* sp. (Rosaceae), *Prunus pérsica* L. (Rosaceae)	Amazonas, Pará, Minas Gerais, Paraná, Rio Grande do Sul, Rio de Janeiro, and São Paulo	Peronti et al. (2024)
Acutaspis umbonifera (Newstead, 1920)	*Anthurium andraeanum* Linden (Araceae), *Philodendron bipinnatifidum* Schott (=*Thaumatophyllum bipinnatifidum* Schott ex Endl.) (Araceae), *Yucca gigantea* Lem. (Asparagaceae)	Espírito Santo, Rio de Janeiro, and São Paulo	Claps et al. (2001); Imenes et al. (2002); Martins et al. (2022)

*Was not found material proving the occurrence of this scale insect in Brazil, it's only mentioned as a host of the parasitoid *Aphytis acutaspidis* Rosen & DeBach, 1979 (Rosen & DeBach 1979); to date, this species has not been found in Brazil.

**There is no record of the State of occurrence and the place where this scale insect is deposited; to date, this species has not been found in Brazil.

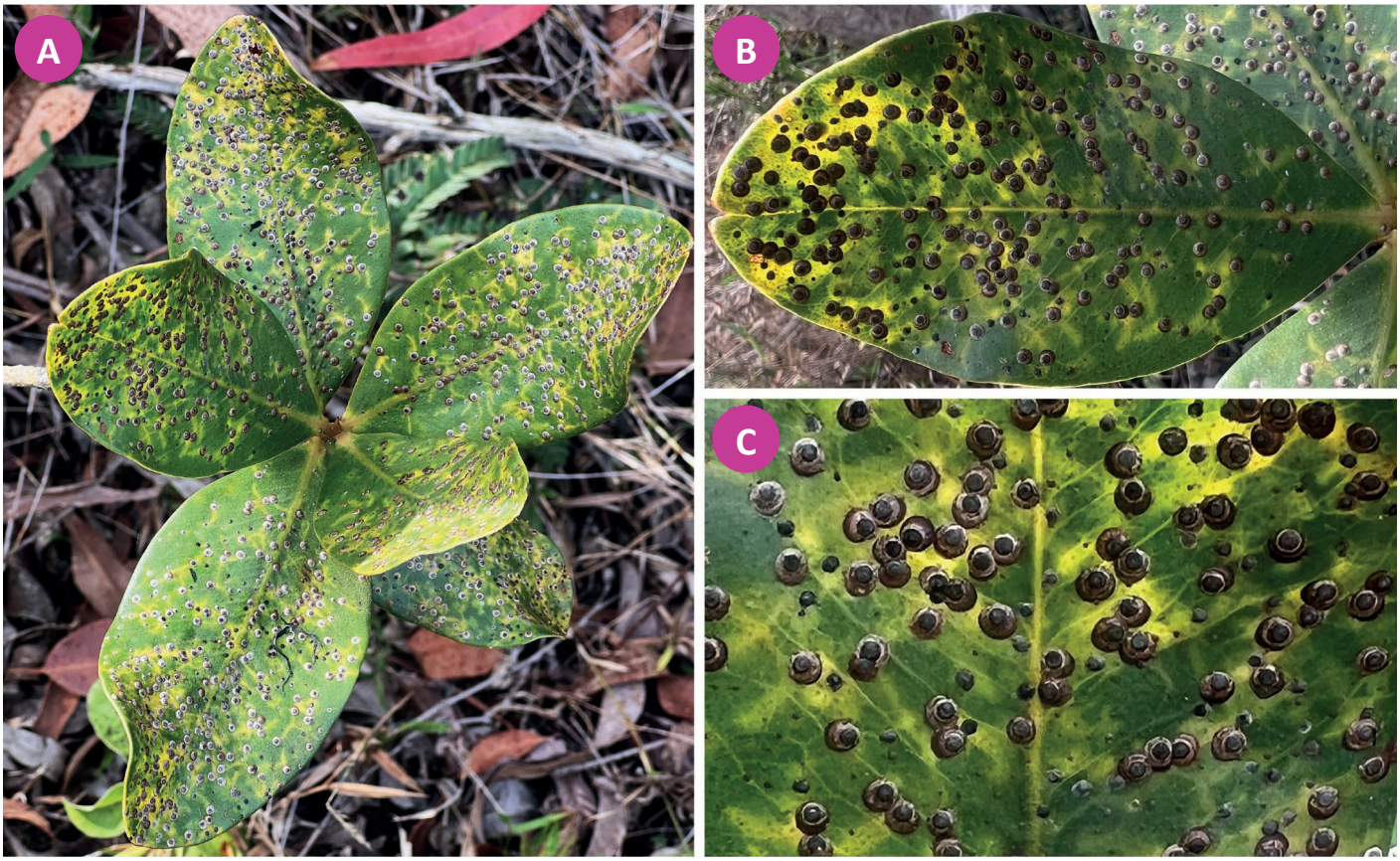

Figure 1. *Acutaspis oliveirai* on *Myrsine guianensis* in Federal District, Brazil. A) *M. guianensis* leaves with *A. oliveirai*; B) and C) Details of the armored scale insects on the upper surface of the leaves causing yellowing and chlorosis. Pictures: M. T. Castro.

Funding Information

No funding received.

Authors' Contribution

MTC: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Writing - original draft, Writing - review & editing; SCLM: Data curation, Formal analysis, Investigation; VRSW: Data curation, Formal analysis, Investigation, Methodology, Resources, Validation, Writing - original draft, Writing - review & editing.

Conflict of Interest Statement

The authors declare that there is no conflict of interest.

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