

# A NEW SPECIES OF *SIDA* SECTION *MALACROIDEAE* (MALVACEAE, MALVOIDEAE) FROM NORTHEASTERN BRAZIL

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**Abstract.** A new species of *Sida* section *Malacroideae* (Malvaceae), *Sida nordestinensis*, is described and illustrated. The new taxon is currently restricted to the State of Paraíba, Northeastern Brazil. This novelty is based on fieldwork and on the examination of relevant material from several herbaria. This study includes a taxonomic description, a distribution map, reproductive phenology data, and images for this new species.

**Keywords:** Caatinga, Malvales, Malveae, Neotropical flora, taxonomy

*Sida* Linnaeus is one of the most representative genera of Malvaceae s.l. worldwide, comprising ca. 200 species currently placed in subfamily Malvoideae (Fryxell, 1997; Krapovickas, 2003; Brandão, 2017). The genus is characterized by flowers bearing 10-ribbed calyces and schizocarps with 5–14 mericarps (Fryxell, 1997). Brazil is one of *Sida*'s main diversity centers, with more than half of its species recorded for the country (i.e., 103 out of 200 species; Flora do Brasil, 2020).

*Sida* section *Malacroideae* Don is one of the most diverse sections of this genus, occurring in Argentina, Brazil, Bolivia, Cuba, Ecuador, United States, Mexico, Uruguay, Paraguay, Peru, and Venezuela (Krapovickas, 2007, 2012). Brazil is the diversity center for this section, with 16 recorded species occurring in the Pampas, Pantanal,

Cerrado, and Caatinga domains (Flora do Brasil, 2020; Krapovickas, 2007). This section comprises 23 species recognized by their herbaceous habit, axillary solitary and subsessile flowers/inflorescences (which are fused to the base of the stipules), staminal tube glabrous or with simple to stellate trichomes, calyx covered with stellate trichomes, and apiculate fruits bearing pubescent stellate trichomes (Krapovickas, 2007, 2012). Additionally, the Brazilian Caatinga (i.e., Seasonally Dry Tropical Forests) represents a secondary diversity center for this section (Krapovickas, 2007).

During work on a taxonomic treatment for *Sida* section *Malacroideae* (Figueiredo & Melo, in prep.) in the Caatinga biome of Northeastern Brazil, a new species of the section was found, which is here described and illustrated.

## MATERIALS AND METHODS

Morphological analyses were based on field observations of the specimens collected in the municipality of Arara, Paraíba, Northeastern Brazil, and on specimens from the CTES herbarium at the Instituto de Botânica del Nordeste (Corrientes, Argentina), where most type specimens of *Sida* section *Malacroideae* are deposited. Moreover, materials from the following herbaria were analyzed: ALCB, ASE, CSTR, EAN, FCQ, HACAM, HST, HUEFS, IPA, JPB,

MAC, PEUFR, PY, SCP, UFP, and UFRN (acronyms according to Thiers, 2020, continuously updated). The terminology for vegetative and reproductive structures followed Harris and Harris (1994), Hickey (1973), Payne (1978), and Rizzini (1977). Conservation assessment follows the categories and criteria from the red list of IUCN (International Union for Conservation Nature, 2017).

## DESCRIPTION

***Sida nordestinensis*** S.S. Figueiredo & J.I.M. Melo, *sp. nov.* TYPE: BRAZIL. Paraíba: Arara, roadside, 6°51'07.3"S, 35°46'10.7"W, 646 m, 30 April 2019, S. S. Figueiredo 60 (Holotype: HACAM; Isotype: JPB, to be distributed). Fig. 1–3.

*Herbs* erect. *Stems* covered with stellate trichomes, 7- to 8-branched. *Stipules* ca. 8 × 2 mm, spatulate, ciliate, cilia 1–2 mm long. *Petioles* 7–8 mm long, covered with stellate trichomes. *Leaf blades* 8–20 × 3–10 mm, lanceolate, base obtuse, margin proximally entire and dentate from the median region to the apex, apex acute, adaxial surface

sericeous, trichomes stellate, 6- to 8-branched, appressed, abaxial surface sericeous, slightly floccose, trichomes stellate; secondary veins 8–9 pairs, conspicuous, abaxially raised, covered with stellate trichomes, 7- to 8-branched, 2 branches longer than others, 1.0–1.5 mm long. *Inflorescences* cymes, helicoidal, terminal. *Flowers* with pedicels ca. 2 mm long; ca. 13 mm long; *floral bud* 3–4 mm long; calyx ca. 7 × 5–6 mm, gamosepalous, 5-lobed, externally ciliate on apical lobes and base glabrous, internally tomentose, margin ciliate, with simple trichomes; *corolla* 6–7 mm long, dialypetalous, *petals* externally pale pink, base internally

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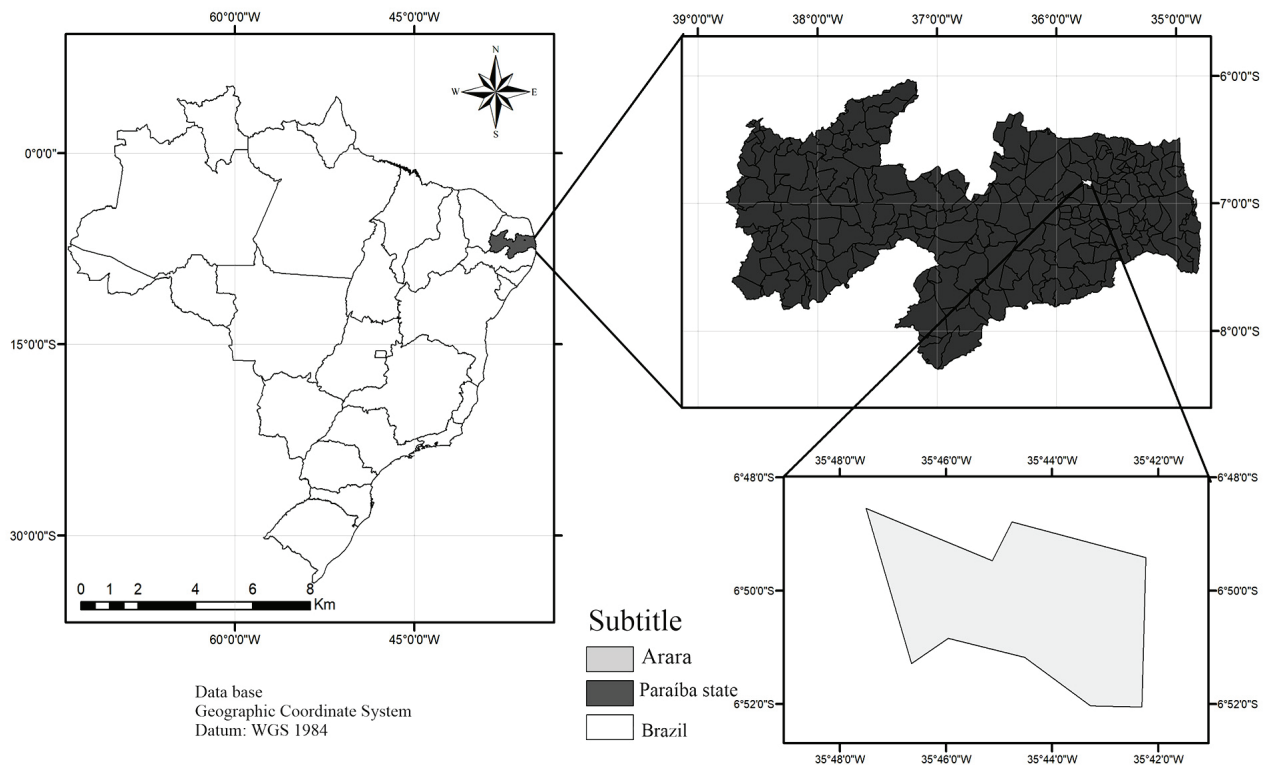


FIGURE 1. Distribution map of *Sida nordestinensis* S.S. Figueiredo & J.I.M. Melo.

yellow, with vinaceous longitudinal stripes from the middle portion to the apex; *staminal tube* 1.5–2.0 mm long, covered with stellate trichomes, the 5-branched, free portion of filaments ca. 1 mm long, anthers ca. 0.5 mm long; *ovary* ca. 1 × 1 mm, 5–8 locular, locules triangular. *Schizocarps* 4–5 × ca. 3 mm, with 5–8 mericarps, aristate, prominences covered with a mixture of radial stellate and glandular trichomes, sometimes glabrous, stellate trichomes 10- to 13-branched, glandular trichomes stipitate; mericarps 2–3 mm long, 2-aristate, aristae with radial stellate trichomes, 10- to 13-branched. *Seeds* 5–8 per schizocarp, ca. 2 mm long, pubescent, dark brown when dry.

**Phenology:** flowering and fruiting in April.

**Etymology:** the specific epithet refers to Northeastern Brazil, the region where this new taxon is recorded.

**Conservation status:** *Sida nordestinensis* was recorded only along the roadside in the municipality of Arara, State of Paraíba. For this reason, this species was categorized as data deficient (DD) because its complete distribution is currently unknown.

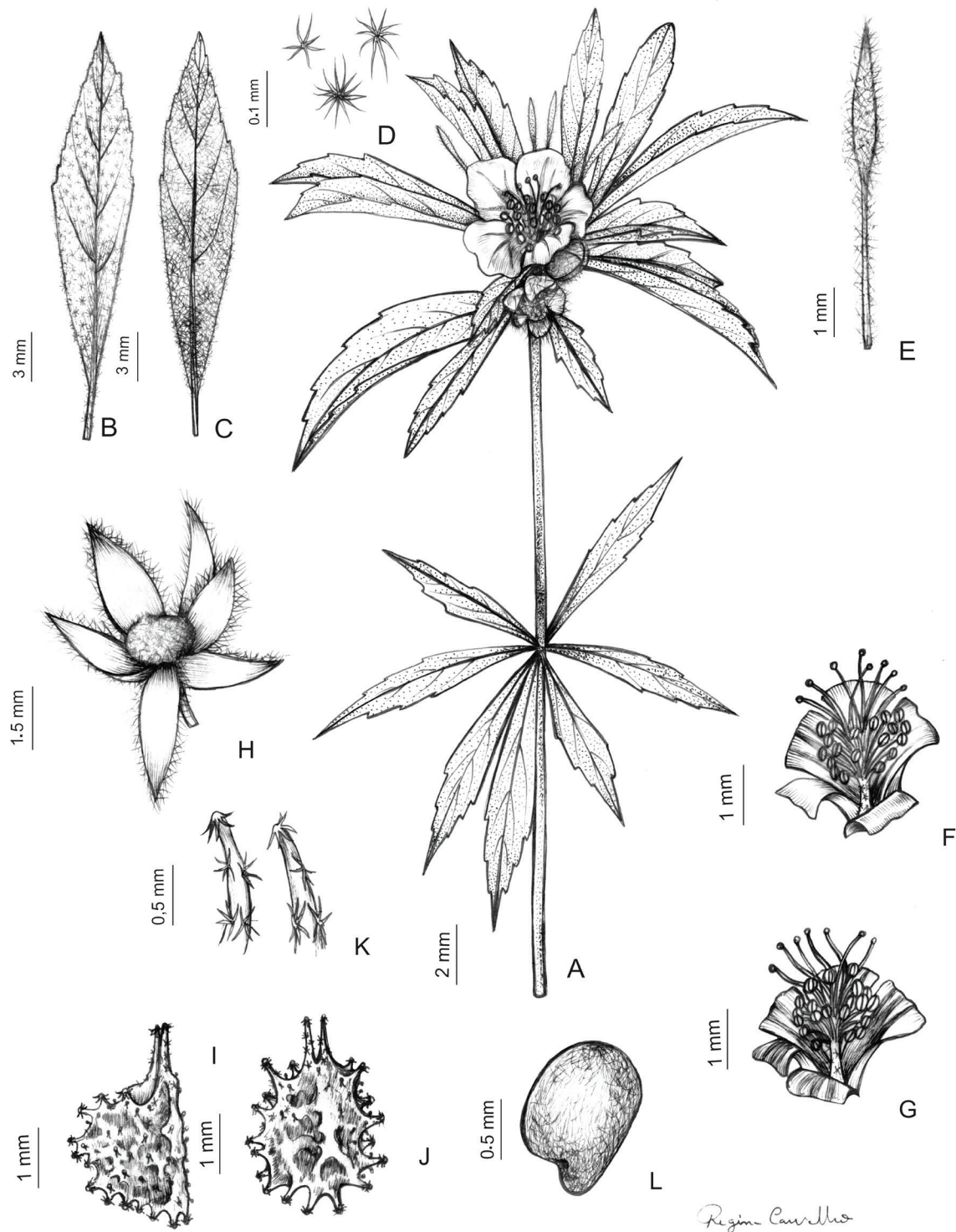
**Distribution and habitat:** *Sida nordestinensis* was recorded in the Caatinga domain within the municipality of Arara, Agreste mesoregion, State of Paraíba, Northeastern Brazil.

As mentioned above, Brazil is the diversity center of *Sida* section *Malacroideae*, with the Caatinga domain being its secondary diversity center (Krapovickas, 2007, 2012). The discovery of *S. nordestinensis* increases the total number of species of the section from 23 to 24 species, corroborating Krapovickas's assertion (2007, 2012) that this region is an important center of taxonomic diversity for the section.

Species from *Sida* section *Malacroideae* are morphologically very similar when analyzed with the naked eye, and this fact is responsible for the long-misapplied name *S. ciliaris* Linnaeus for practically all species in this section (Krapovickas, 2007). Despite the morphological similarities among these species, several morphological characters are key in differentiating the species from *S.* section *Malacroideae*, according to Krapovickas (2007): mostly herbaceous habit, roots generally adventitious, stems erect or prostrate; leaves spatulate to lanceolate, leaf blades with trichomes on both surfaces, simple to stellate; petioles with or without stellate trichomes; inflorescences or solitary flowers, subsessile, staminal tube glabrous or with simple to stellate trichomes; calyx covered with stellate or simple trichomes; mericarps apiculate, with pubescent, stellate trichomes; 1 seed per mericarp. In addition, the calyx is persistent, protecting the fruit.

In a detailed study, including all species of *Sida* section *Malacroideae*, we noticed that the species most similar to *S. nordestinensis* is *S. centuriata* Clement, but they differ in the characteristics listed in Table 1. In addition to the morphological features, it is worth mentioning that *S. centuriata* is a species restricted to the Pantanal domain, currently known only in the State of Mato Grosso do Sul, Brazil.

*Sida nordestinensis* shows pink corollas, a characteristic resembling several species in this section, such as *S. castanocarpa* Krapovickas. However, the latter is differentiated from this section's remaining species by the leaf blade's adaxial surface covered with stellate trichomes along the margins, simple trichomes in the middle portion, and the abaxial surface covered with stellate trichomes.



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FIGURE 2. *Sida nordestinensis* S.S. Figueiredo & J.I.M. Melo. **A**, reproductive branch detaching flower with gynoecium showing 5 stigmas; **B**, adaxial surface of a leaf blade showing stellate trichomes; **C**, abaxial surface of a leaf blade showing stellate trichomes; **D**, stellate trichomes; **E**, stipule; **F**, gynoecium showing 8 stigmas; **G**, gynoecium showing 7 stigmas; **H**, ovary and persistent calyx; **I**, lateral surface of the mericarp with radial stellate trichomes and stipitate-glandular trichomes; **J**, dorsal surface of the mericarp; **K**, aristae with radial stellate trichomes; **L**, seed, side view. Based on *S. S. Figueiredo* 60.

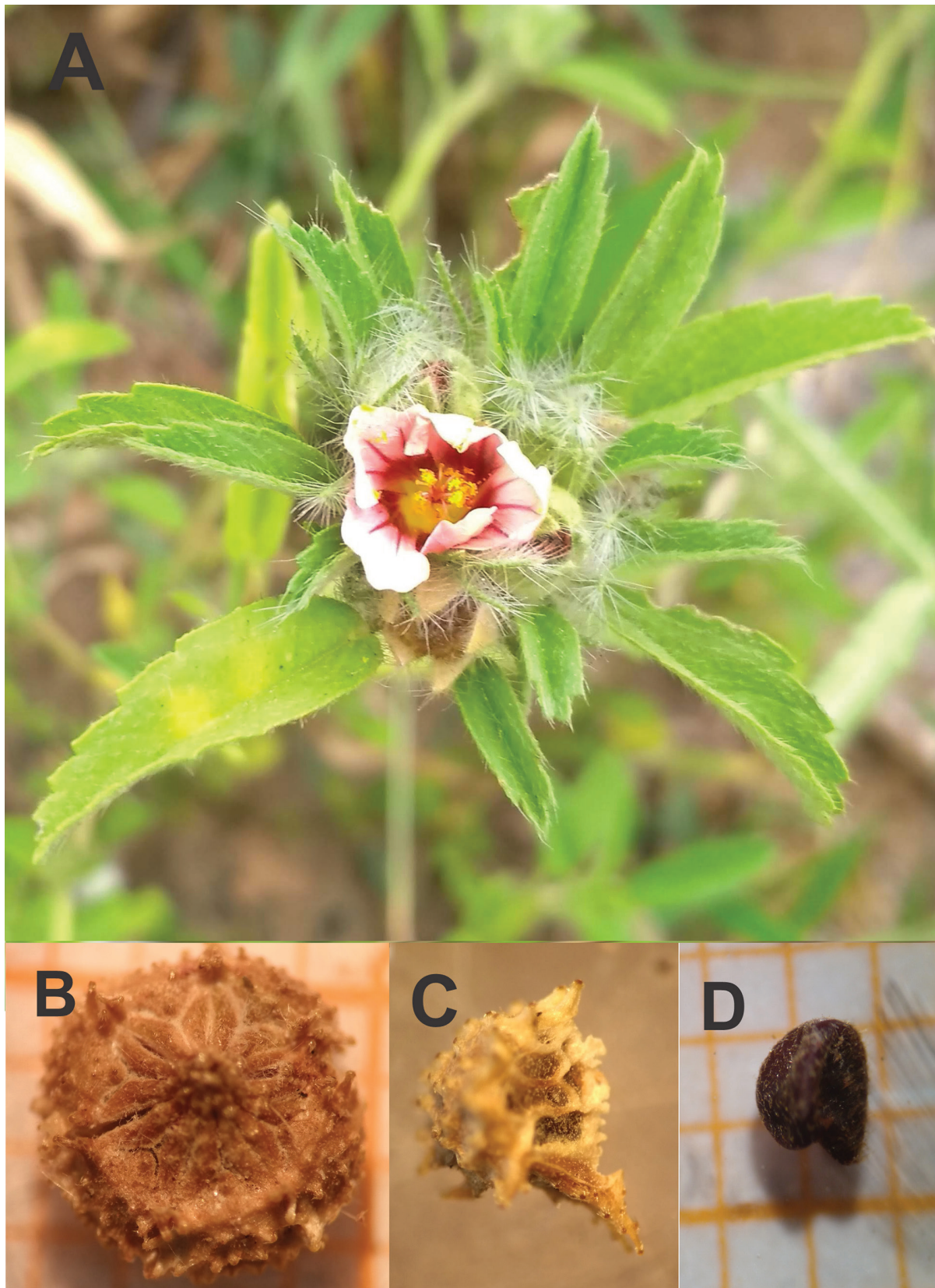


FIGURE 3. *Sida nordestinensis* S.S. Figueiredo & J.I.M. Melo. **A**, habit; **B**, fruit; **C**, bi-aristate mericarp, with radial stellate and pedicellate glandular trichomes; **D**, seed. Photographs by S. S. Figueiredo. Based on S. S. Figueiredo 60.

TABLE 1. Morphological comparison among *Sida nordestinensis* from *S. centuriata* and *S. castanocarpa*.

FEATURES	<i>S. CASTANOCARPA</i>	<i>S. CENTURIATA</i>	<i>S. NORDESTINENSIS</i>
Habit	Erect and/or prostrate herb	Prostrate herb	Erect herb
Shape of the stipules	Linear	Linear-lanceolate	Spatulate
Branching of the stellate trichomes of the stem	6–7-branched	4-branched	7–8-branched
Fruits indumentum	Presenting stellate trichomes and glandular trichomes	Always presenting glandular trichomes	Sometimes presenting glandular trichomes

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