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***SIDA SANTAREMENSIS* (MALVACEAE): A NEW RECORD FOR PARAÍBA STATE, IN CAATINGA DOMAIN, NORTHEASTERN BRAZIL**

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ABSTRACT

Sida santaremensis Mont. (Malvaceae) is a species previously reported only from Amazon Rainforest, Central Brazilian Savanna and Atlantic Forest phytogeographical domains. In this paper, we present the first record of *S. santaremensis* for Paraíba state in Caatinga domain. This is the second species of *Sida* sect. *Sidae* recorded for Paraíba, together with *Sida rhombifolia* L. This new record contributes to improve the knowledge on the Malvaceae of Paraíba flora and expands the geographic distribution of this species in Brazil. A brief description, comments, images, and identification key for *Sida* sect. *Sidae* in the state are presented.

Key words: Malvales, Paraíba flora, *Sida* sect. *Sidae*

RESUMO

Sida santaremensis Mont. (Malvaceae) é uma espécie citada previamente para os domínios fitogeográficos da Floresta Amazônica, Cerrado e Mata Atlântica. Neste artigo, apresentamos o primeiro registro de *S. santaremensis* para o estado da Paraíba no domínio da Caatinga. Esta é a segunda espécie da seção *Sidae* registrada para a Paraíba, juntamente com *Sida rhombifolia* L. Esse novo registro contribui para melhorar o conhecimento sobre as malváceas da flora paraibana e amplia a distribuição geográfica dessa espécie no Brasil. Fornecemos uma breve descrição de *S. santaremensis*, comentários, imagens, além de chave de identificação para os representantes da seção *Sidae* ocorrentes no estado da Paraíba.

Palavras-chave: Malvales, Flora da Paraíba, *Sida* seção *Sidae*

INTRODUCTION

Malvaceae Juss. is included in Malvales order and comprises 243 genera and 4,300 species distributed in tropical and subtropical regions (Bayer & Kubitzky, 2003). In Brazil 73 genera and 790 species are recorded, of which seven genera and 419 species endemic to the country (Flora do Brasil 2020, under construction). The family is monophyletic and presents as morphological synapomorphy a nectary consisting of multicellular glandular trichomes located internally at the base of the calyx (Alverson *et al.*, 1999; Bayer *et al.*, 1999; APG IV, 2016).

Sida L. is one of most heterogeneous genera and one of the richest in species of Malvaceae, with 188 American species (Baracho & Agra, 2016), and with 103 species occurring in Brazil (Flora do Brasil 2020, under construction). Morphologically, *Sida* is characterized by calyx often 10-ribbed, and schizocarpic fruits with 5-14 one-seeded

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mericarps, muticous to prominently aristate; pedicels often articulate; involucrel absent; solitary flowers in leaf axils, crowded in axillary glomerules, or in dense or open terminal inflorescences, and stamens grouped in phalanges (Fryxell, 1985; 1997; Fuertes Aguilar, 1995).

Twelve sections are currently recognized in the genus *Sida*: *Cordifoliae* (DC.) Fryxell, *Distichifolia* (Mont.) Krapov., *Ellipticifoliae* Fryxell, *Hookerianae* Clement, *Malacroideae* G. Don, *Muticae* C. Presl., *Nelavagae* Borss. Waalk., *Oligandrae* Clement, *Pseudonapaea* A. Gray, *Sidae* G. Don, *Spinosae* Small, and *Stenindae* Griseb. (Fryxell, 1985; Krapovickas, 2003; Brandão *et al.*, 2014).

The *Sidae* section, with about 50 species, is characterized by its short-petiolate rhomboid leaves, base cuneiform, usually 3-nerved, the entire margin facing the base and crenate-serrate towards the apex, the calyx with 10 prominent ribs, yellowish at the base and with lobes folded. The *Sidae* section comprises three series: *Sida* L., *Bifurcata* Krapov. and *Viarumae* Krapov. (Krapovickas, 2014).

In Northeastern Brazil, the genus is represented by 23 native species (Esteves, 2006), and expanded to 49 species by project Flora do Brasil 2020, under construction. However, for some states of this region, the genus is still underestimated, as the case of Paraíba. The number of species listed to this state is not based on extensive and careful fieldwork investigation, and is most likely outdated, with only 13 species: *Sida angustissima* A.St.-Hil., *S. brittoni* León, *S. cerradoensis* Krapov., *S. cordifolia* L., *S. galheirensis* Ulbr., *S. linifolia* Cav., *S. macropetala* Mont., *S. pernambucensis* Baracho & J.L. Brandão, *S. pseudo-potentilloides* Mont., *S. rhombifolia* L., *S. spinosa* L., *S. xavierii* Mont. (Flora do Brasil 2020, under construction), and *S. glutinosa* Comm. ex Cav. (Baracho & Agra, 2016). Of these, only *S. rhombifolia* belongs to section *Sidae*. Thus, this work aims to record the occurrence of *Sida santaremensis* as native species in the Paraíba flora.

MATERIAL AND METHODS

Cuité municipality (Figure 1) is located at the central-north portion of the state of Paraíba at the coordinates 06°29'06"S, 36°09'25"W, at a mean altitude of 667 m.a.s.l. (Mascarenhas *et al.*, 2005) and climate type characterized as BSh (Alvares *et al.*, 2013). The municipality has two distinct seasons, a rainy season from February to June and a pronounced dry season between July and January. The vegetation type in Cuité varies from low and sparse shrub to trees, growing in sandy, rocky or sandy-stony soils (Velloso *et al.*, 2002).

Morphological studies were carried out according to the usual methods for the taxonomy of angiosperms, with the analysis of vegetative and reproductive structures. The morphological description presented in this work was made studying the collected material. Individuals were photographed in fieldwork, collected, and specialized literature was consulted (Krapovickas, 2007; 2014; Brandão *et al.*, 2014) to aid in the identification of the species. The morphological description follows Radford *et al.* (1974). Data on the geographical distribution were obtained from herbaria specimens labels and literature. Duplicates were sent to the herbaria JPB and UFRN, acronyms according to Thiers 2019 (continuously updated), and CES and ACAM, that belongs to the Federal University of Campina Grande and Federal University of Paraíba, respectively, and are not indexed.

RESULTS

Sida santaremensis Mont., Monogr. Malv. Bras. 1(Sida): 44. 1936. (Figure 2: A-C.)

Subshrub 40-60 cm high, erect; branches cylindrical, with minute stellate trichomes. Stipules 0.5-0.8 mm long, linear, 1-2-nerved, with minute stellate trichomes. Petiole 0.5-1.5 cm long, cylindrical, with pubescence like the stipules. Leaf blades 1.5-4.5 × 0.8-3 cm,

membranous, slightly discolor, ovate-elliptic, the apex acute, the base cuneate or obtuse, margin crenate to serrate, 3-nerved, the upper surface sparsely pubescent, with minute stellate trichomes; the lower surface densely stellate-pubescent, with minute trichomes. Flowers grouped in axillary glomerules; pedicels 2-10 mm long, stellate trichomes. Calyx 5-7 mm long, campanulate, accrescent, prominently 10-ribbed, the upper surface glabrous, the lower surface densely pubescent, with stellate trichomes; sepals 3-3.5 × 3 mm long, ovate, apex acute. Corolla ca. 2 cm in diameter; petals 8-10 × 4-5 mm, yellow, obovate; stamens 15-20, filaments ca. 2 mm long, free, glabrous, staminal column ca. 1.8 mm long, cylindric, yellowish, simple-puberulent; ovary 1.2-1.5 × 1.5-2 mm, glabrous, carpels 13, styles ca. 5 mm long, free, cylindrical, vinaceous, stigma capitate. Mericarps 10-12, 3 × 2 mm, blackish, the aristae ca. 1 mm long sparsely covered with stellate minute trichomes, lateral walls weakly reticulate, glabrous; seeds ca. 2 × 2 mm, trigonous-reniform, smooth, blackish.

Examined specimen: BRAZIL. Paraíba. Cuité, Jardim Planalto, 6°28'51"S, 36°08'46"W, V.F. Sousa 623, 27-III-2018, fl., fr. (CES, ACAM, JPB; UFRN); same locality, Sítio Olho D'Água da Bica, Campus da UFCG/CES, 6°29'43"S, 36°09'34"W, V.F. Sousa 826, 22-I-2019, fl., fr. (CES, ACAM, JPB).

DISCUSSION AND CONCLUSION

Sida santaremensis occurs in subtropical and tropical America, from the southern United States (Florida) and Mexico to Colombia, Bolivia, Brazil, Paraguay and Argentina (Fryxell *et al.*, 1984; Fryxell, 1985; Krapovickas, 2014). In Brazil, the species occurs in the states of Amazonas, Amapá, Pará, Maranhão, Sergipe, Goiás, Mato Grosso do Sul, Minas Gerais, Rio de Janeiro, São Paulo, Paraná (Flora do Brasil 2020, under construction), and Pernambuco (Brandão *et al.*, 2014), where it grows in phytogeographical domains of Amazon Rainforest, Central Brazilian Savanna (Cerrado) and Atlantic Rainforest. In this paper we present *Sida santaremensis* as first record for Paraíba state, collected in transition area (Agreste) between Atlantic Forest and Caatinga, where it grows on sand-stony soils, in disturbed environments, such as road side and wasteland. It is cited as ruderal species for the United States of America (Fryxell *et al.*, 1984) and Colombia (Fuentes Aguilar, 1995).

This species is easily recognized in the field by its subshrubby habit, minutely stellate-puberulent branches; linear stipules, 1-2-nerved, 5-15 mm long; leaves with a short petiole of 5-15 mm long; leaf blades entirely crenate; flowers arranged in axillary glomerules; the pedicels shorter; calyx strongly ribbed and campanulate; and mericarps 10-12, blackish, short-aristate, the aristae ca. 1 mm long, minutely puberulent. According to Bovini (2001), *S. santaremensis* is the only species of *Sidae* section that shows the margin of the leaf blade fully crenate.

Sida rhombifolia L., the other species of section *Sidae* recorded from Paraíba, differs from *S. santaremensis* especially by its filiform stipules, 5-8 mm long, rhomboid or rhomboid-lanceolate leaf blades, serrate margin only in 1/2 or 2/3 upper medial portion and entire toward the base, stellate-pubescent adaxial surface, with sparse simple trichomes, abaxial surface densely stellate-puberulent; solitary flowers; yellow corolla usually without a red center; ovary glabrous, and mericarps 9-12, glabrous, 1-2-spines, 0.5-4 mm long (Bovini, 2001; Brandão *et al.*, 2014). This is a pantropical and subtropical species and almost cosmopolitan (Krapovickas, 2014), occurring throughout the tropics of both the Old and the New Worlds and extending well into the temperate zones (Fryxell, 1988).

There are few studies including the representatives of Malvaceae in the Flora of Paraíba, summarizing floristic surveys (Silva *et al.*, 2008; Araújo *et al.*, 2010; Barbosa *et al.*, 2007), taxonomy (Pinto, 2016) and a new occurrence (Baracho & Agra, 2016). This

new record for the state of Paraíba helps to improve the knowledge about the biogeography of *S. santaremensis*, and reinforces the need for more botanical expeditions in areas still scarcely known (Baracho & Agra, 2016; Sousa & Versieux, 2016; Sousa *et al.*, 2017; Melo *et al.*, 2018).

Below, we provided an updated key to the species of *Sida* sect. *Sidae* that occur in Paraíba state:

1. Leaf blade 2-7 × 0.3-2 cm, rhombiform or rhomboid-lanceolate, margin serrate only in upper medial portion, adaxial surface puberulent, abaxial surface velutinous, base cuneate, apex obtuse or acute; flowers solitary; calyx cupuliform, calyx lobes acute; ovary glabrous *S. rhombifolia* L.
1. Leaf blade 1.5-4.5 × 0.8-3 cm, ovate-elliptic, margin completely crenate or serrate, the upper surface sparsely pubescent, with minute stellate trichomes; the lower surface densely stellate-pubescent, with minute trichomes, base obtuse, apex acute; flowers grouped in axillary glomerules; calyx campanulate, calyx lobes acuminate; ovary puberulous *S. santaremensis* Mont.

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Figure 1: Map of Paraíba state showing the municipality of Cuité, where *Sida santaremensis* (whitish circle) was collected.



Figure 2: *Sida santaremensis*. A. Habit. B. Detail of flower. C. Mature fruit.

ADAPTAÇÃO DE ESPÉCIES NATIVAS EM ÁREAS URBANAS

Josafá Carlos de Siqueira SJ.

CATEGORIZAÇÃO DO RISCO DE EXTINÇÃO DE *Ameroglossum pernambucense*

Eb. Fisch., S. Vogel & A.V.Lopes (SCROPHULARIACEAE)

Daniel Oliveira Reis, Josias Gomes Júnior, Lara Fabian Rodrigues de

Jesus, Diego de Andrade Mendonça & Juliano Ricardo Fabricante

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