

Psidium guedesiae a new species from the Caatinga of Northeastern Brazil

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Abstract

Psidium is one of the largest genera of Myrtaceae in Brazil. Bahia, the most species rich state, has species growing in the Cerrado, Caatinga, and Atlantic Forest domains, and the ecotones between these. A new species, *Psidium guedesiae*, is described from the Caatinga of Northeastern Brazil. It is compared to three similar species of *Psidium* that all seem to grow in the Caatinga habitat. A key to the species of this group is provided. The morphology, phenology, ecology and conservation status of *P. guedesiae* are discussed.

Key words: Dryland, Myrteae, Pernambuco

Introduction

Psidium Linnaeus (1753: 470) is one of the largest genera of American Myrtaceae, and eastern Brazil is considered the region of highest diversity and endemism for the genus (Landrum 2017); less important centers are the Andean countries from Peru to Venezuela and the Caribbean. The number of species of *Psidium* is controversial, with estimates varying from 63 species (Landrum in press) to 90 species (Proença *et al.* 2022).

The genus is known by a combination of features discussed in Landrum & Kawasaki (1997) and Landrum (2017) including floral and seed morphology. *Psidium* is quite variable and several subgeneric taxa, based in part on molecular evidence, have been proposed (Proença *et al.* 2022) and informal complexes based on morphology have previously been recognized (Landrum 2003, 2005, 2021 and Landrum *et al.* 2024).

Bahia is the fifth largest state in Brazil and has a wide variety of habitats including the Cerrado, Caatinga, and Atlantic Forest domains and the ecotones between these. The state is known for its high biodiversity of plants in general (Giulietti *et al.* 1997) and *Psidium* in particular (Tuler *et al.* 2020). Of all the states in Brazil, *Psidium* is most diverse in Bahia, with 31 species, of which 14 occur in Caatinga (drylands with seasonally deciduous plants) (FBO 2025).

The Caatinga was historically considered a low diversity habitat and poorly collected, however recently many new species have been described for this type of vegetation, such as *Psidium rotundidiscum* Proença & Tuler (Tuler *et al.* 2016), *Psidium brevipedunculatum* Tuler & Landrum (Tuler *et al.* 2020) and *Psidium pulcherrimum* Tuler & C.M.Costa (Tuler *et al.* 2019).

We here describe a species of the Caatinga that, until recently, was known from a single specimen (referred to as “species C” in Landrum 2017). This new species shares a similar habitat and some morphological characteristics with three other species of *Psidium* of the Caatinga; we provide a key distinguishing them. We discuss the morphology and ecology of our new species and provide a map of its distribution and illustrative images.

Methodology

Herbarium specimens were analyzed from ALCB, ASE, ASU, HUEFS, and HURB in person and as images from RB and UB (acronyms according to Thiers 2025). Descriptive terms of reproductive and vegetative morphology were

based on Radford *et al.* (1974) and Beentje (2016). The measurements presented follow the sequence length \times width and were made using herborized materials; flowers, embryo and seeds were rehydrated. Photographs were made using an Olympus SC30 camera coupled to a stereomicroscope and edited using Inkscape v. 0.92.4 (www.inkscape.org). The shapes used for the occurrence map were downloaded at IBGE (2025) and created using Qgis v.3.40.

Taxonomy

Psidium guedesiae Stadnik & Landrum, *sp. nov.* Type: BRAZIL. Bahia, Licínio de Almeida, Jurema – estrada para São Domingos, 14° 40' 56"S, 42° 30' 27"W, 22 January 2017 (fr.), *A. Stadnik, R. Lopes, J.G. Jardim & M. Ibrahim 279* (Holotype ALCB!; isotypes HUEFS!, UB!). Figures 1–3.

Similar to *Psidium brevipedunculatum* but flower buds and lower surface of leaves moderately to sparsely strigose or pubescent (not densely tomentose), petioles 0–2 mm long (not 4–5 mm long) and leaf blades submembranous to chartaceous (not subcoriaceous) at maturity.

Shrub up to 5 m tall, the young growth thinly to moderately strigose, or hirtellous on inner flower surfaces or insect galls; trichomes clear, white, or light yellowish, to ca. 1 mm long; young twigs yellowish brown, sparsely strigose, villous or pilose, glabrescent with age, moderately glandular, with dark conspicuous glands, the older twigs grayish, the bark smooth to longitudinally cracking, the nodes sometimes 1.5–2 times as wide as internodes, with vegetative buds present in some leaf axils, these apparently producing cataphylls as they open, the young cataphylls ovate, 1 mm \times 1 mm, the expanded cataphylls oblong, up to 7 mm long and 4 mm wide. Leaves obovate to oblanceolate, 2.2–5.8 cm \times 1–2.7 cm, 1.8–2.9 times as long as wide, sessile to subsessile; apex acute to abruptly acuminate, sometimes mucronate; base cuneate or attenuate; petioles 0–2 mm \times ca. 1 mm, slightly winged, with a spur-like protuberance ca. 0.5 mm long at base so that the petiole attachment appears to be above the base; venation brochidodromous distally, eucamptodromous proximally, the midvein scarcely visible and flat above, moderately prominent below, the lateral veins 6–7 pairs, leaving the midvein at an angle of ca. 45° or less, arching towards apex near the margin, the marginal vein weak, only present distally, running 1–4 mm from the margin, the tertiary and smaller veins forming a reticulate pattern between the laterals, visible adaxially and abaxially; blades membranous to submembranous at anthesis, later chartaceous. Flower buds pyriform, 5–6 mm long, the distal portion apiculate to acute, the hypanthium obconic, ca. 2.5 mm long; external surface sparsely strigose, the inner surfaces densely hirtellous except for subglabrous disk within staminal ring and distal portion of style; peduncles uniflorous, 5–7 mm long, ca. 0.5 mm wide, borne in axils of leaves or at leafless nodes. Calyx closed in bud, sometimes with a rostrate tip ca. 1.2 mm long, falling as a calyptra, or tearing irregularly in 2 to 5 parts; petals probably 5 based on shape of staminal ring, white, obovate, ca. 3 mm \times ca. 2 mm, ciliate; staminal ring ca. 1 mm wide, densely hirtellous; disk within staminal ring ca. 2 mm across; stamens ca. 2.5 mm long; anthers subglobose, ca. 0.2 mm \times ca. 0.2 mm, with one gland in apex of connective; style 3–4 mm long, capitate, with a swollen, hirtellous base; ovary 2-locular, the placenta central, peltate; ovules 7–10 per locule, reflexed. Fruits globose, ca. 4–5 mm long, hirtellous, green when immature, mature fruit not seen; seeds 5–7, ca. 3–4 mm long.

Paratypes:—BRAZIL. BAHIA: Caetité, 14°4'S, 42°29'W, 1 March 1993 (fl.), *M.L. Guedes et al. 2922* (ALCB!, JPB); Licínio de Almeida, Serra Geral, Lagoa da Vereda, 14°34'11"S, 42°27'59"W, 738m alt., Caatinga/Cerrado, 11 December 2009 (fr.), *F.S. Gomes, M.L. Guedes, F. Melo & et al. 336* (ALCB!, HUEFS!); Morro do Chapéu, Estrada para a serra, no caminho para a Gruta dos Brejões, Caatinga, 11°55'S, 41°15'W, 6 December 2009 (fr.), *R.F. Machado, M.F. Fernandes, F.H.F. Nascimento, Souza & I. Mascare 485* (HUEFS!); Condeúba, 14°53'S, 41°58'W, Caatinga, 15 December 2017 (fl.), *M.L. Guedes & Alunos de BOTC05 2º semestre de 2017 30146* (ALCB!); Mortugaba, Serra Geral, 15°01'S, 42°22'W, Caatinga, 16 February 2018 (fl.), *M.L. Guedes 30198* (ALCB!, HURB!). PERNAMBUCO: São Caitano, RPPN Pedra do Cachorro, Trilha arbórea da subida do afloramento, 8°14'21,7"S, 36°11'12,7"W, 790 m alt., Caatinga arbustiva-arbórea, 20 March 2010 (fr.), *K. Mendes, E. Chagas, M.T. Buril, P. Lavour, R. Rodrigues 426* (ASE!, UFP).

Etymology:—*Psidium guedesiae* is a tribute to Maria Lenise Guedes who is a distinguished colleague of the Alexandre Leal Costa Herbarium at Salvador, Bahia. Guedes is a prolific botanist that has been contributing to the biodiversity knowledge of Brazil, mainly in the Bahia state. She was the first collector of *P. guedesiae*, and based on online platform of herbarium data, she is the paramount female collector of vascular plants in Brazil and has collected more specimens of *Psidium* in Bahia than anyone else.



FIGURE 1. *Psidium guedesiae*. Holotype (Stadnik 279) and vegetative details. A—Young cataphyll emerging in leaf axil (Guedes 30198); B—Leaf blade with pellucid glands, secondary veins leaving at an angle of ca. 45° or less (Guedes 30146); C—Winged petiole (Stadnik 279); D—Leaf apex (Guedes 30198).

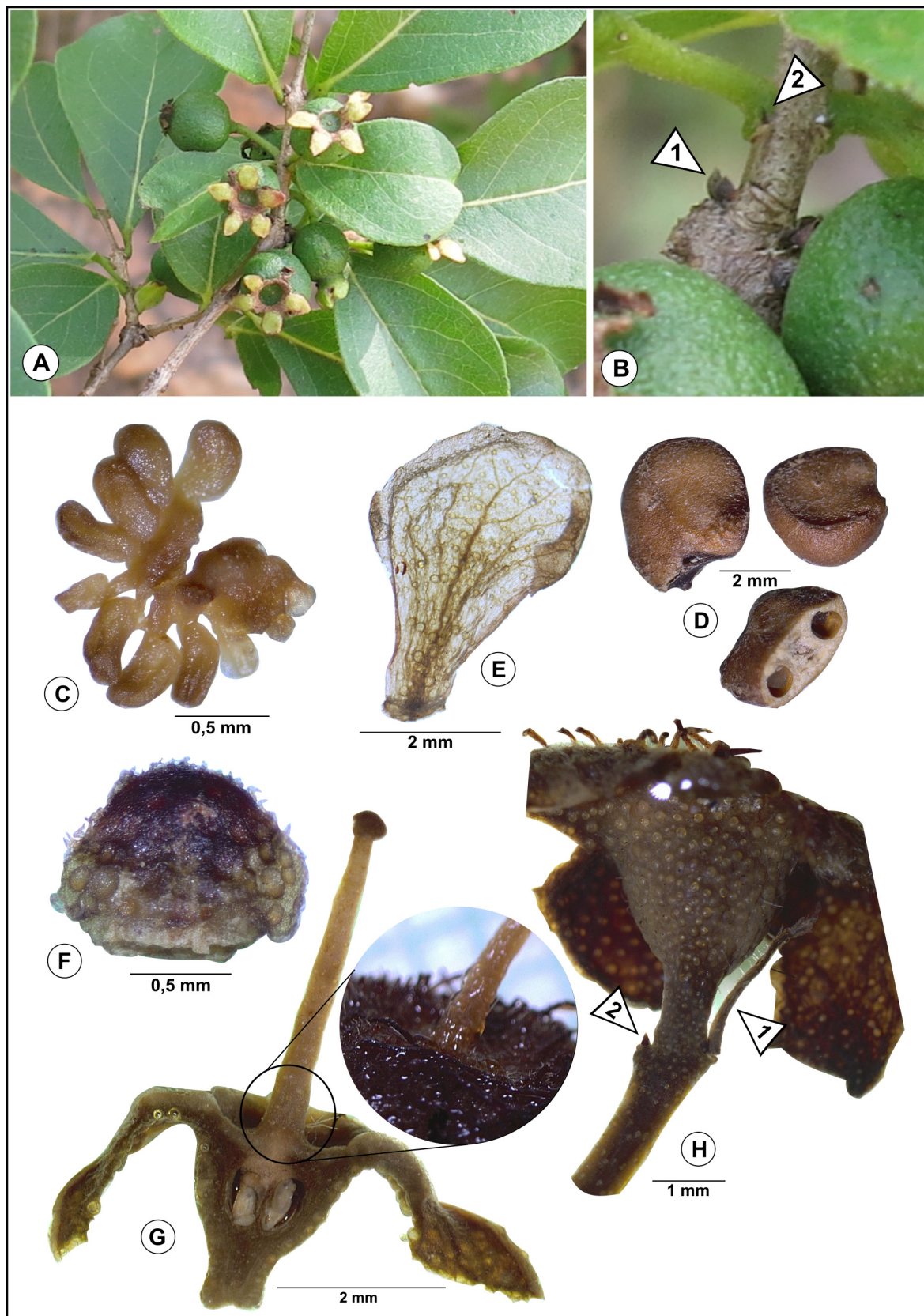


FIGURE 2. *Psidium guedesiae*. Details. A—Fruiting branch (Stadnik 279); B—Twig. B1—Vegetative bud, B2—Colleter (Stadnik 279); C—Placenta with ovules (Guedes 30198); D—Seeds (Stadnik 279); E—Petal (Guedes 30198); F—young cataphyll (Guedes 30146); G—longitudinal section of an old flower, highlighting gynoecium features; H—old flower, H1—Bracteole, H2—Colleter (Guedes 30146).

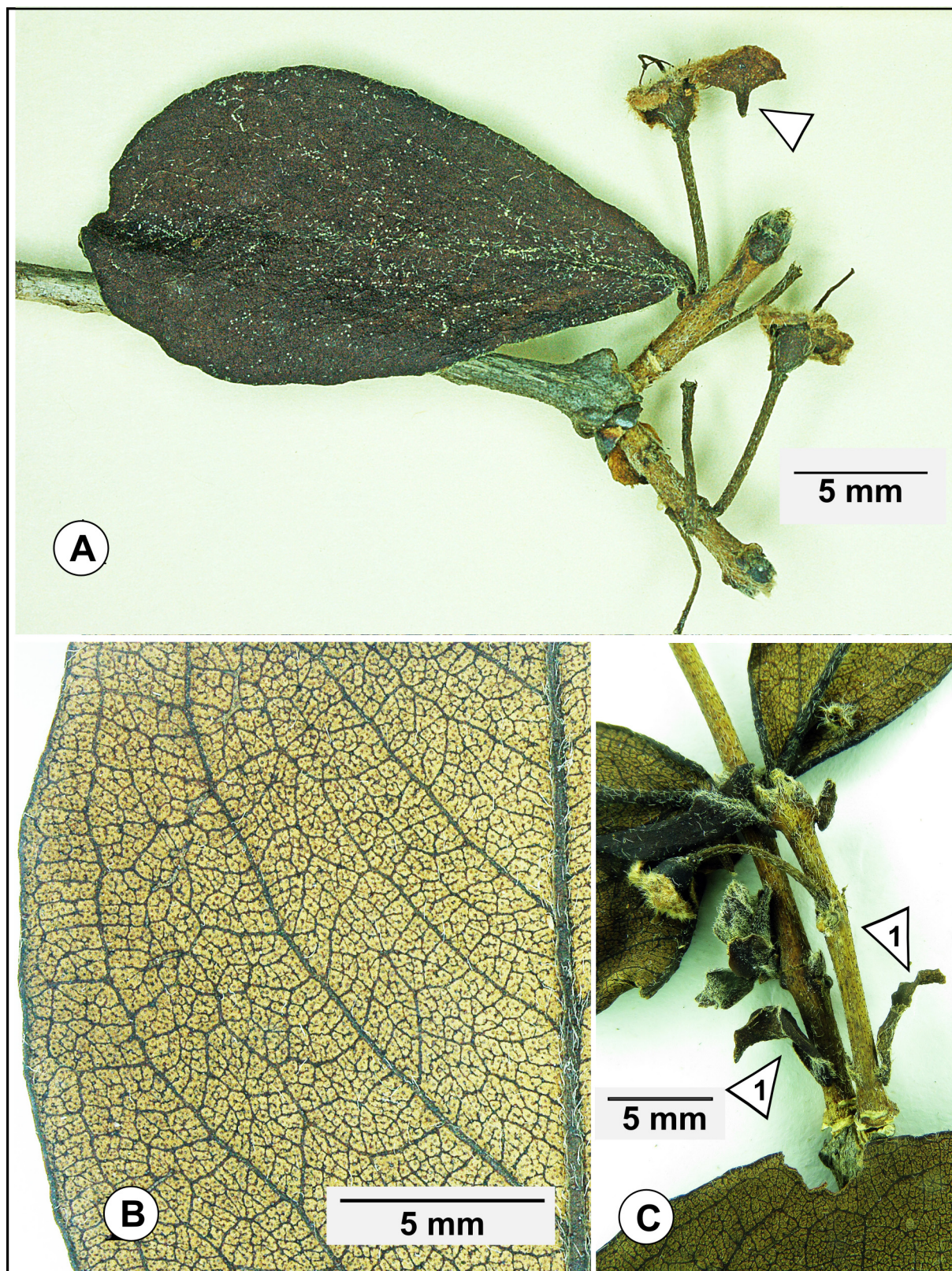


FIGURE 3. *Psidium guedesiae*. Details. A—Close-up of twigs and flowers after anthesis, the upper flower with a rostrate calyptra still attached (Arrow). B—Close-up of lower surface of leaf showing venation pattern and scattered appressed trichomes. C—Mature branch. C1—mature cataphylls (Guedes *et al.* 2922).

Distribution, habitat and phenology:—*Psidium guedesiae* occurs in Caatinga and ecotone vegetations between Caatinga and Cerrado habitat of Bahia and Pernambuco (Fig. 4). It is known to have flowers in February, old flowers in March and December, fruits in March and December.

Conservation Status:—This species has only been collected a few times over a moderately broad geographic range. Now that it is recognized, studies of its conservation status can be made. For the time being we consider it Data Deficient (DD) according to IUCN (2024) guidelines. We encourage more collections and field studies.

Comments:—*Psidium guedesiae* seems to belong to a group of four species, the three others being, *P. rhombeum* O. Berg (1857–1859: 383), *P. pulcherrimum* and *P. brevipedunculatum*. *Psidium rhombeum* has been known since its description by Berg, but the other two have been only recently formally described (Tuler *et al.* 2019; Tuler *et al.* 2020). These two recently described new species were known from single specimens and were cited as *Psidium* sp. A and *Psidium* sp. B in Landrum (2017); *Psidium guedesiae* was cited in the same paper as *Psidium* sp. C.

These four species commonly grow in caatinga vegetation, which is characterized by a pronounced dry season. They all seem to lose their leaves for the dry part of the year and perhaps have flowers when the new leaves appear at the beginning of the rainy season. All species have small flowers (flower buds 4–6 mm long, styles ca. 3–4 mm long, stamens ca. 50–200, ovules per locule 3–12) and small leaves (1–6.5 cm long) that are membranous to subcoriaceous. Some species at least have vegetative buds with specialized scales that do not develop into leaves, and the twigs have some nodes that are about 1.2–2 times as wide as internodes (e.g., *Psidium guedesiae* [Fig. 3A] and *P. pulcherrimum* [Landrum in press, Fig. 54B]). Three of these four species have clearly visible venation (not *P. pulcherrimum*), which is eucamptodromous proximally and brochidodromous distally and have the tertiary venation finely reticulate.

Whether all are closely related or if they have become similar through parallel adaptation to a similar habitat is not clear to us. We provide a key for distinguishing them.

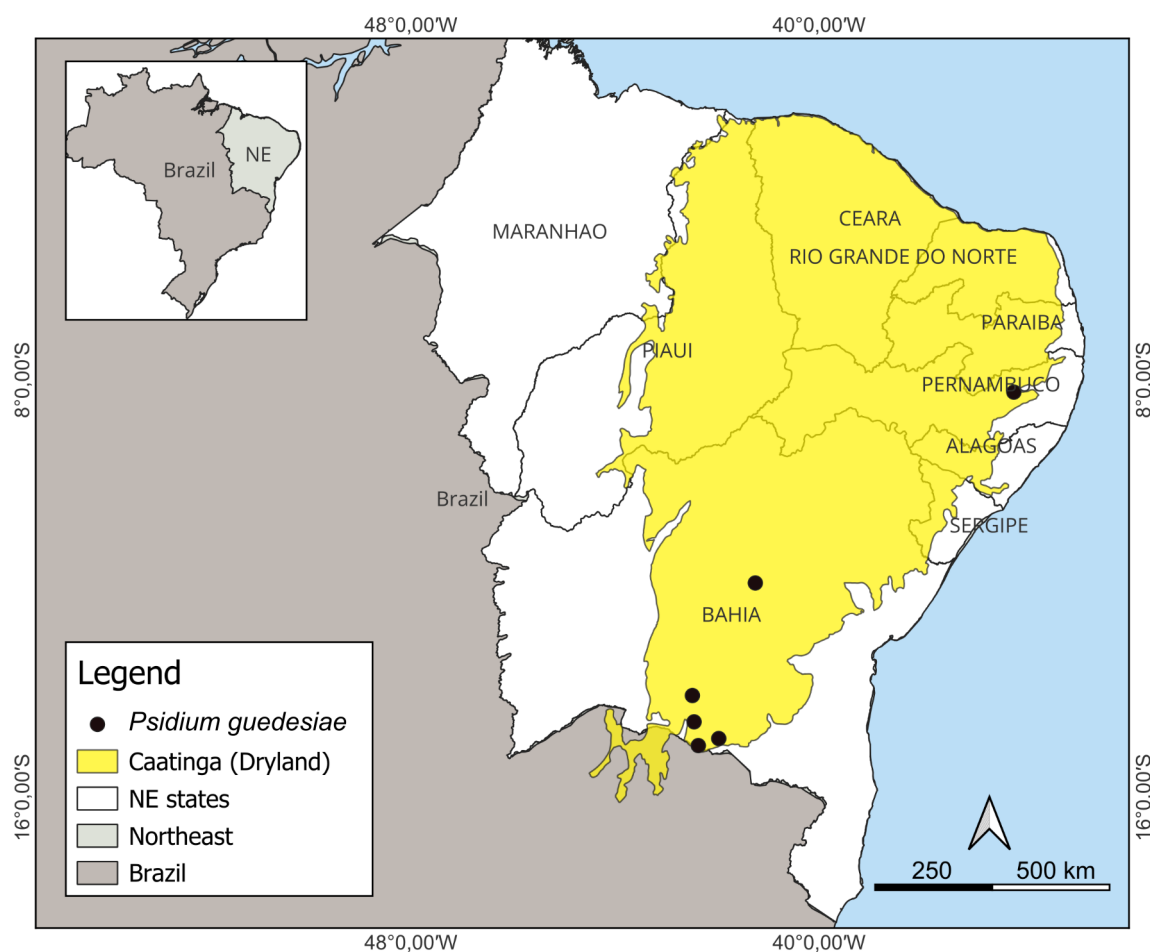


FIGURE 4. Occurrence map of *Psidium guedesiae* (black dots). The Caatinga domain is represented in yellow. Scale bar = 500 km.

1. Calyx open in bud; petioles 3–7 mm long; leaf blade elliptic to suborbicular, to obovate, the base attenuate to rounded.....*P. rhombeum*
- Calyx closed in bud; petioles 0–5 mm long; leaf blade linear, elliptic, obovate to oblanceolate, the base cuneate to attenuate.
2. Leaf blade linear to narrowly oblanceolate, 7–9 times as long as wide; peduncles ca. 15 mm long.....*P. pulcherrimum*
- Leaf blade elliptic, obovate, to oblanceolate, 1–3 times as long as wide; peduncles up to ca. 5 mm long.
3. Flower buds and lower surface of leaves densely tomentose; petioles 4–5 mm long; leaf blades subcoriaceous at maturity*P. brevipedunculatum*
- Flower buds and lower surface of leaves moderately to sparsely strigose or pubescent; petioles 0–2 mm long; leaf blades submembranous to chartaceous at maturity*P. guedesiae*

The variable manner of calyx dehiscence in *Psidium guedesiae*, from tearing irregularly to calyptrate, is also known in *P. brownianum* DC. (1828: 236) and *P. oligospermum* DC. (1828: 236) (Landrum 2017). The calyx of *P. pulcherrimum* is only known to be calyptrate (Tuler *et al.* 2019) and in *P. brevipedunculatum* the calyx tears irregularly (Tuler *et al.* 2020).

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