

New state record of *Schismatodiplosis lantanae* (Rübsaamen, 1908) (Insecta, Diptera, Cecidomyiidae) in Brazil

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ABSTRACT: *Schismatodiplosis lantanae* (Rübsaamen, 1908) (Insecta, Diptera, Cecidomyiidae) induces leaf galls in *Lantana camara* L., *L. urticifolia* Mill. and *L. hispida* Kunth (Verbenaceae). The previous records of *S. lantanae* in Brazil included only the states of Rio de Janeiro (Southeast Region) and Santa Catarina (South Region). In this study, the geographic distribution of this galling species is extended to the states of Pará and Rondônia (North Region), Pernambuco (Northeast Region), Minas Gerais (Southeast Region), and four municipalities of the State of Rio de Janeiro (Casimiro de Abreu, Mangaratiba, Rio das Ostras and Valença).

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Schismatodiplosis Rübsaamen, 1916 (Diptera: Cecidomyiidae) is a monotypic genus described based on material from the states of Rio de Janeiro (Cabo Frio) and Santa Catarina (Tubarão). The only known species, *S. lantanae* Rübsaamen, 1907, was first included in the genus *Clinodiplosis* Kieffer, 1894. This gall midge species is oligophagous, a rare characteristic among the Cecidomyiidae, as most of them are monophagous (Fernandes *et al.* 2010). It induces hairy, green, globoid, and one-chambered leaf galls (Figure 1) in three species of *Lantana* L. (Verbenaceae): *L. camara* L., *L. urticifolia* Mill., and *L. hispida* Kunth, these last two do not occur in Brazil.

Lantana camara commonly known as wild or red sage, is a native plant of tropical and subtropical Americas, the most widespread species of this genus, and one of the ten most noxious weeds in the world. It causes toxicosis in livestock and humans, inhibits the growth of other vegetation and exerts allelopathic action on neighboring vegetation (Ghisalberti 2000; Sharma *et al.* 1988).

The geographical distribution of *L. camara* is well known, but little is known about the distribution of *Schismatodiplosis lantanae*. According to Gagné (2010), this gall midge has a Neotropical distribution and is found in Mexico (Veracruz, Tabasco, and Quintana Roo), Guadeloupe, Trinidad, and Brazil (Rio de Janeiro and Santa Catarina).

The objective of this study is to analyze the geographical distribution of *S. lantanae* in Brazil and check their occurrence by biome.

Data on the distribution of *S. lantanae* was based on field works developed by the authors in the municipality of Campo Novo de Rondônia (10°28'53" S, 63°51'6" W), State of Rondônia, North Region of Brazil (October 2011 and May 2012) and in three different municipalities of the state of Rio de Janeiro (Southeast Region of Brazil):

Valença—Parque Natural Municipal do Açude da Concórdia (22°21'0" S, 43°45'50" W) and Santuário de Vida Silvestre da Serra da Concórdia (22°24' S, 43°47' W) from November



FIGURE 1. A: *Lantana camara* L. (Verbenaceae) in Valença (Rio de Janeiro); B: Gall of *Schismatodiplosis lantanae* (Rübsaamen, 1907) (Diptera, Cecidomyiidae) on leaves of *Lantana camara* L. (Verbenaceae).

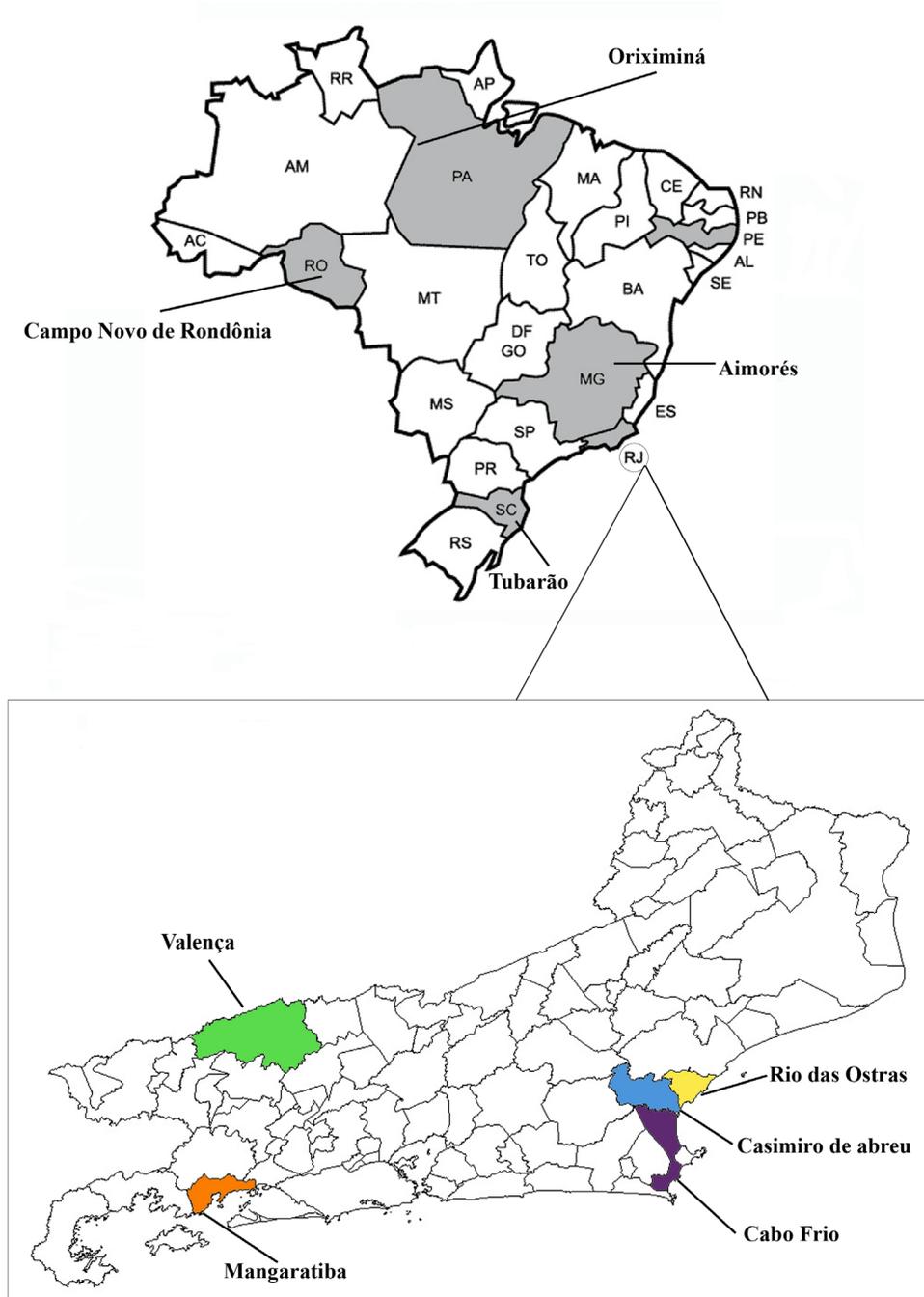


FIGURE 2. Geographic distribution of *Schimatodiplosis lantanae* (Rübsaamen, 1907) (Diptera, Cecidomyiidae) in Brazil.

2011 to November 2013; Casimiro de Abreu ($22^{\circ}28'57''$ S, $42^{\circ}8'39''$ W) and Rio das Ostras ($22^{\circ}27'16''$ S, $41^{\circ}56'57''$ W), in areas of the Reserva Biológica União (Rebio União) from January 2013 to January 2014.

During the field work, individuals of *L. camara* were investigated for galls. The host plant and the galled leaves were photographed with a digital camera (Figure 1), removed from host, and transported to Laboratório de Diptera (MNRJ). Some samples were maintained in plastic containers for adults' emergence, while others were dissected to obtain larva and pupa. The specimens were mounted on microscope slides following the methods of Gagné (1994) and were identified based on gall and gall midge morphology, according to the key of Gagné (1994) and original description. The material is deposited in the Diptera collection of Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ).

Besides this material, we examined the specimens deposited in the Cecidomyiidae collection of the MNRJ, the only reference collection for this family in Brazil and the largest one in Latin America. We also have analyzed all insect galls inventories of Brazil published from 1988 to 2012, totalizing 36 papers.

The gall midges obtained from galled leaves of *L. camara* in Campo Novo de Rondônia (Rondônia), Valença, Rio das Ostras, and Casimiro de Abreu (Rio de Janeiro) were identified as *S. lantanae*.

The Cecidomyiidae collection of MNRJ includes specimens of *S. lantanae* from Mangaratiba, state of Rio de Janeiro (Atlantic Forest), as well as from Oriximiná, state of Pará (Amazonian Forest), localities where this galling species had not yet been recorded.

The host plant, *L. camara*, is found in all states of Brazil, except in Pará, Sergipe and Alagoas (Lista de Espécies da

Flora do Brasil 2013). However, the collection of MNRJ comprises specimens of *S. lantanae* obtained from the state of Pará. This suggests the expansion of host plant distribution, due to the specificity between galling insect and host plant.

Most part of the published inventories (62%) presented only a list of the host plant species and the galls description, without providing the identification of the inducers. These data are sufficient to identify the galling species due its specificity to the host plants, plant-organ and gall morphology. Based on these inventories, the distribution area of *S. lantanae* is expanded to Minas Gerais (Aimorés and Vale do Rio Doce) and Pernambuco (city not specified in the original publication) (Fernandes *et al.* 2001; Fernandes and Negreiros 2006; Santos *et al.* 2011).

The geographic distribution of *S. lantanae* in Brazil includes six states (Figure 2): Rio de Janeiro, Pará (new record), Rondônia (new record), Pernambuco, Minas Gerais and Santa Catarina (Fernandes *et al.* 2001; Maia 2001; Fernandes and Negreiros 2006; Santos *et al.* 2011). In the state of Rio de Janeiro this species occur in four municipalities (new records): Mangaratiba, Rio das Ostras, Valença and Casimiro de Abreu.

Considering the previous records and the present study, we can realize that the geographical distribution of *S. lantanae* covers four different biomes: Amazonian Forest, Atlantic Forest (Ombrophylous Forest and Restinga), Cerrado and Caatinga, which indicates plasticity to different biotic and abiotic conditions.

The majority of the geographic records are from the Southeast Region of Brazil. Such concentration can be

justified both by the highest number of cecidologists and by the greatest number of gall surveys in this region.

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