

First record of *Crypticerya brasiliensis* (Hemiptera: Monophlebidae) on pequi trees (*Caryocar brasiliense*, Caryocaraceae) in the Brazilian Cerrado

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ABSTRACT

Crypticerya brasiliensis (Hempel, 1900) (Hemiptera: Monophlebidae) is a scale insect that has recently been observed in some native and exotic plants from the Brazilian Cerrado. This study reports for the first time the occurrence of *C. brasiliensis* in pequi trees (*Caryocar brasiliense* Camb., Caryocaraceae). Infestations were found in two pequi trees located in the urban area of Brasília, Distrito Federal, Brazil. This is the first report of the occurrence of a monophlebid associated with the Caryocaraceae family.

Keywords: forest entomology, phytophagous insect, scale insect.

INTRODUCTION

The Brazilian Cerrado is composed of hundreds of endemic plant species and many of these plants are of high environmental, social and economic interest. Currently, this biome suffers from a high loss of biodiversity due to the accentuated anthropic action, including agricultural activities and disorderly land occupation.⁽¹⁾ Protective measures should be prioritized, as many animal and plant species are considered unique to this biome.⁽²⁻⁴⁾

The pequi tree (*Caryocar brasiliense* Camb., Caryocaraceae) is a common tree in the Brazilian Cerrado and has great regional importance for having fruits that are highly appreciated by the local population.⁽⁵⁾ In addition, pequi trees are also used in landscaping, as they have exuberant flowering.⁽⁶⁾ Due to its importance, the pequi tree is currently a species protected by law.⁽⁷⁾

Some studies report several associations of arthropods with pequi trees, including potentially harmful species. Ferreira,⁽⁸⁾ found ten orders, 78 families and 194 species of insects associated with pequi trees in the State of Goiás, Brazil, including pests and natural enemies. In seedlings, Leite,⁽⁹⁾ detected the attack of aphids (Hemiptera: Aphididae), whitefly (Hemiptera: Aleyrodidae) and leafhoppers (Hemiptera: Cicadellidae). Currently, the main harmful insects to fruits are *Carmenta* sp. (Lepidoptera: Sesiidae)⁽¹⁰⁾ and the *Amblycerus* sp. (Coleoptera: Chrysomelidae)⁽¹¹⁾ which attack and depreciate the fruits, making them unfit for consumption.

Among the scale insects *Praelongorthezia praelonga* (= *Orthezia praelonga*) (Douglas, 1891) (Hemiptera: Ortheziidae), *Aulacaspis tubercularis* Newstead (Hemiptera: Diaspididae) and *Pseudococcus* sp (Hemiptera: Pseudococcidae) have been registered on pequi trees.^(8,9) This study aimed to report the occurrence of a scale insect of the Monophlebidae family associated with *C. brasiliense* in Brasília, Distrito Federal, Brazil.

MATERIAL AND METHODS

Adult female scale insects were collected from two pequi trees located in the urban area of Brasília, Distrito Federal, Brazil (coordinates: 15°45'11.0"S 47°53'51.6"W), in December 2020. The two plants analyzed were about three meters tall and regularly produced flowers and fruits. Ten random samples were taken from the leaves of the upper and lower portions of the trees to verify the region of greatest infestation by scale insects.

The scales were fixed in Falcon tubes containing 70% alcohol and later the specimens were placed on slides following the Gullan method,⁽¹²⁾ and were identified with a compound light microscope using key from Kondo⁽¹³⁾ based on adult female morphology.

Voucher specimens have been deposited in DCBU collection (Department of Ecology and Evolutionary Biology, UFSCar, São Carlos, SP, Brazil). Insect collections were authorized by the Chico Mendes Institute for Biodiversity Conservation, Brazil, under number 57418-4.

RESULTS

The scale insect was identified as *Crypticerya brasiliensis* (Hempel, 1900) (Hemiptera: Monophlebidae). Nymphs and adults were found in the leaves (Figure 1) and in inflorescences in the two pequi trees analyzed. In the leaves, scale insects were concentrated in the veins, especially nymphs, in the abaxial leaf part (Figure 1A). Adults were mostly on the branches and stems of plants (Figure 1B). The attacked leaves were yellowed and shriveled in appearance, and the branches were dry. Furthermore, it was observed in some leaves the presence of sooty mold, caused by the fungus *Capnodium* sp. Scale insects were found mainly on abaxial face of the leaf of the trees.

DISCUSSION

Crypticerya brasiliensis is a scale insect native to South America, with probable Brazilian origin.⁽¹⁴⁾ Currently, *C. brasiliensis* has been reported in association with ten species of host plants of eight families, distributed in four countries of South American (Argentina, Brazil, Colombia, and Guyana) (Table 1).⁽¹⁴⁻¹⁸⁾ Garcia-Morales⁽¹⁹⁾ mentioned the occurrence in Peru based on Vasquez⁽²⁰⁾ and Castro,⁽¹⁸⁾ but it's a possible mistake with a very similar species, *C. zeteki* (Cockerell, 1914), as related by Kondo.⁽¹³⁾ In Brazil, this Monophlebidae was reported in Goiás, São Paulo and Distrito Federal (DF). In Brasília (DF) was observed infesting mulberry plants (*Morus nigra* L., Moraceae), an exotic species, common in Cerrado areas of this municipality.⁽¹⁸⁾

Macroscopically, *C. brasiliensis* is very similar to two other two species of monophlebid from South America, *C. multicastrices* Kondo & Unruh, 2009 registered for Colombia and Ecuador, and *C. zeteki*, distributed in Brazil, Colombia, Panama and Peru. Although these last two species have been recorded more in the northern region of South America. Microscopic studies are necessary for the correct identification of these species.^(14,22)

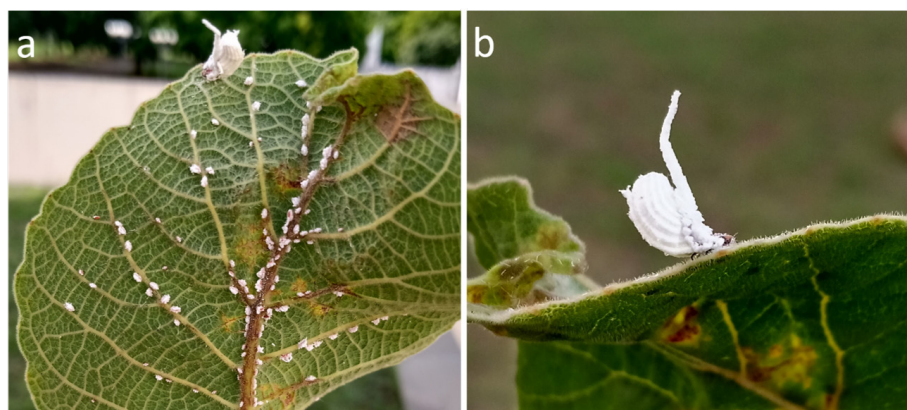


Figure 1. *Crypticerya brasiliensis* in pequi trees in Brasília, Distrito Federal, Brazil. a) abaxial face of the leaf with nymphs and adult (dorsal view) of *C. brasiliensis*. B) detail of the adult of *C. brasiliensis* on the abaxial surface of the leaf.

Table 1. Distribution of *Crypticerya brasiliensis* in South America⁽¹⁹⁾

Host	Family	Country	Reference
<i>Caryota</i> sp.	Arecaceae	Argentina	(16)
<i>Jacaranda acutifolia</i> Benth.	Bignoniaceae	Unknown	(17)
<i>Codiaeum</i> sp.	Euphorbiaceae	Brazil (São Paulo)	(15)
<i>Cinnamomum camphora</i> (L.) J. Presl	Lauraceae	Brazil	(15)
<i>Liriodendron tulipifera</i> L.	Magnoliaceae	Brazil	(15)
<i>Ficus</i> sp.	Moraceae	Brazil (São Paulo)	(15)
<i>Morus nigra</i> L.	Moraceae	Brazil (Distrito Federal)	(18)
<i>Callistemon viminalis</i> G. Don ex Loud.	Myrtaceae	Brazil (Goiás)	(14)
<i>Psidium guajava</i> L.	Myrtaceae	Brazil (São Paulo) and Colombia	(14)
<i>Rosa</i> sp.	Rosaceae	Brazil (São Paulo)	(15)
Unknown	Unkwown	Guyana	(21)
<i>Caryocar brasiliense</i>	Caryocaraceae	Brazil (Distrito Federal)	Present study

New records of these scale insects, including host plants, especially native ones, and new locations are important as a basis for bioecological studies, in addition to helping to prevent them from spreading to other areas where they do not yet occur.

CONCLUSIONS

This work represents for the first time the presence of *C. brasiliensis* on pequi trees. Additionally, this is the first record of an insect of the Monophlebidae family in association with plants of the Caryocaraceae family.

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The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The entire dataset supporting the findings of this study

was used in this article.

AUTHOR CONTRIBUTIONS

Conceptualization: Ana Lucia Benfatti Gonzalez Peronti , Marcelo Tavares de Castro , Sandro Coelho Linhares Montalvão .

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