

New state record of four species of gall midges (Insecta, Diptera, Cecidomyiidae)

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ABSTRACT: Four gall midge species (Insecta, Diptera, Cecidomyiidae), *Bruggmannia acaudata*, *B. elongata*, *B. robusta*, and *Pisphondylia brasiliensis*, are recorded for the first time in the State of Bahia. All of them induce galls on *Guapira opposita* (Nyctaginaceae), the first three in leaves and the fourth in buds.

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Insect galls inventories have been developed in Brazil, mainly in areas of Minas Gerais, Rio de Janeiro and São Paulo (Fernandes *et al.* 1988, 1997; Gonçalves-Alvim and Fernandes 2001; Maia 2001; Urso-Guimarães *et al.* 2003; Maia and Fernandes 2004; Oliveira and Maia 2005; Urso-Guimarães and Scareli-Santos 2006; Maia *et al.* 2008; Carneiro *et al.* 2009; Maia and Oliveira 2010; Saito and Urso-Guimarães 2012; Maia 2013), and less frequently in the states of Espírito Santo (Bregonci *et al.* 2010; Maia *et al.* in press) and Pernambuco (Fernandes *et al.* 2009; Santos *et al.* 2011a, b; Santos *et al.* 2012). Nevertheless, the taxonomic knowledge of the galling insects are still incipient, as the majority of the records have been presented in suprageneric categories.

Guapira opposita (Vell.) Reitz (Nyctaginaceae), commonly known as “maria-faceira”, “maria-mole” or louro-branco”, is a native plant, with occurrence in four Brazilian biomes: Amazonia, Caatinga, Cerrado, and Atlantic Forest (ombrophilous dense forest, seasonal semideciduous forest, restinga, and mangrove). It is widespread, being recorded in the North (Amapá, Pará, Amazonas, Tocantins), Northeast (Maranhão, Ceará, Paraíba, Pernambuco, Bahia, Alagoas), Center-West (Goiás, Distrito Federal, Mato Grosso do Sul), Southeast (Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro), and South (Paraná, Santa Catarina, Rio Grande do Sul) regions of Brazil (Sá 2010).

Six species of Cecidomyiidae (Diptera) are associated with this plant: *Bruggmannia acaudata* Maia, 2004; *B. elongata* Maia & Couri, 1993; *B. robusta* Maia & Couri, 1993; *Pisphondylia brasiliensis* Couri & Maia 1992; and *Proasphondylia guapirae* Maia, 1993; and *Pr. formosa* Maia, 1993. Each one induces a specific gall with unique morphological characteristics (Maia 2013). The main purpose of the present work is to contribute to the knowledge of the geographic distribution of the gall midges associated with *Guapira opposita*. Little is known about the geographical distribution of these species, being the previous records largely restricted to the Southeast region. For the first time, *Bruggmannia acaudata*, *B. elongata*, *B. robusta*, and *Pi. brasiliensis* are recorded in the State of Bahia.

The coastal vegetation of Porto Seguro (Bahia, Northeast region, Brazil) was surveyed from Arraial da Ajuda (16°28'26" S, 39°08'56" W) to Trancoso (16°32'27" S, 39°06'28" W), in September of 2013 for 8 hr by two people. Individuals of *Guapira opposita* were investigated for insect galls. The gall morphotypes were photographed in field with a digital camera and samples of each morphotype were collected and dissected. Other samples were dried, pressed and deposited in the galls collection of the Museu Nacional, Universidade Federal do Rio de Janeiro. The gall midges were identified based on gall and larva morphology, according to the descriptions of Maia (2001).

Four gall morphotypes were found on *G. opposita*, three in leaves and one in buds. The leaf galls were induced by three distinct species of *Bruggmannia* Tavares, 1906 (Diptera, Cecidomyiidae): *B. acaudata* (conical, glabrous, green or reddish gall; Figure 1), *B. elongata* (discoid, glabrous, green or reddish gall; Figure 2), and *B. robusta* (globose, hairy, green, yellow or reddish gall; Figure 3). The bud gall was induced by *Pi. brasiliensis* (rosette, green, glabrous gall, Figure 4).

The previous records of *B. acaudata*, *B. elongata* and *B. robusta* include several restinga areas of the State of Rio de Janeiro (Ilha Grande in Angra dos Reis, Mangaratiba, Maricá, Carapebus, and Jurubatiba), and ombrophilous forest areas of Santa Teresa (Espírito Santo). *B. elongata* and *B. robusta* occur also em Arraial do Cabo (RJ) and Bertioga (SP). Comparatively, *Pi. brasiliensis* has the broadest geographic distribution, occurring in Rio Grande do Sul (Porto Alegre), São Paulo (Bertioga), Rio de Janeiro (Maricá and Jurubatiba), Espírito Santo (Santa Teresa), and Minas Gerais (Brumadinho) (Maia 2001; Monteiro *et al.* 2004; Maia *et al.* 2008; Maia and Oliveira 2010; Maia *et al.* 2010; Rodrigues *et al.* 2014; Maia *et al.* in press).

Based on these data, we can realize that the geographic distribution of these gall midge species was restricted to the Southeast and South regions of Brazil. So, the occurrence in Bahia expands their distribution to the Northeast region. As the host plant species is wide-spread in Brazil, the gallers



FIGURES 1–4. Galls of Cecidomyiidae (Diptera) on *Guapira opposita* (Nyctaginaceae). 1: Galls of *Bruggmannia acaudata*. 2: Gall of *B. elongata*. 3: Gall of *B. robusta*. 4: gall of *Pisphondylia brasiliensis*.

associated with it can also have a wider distribution, e.g., Santos *et al.* (2012) in an inventory of gall inducing insects and their host plants in the Atlantic forest of Pernambuco, they found nine morphospecies of galling insect to this host plant. Although *G. opposita* has been recorded in four biomes, Amazonia, Caatinga, Cerrado, and Atlantic Forest, the current distribution of the galling species includes only cerrado (rupestrian fields) and Atlantic forest (restinga, ombrophilous forest and deciduous seasonal forest) areas. As few insect galls inventories have been developed in Amazonia and Caatinga, collections in these biomes are necessary to understand the pattern of distribution of the studied species.

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