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The family Bignoniaceae in the Environmental Protection Area Serra Branca, Raso da Catarina, Jeremoabo, Bahia, Brazil

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ABSTRACT. Bignoniaceae comprises 82 genera and 827 species distributed mostly in tropical and subtropical regions, with a few species in temperate climates, and is most diverse in South America. The Brazil is the center of diversity for the group, with about 406 species in 33 genera, of which 22 genera and 90 species occur in the Caatinga. The floristic survey of Bignoniaceae in the Environmental Protection Area Serra Branca included analysis of 31 specimens collected from August 2009 to February 2012. The analyses were supplemented with dried collections from the following herbaria: ALCB, HRB and HUEFS. Nine genera and 11 species were recorded: [*Anemopaegma* Mart ex DC.; *Bignonia* L.; *Cuspidaria* DC.; *Fridericia* Mart.; *Handroanthus* Mattos; *Jacaranda* Juss; *Lundia* DC.; *Mansoa* DC. and *Tabebuia* Gomes ex DC.]. *Fridericia* was the most representative genus with three species. The taxonomic treatment includes a key for the identification, descriptions, illustrations, photos, data of the geographical distribution, reproductive phenology and comments about the species.

Keywords: floristic, semiarid, biodiversity.

A família Bignoniaceae na APA Serra Branca, Raso da Catarina, Jeremoabo, Bahia, Brasil

RESUMO. Bignoniaceae é composta por 82 gêneros e 827 espécies distribuídas principalmente nas regiões tropicais e subtropicais, com algumas espécies em climas temperados, é mais diversificada na América do Sul. O Brasil é o centro de diversidade do grupo com cerca de 406 espécies em 33 gêneros, dos quais 22 gêneros e 90 espécies ocorrem na Caatinga. O levantamento florístico das Bignoniaceae na Área de Proteção Ambiental Serra Branca incluiu a análise de 31 espécimes coletados de agosto de 2009 a fevereiro de 2012. As análises foram complementadas com coleções dos seguintes herbários: ALCB, HRB e HUEFS. Nove gêneros e 11 espécies foram registradas: [*Anemopaegma* Mart ex DC.; *Bignonia* L.; *Cuspidaria* DC.; *Fridericia* Mart.; *Handroanthus* Mattos; *Jacaranda* Juss; *Lundia* DC.; *Mansoa* DC. e *Tabebuia* Gomes ex DC.]. *Fridericia* foi o gênero mais representativo com três espécies. O tratamento taxonômico inclui uma chave para a identificação, descrições, ilustrações, fotografias, dados de distribuição geográfica, fenologia reprodutiva e comentários sobre as espécies.

Palavras-chave: florística, semiárido, biodiversidade.

Introduction

Bignoniaceae comprises 82 genera and 827 species distributed mostly in tropical and subtropical regions, with a few species in temperate climates, and is most diverse in South America (Lohmann & Ulloa, 2007; Judd et al., 2009). According to Gentry (1990), it is the most ecologically important liana family in the American tropics, and so constitutes a good model for studying the great diversity of tropical plant communities. Brazil is the center of diversity for the group with about 406 species in 33 genera, of which 22 genera and 90 species occur in the Caatinga (Lohmann, 2015).

Giulietti, Conceição, and Queiroz (2006) considers Bignoniaceae to be the eighth most

representative family of the Caatinga. Among the works carried out on taxa of Bignoniaceae in the Northeast Region of Brazil, we highlight the following: Harley and Simmons (1986) recorded three species in the region of Mucugê (Bahia); Gentry (1995) recorded six species at Pico das Almas, Chapada Diamantina; Lohmann and Pirani (1996) identified 17 species of the formerly tribe Tecomeae in the Cadeia do Espinhaço (Bahia and Minas Gerais); Silva and Queiroz (2003) recorded 33 species in Catolés, Chapada Diamantina, Bahia; Silva-Castro, Costa, and Brito (2007) recorded 15 species of *Jacaranda* in Bahia and Espírito Santo, Silva-Castro, and Rapini (2013) recognized 26 species in their taxonomic treatment of the *Tabebuia* Alliance.

The Caatinga has a high rate of endemism and diversity, making a better understanding of its flora necessary for proper conservation measures (Prado, 2003). However, Caatinga is probably the most undervalued and poorly known botanically biome (Giulietti et al., 2002), yet it has the lowest number of conservation units and is one of the least protected in Brazil (Leal, Silva, Tabarelli, & Lacher, 2005).

Studies on taxa of Bignoniaceae in areas of Caatinga in Bahia are few. Given the significant rate of endemism and diversity for the Caatinga biome, and the limited number of surveys for the family therein, this study aims to contribute to a better understanding of the Bignoniaceae in the Caatinga. Towards this aim, a survey of species of Bignoniaceae was conducted in the Environmental Protection Area Serra Branca, Raso da Catarina, to contribute to the knowledge of Angiosperms of the Caatinga in Bahia, as well as support the development of the area's management plan.

Material and methods

The Environmental Protection Area Serra Branca, Raso da Catarina (EPASB, Figure 1) comprises 67,237 ha, located in the municipality of Jeremoabo in Northeastern, in the State of Bahia, and it is fully inserted into the “*polígono das secas*” (Fundação CTI/NE, 2016), delimited by the coordinates 09°53'15.5" to 09°44'34.6"S and 38°49'36.1" to 38°52'20.4"W, limited to the South with the Vaza-Barris River and North to the Ecological Station Raso da Catarina (ESRC). The predominant vegetation is the sandy, very dense bushy Caatinga. The climate of the Ecoregion is semiarid, with average rainfalls of 500 mm year⁻¹ and annual temperature is approximately 23°C (Szabo, Rocha, Tosato, & Barroso, 2007). The soils are generally sandy deep and very fertile relief plan with sandstone formations (Velloso, Sampaio, & Pareyn, 2002).

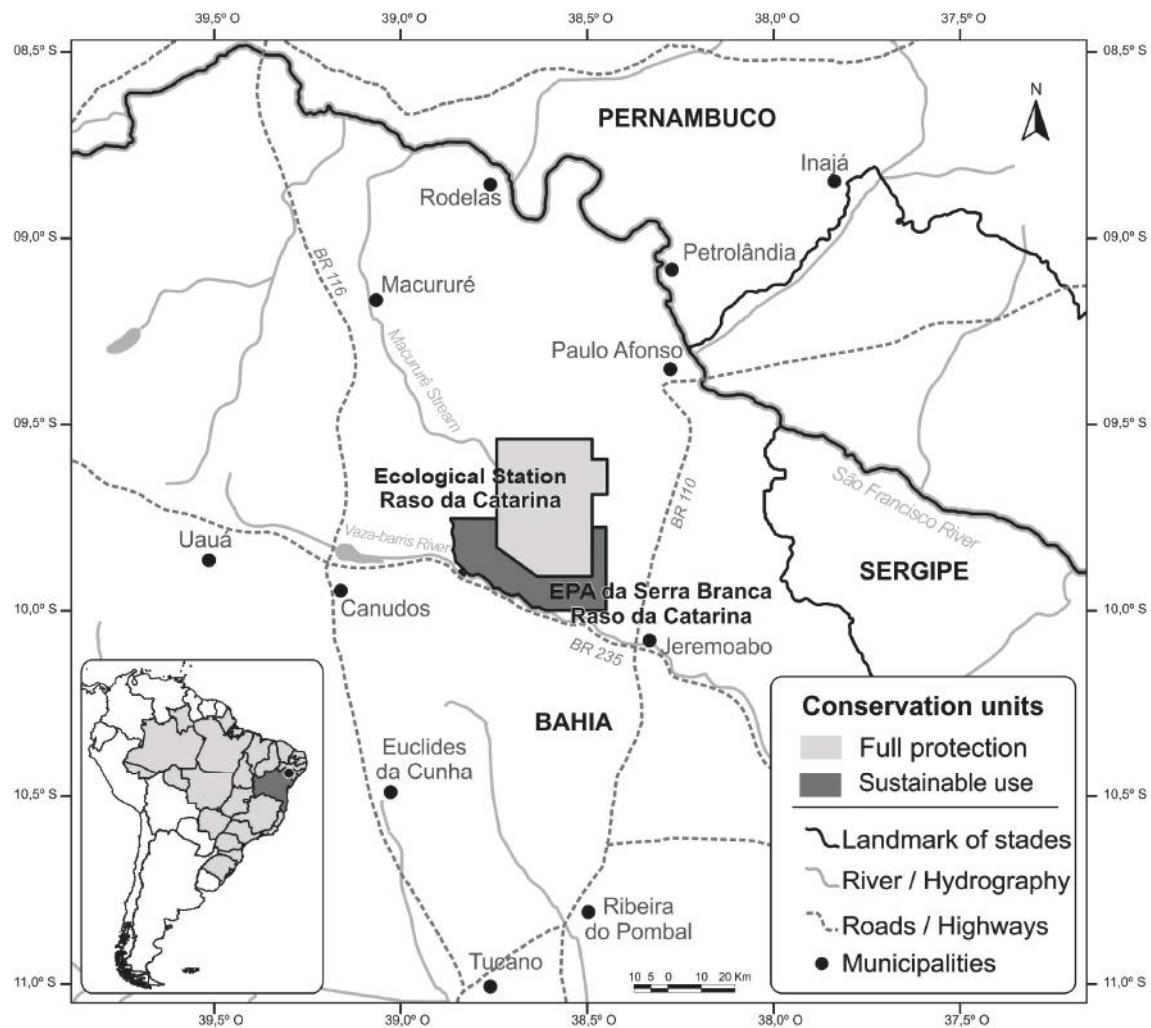


Figure 1. Location EPA Serra Branca, Raso da Catarina, Bahia, Brazil (Varjão, Jardim, & Conceição, 2013).

The study was based on fieldwork carried from August/2009 to February/2012. Additional information was complemented by the analysis of specimens deposited in the following herbaria: ALCB, HRB and HUEFS (acronyms according to Thiers (2016) continuously updated). The field collections and observations were performed during random walks exploring most of the study area. The herborization and material processing followed the methodology by Fosberg and Sachet (1965); Mori, Silva, Lisboa, and Coradin (1989), where fertile material was collected with flowers and/or fruit. The specimens were deposited in the herbarium of the *Universidade Estadual da Bahia* (HUNEB - Collection Paulo Afonso) and the duplicates will be sent to the main herbaria in the State of Bahia (ALCB, HRB and HUEFS).

The identifications were based mainly on specialized bibliographies (e.g., Woodson, Schery and Gentry (1973), Gentry (1982), Lohmann and Pirani (1996), Rizzini, Agarez, Andrade, and Azevedo (1997), Silva and Queiroz (2003), Scudeller (2004), Silva-Castro et al. (2007), Grose and Olmstead (2007), and Lohmann and Taylor (2014); protologues; photos of type collections; and comparison of the collections in the herbaria that were visited. For the taxonomic descriptions, the terminologies proposed by Radford, Dickison, Massey, and Bell (1974), Harris and Harris (2001) and Beentje (2010) were adopted. Phenological data refers to the observations made in the study area.

Results and discussion

Identification key for the species of Bignoniaceae in the EPA Serra Branca (Figure 2)

1. Trees or erect shrubs; without tendrils.
 2. Trees; leaves digitate; staminode undeveloped, 8-10 mm.
 3. Leaflets with both surfaces lepidote; calyx bilabiate, lepidote, without nectaries; corolla yellow with red or brown nectar guides on the fauces.....**11. *Tabebuia aurea***
 - 3'. Leaflets glabrescent with tector and dendroid trichomes on the abaxial surface; calyx 5-lobed, glabrous, with nectaries; corolla magenta with yellow nectar guides on the fauces.....**7. *Handroanthus impetiginosus***
 - 2'. Shrub; leaves pinnate at the base and bipinnate at the apex; staminode well developed ca. 30 mm.....**8. *Jacaranda jasminoides***
- 1'. Lianas or scandent shrubs; with tendrils.
 4. Nectariferous disk inconspicuous or absent.
 5. Calyx campanulate; corolla magenta with white fauces; anthers and connective

- glabrous, ovary papillate.....
-**2. *Bignonia convolvuloides***
- 5'. Calyx tubular; corolla pink to red with yellow fauces; anthers, connective and ovary pilose.....**9. *Lundia longa***
- 4'. Nectariferous disk conspicuous.
 6. Bracteoles filiform; anthers curved.....
 -**3. *Cuspidaria lateriflora***
 - 6'. Bracteoles inconspicuous or caducous; anthers straight.
 7. Prophylls of the axillary buds foliaceous; ovary stipitate, capsule ovate to orbicular.....**1. *Anemopaegma laeve***
 - 7'. Prophylls of the axillary buds minute; ovary sessile; capsule linear or oblong.
 8. Tendrils trifid; connective elongated, pubescent.....
 -**10. *Mansoa paganuccii***
 - 8'. Tendrils simple; connective not elongated, glabrous.
 9. Leaflets obovate; stamens exerted; corolla red orange passing to pink after pollination; capsules with margins with wavy wings.....
 -**5. *Fridericia erubescens***
 - 9'. Leaflets elliptical, or elliptical to oblong; stamens included; corolla white passing to cream or lilac; capsule with margins without wavy wings.
 10. Leaflets membranous; calyx campanulate; corolla tomentose, lilac with lobes passing to magenta, white fauces.....**4. *Fridericia dichotoma***
 - 10'. Leaflets chartaceous; calyx slightly urceolate; corolla pubescent, white passing to cream, with white to cream fauces.....**6. *Fridericia limae***

Taxonomic treatment

Bignoniaceae Juss., Gen. Pl. [Jussieu]. 137. 1789.

Trees, shrubs or lianas. Branches commonly cylindrical to quadrangular or hexagonal. Leaves opposite, rarely verticillate or alternate, composite, 2-3-foliolate, ternate, pinnate, bipinnate or digitate, rarely simple, entire, crenate or serrate, venation pinnatinerved to palmatinerved; in lianas terminal leaflet can be substituted by tendril (simple, bifid, trifid or multifid). Inflorescences racemose or tirsoid, terminal, axillary or cauliflorous. Flowers generally large and showy, dichlamydeous, pentamerous, zygomorphic, bisexual. Calyx

gamosepalous, campanulate, tubular, spathaceous or urceolate, apex spatulate, bilabiate, truncate or 2-5-lobed, aestivation imbricate, with or without patelliform nectaries. Corolla gamopetalous, tubular-campanulate, infundibuliform, campanulate or hypocrateriform, sometimes with bilabiate apex, aestivation imbricate, zygomorphic; stamens included or exerted, 4, rarely reduced to 2, didynamous, staminode reduced, glabro, rarely elongate and pilose; filaments adnate to the corolla at

the base; anthers commonly divergent, generally glabrous, rarely pilose; pollen grains many, in monads, rarely in tetrads or polyads; nectariferous disk generally present; gynoecium bicarpellate, bilocular; ovary superior, multiovulate, placentation axial, stigma bilamellate, lobes sensitive (closing after contact with pollinator). Fruit capsule usually dehiscent, septifragal or loculicidal, rarely indehiscent; seeds usually winged, rarely without wings (Woodson et al., 1973; Gentry, 1980; Lohmann, 2004).



Figure 2: Representatives of the Bignoniaceae in the EPASB. A. *Anemopaegma laeve*. B. *Bignonia convolvuloides*. C. *Cuspidaria lateriflora*. D. *Fridericia dichotoma*. E. *Fridericia erubescens*. F. *Fridericia lima*. G. *Jacaranda jasminoides*. H. *Lundia longa*. I. *Mansoa paganuccii*. (Photos by L.R. Silva).

1. *Anemopaegma laeve* DC., Prodr. [A. P. de Candolle]. 9: 189. 1845. Figures 2.A, 3.A-E

Liana; branchlets cylindrical, striated, without lenticels, pubescent, with interpetiolar gland fields. Prophylls of the axillary buds foliaceous ca. 1.5 × 1.3 cm, orbicular, pubescent, trichomes tector. Leaves 2-foliolate, petioles 2.5–3 cm, petiolules ca. 0.4 cm, both pubescent; leaflets 4.5–6 × 2.5–2 cm, concolorous, chartaceous, lanceolate to elliptic, apex acuminate to rounded, margins entire, base rounded, venation penninerved, both surfaces pubescent with tector trichomes; tendrils simple. Inflorescence a thyrse, peduncles ca. 1 cm, pedicel ca. 1 cm, both pubescent, bracts and bracteoles caducous. Calyx ca. 1 × 1 cm, green, tubular to campanulate, truncate, without rifts, slightly pubescent, tector trichomes sparse, with nectaries; corolla 3–5 × ca. 1.5 cm, tube and fauces yellow and lobes white, infundibuliform, slightly pubescent; stamens included, dorsal filaments ca. 2.3 cm, ventral filaments ca. 1.5 cm, anthers ca. 8 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 5 mm; nectariferous disk conspicuous; ovary ca. 5 × 1 mm, glabrous, stipitate, not ribbed, style ca. 3.3 cm, stigma ca. 3 mm. Capsules 6–8 × 4.5–5.5 cm, ovate to orbicular, enlarged and flattened, smooth, coriaceous, margins flat, without wings. Seeds 2.5 × 3.3 cm.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Entrada da APA próximo à porteira*, 28.XI.2011, fl. fr., R.R. Varjão 35 (HUNEB); *Baixa da estrada que vai da Estação Ecológica do Raso da Catarina aos Quelés*, 27.I.2011, fl., R.R. Varjão 19 (HUNEB); *Fazenda Serra Branca, próximo ao rio Vaza-Barris*, 01.XI.2008, fr., M.V.V. Romão 410 (HUNEB); *Caminho da Estação Ecológica do Raso da Catarina em direção ao povoado Quelés*, 08.XII.2009, fl. fr., T.M.S. de Melo 113 (HUNEB).

This species is endemic to Brazil with records in Caatinga and Cerrado, and is distributed in the southeast and northeast regions (Lohmann, 2015). In the EPASB it was collected with flower and fruit in January, March, April, November and December. *Anemopaegma laeve* is widely distributed over the area, being one of the most representative species of the family.

Anemopaegma laeve is characterized by the foliaceous prophylls, calyx with nectaries, tube and fauces yellow and lobes white, ovary stipitate and capsule flattened and enlarged, and ovate to orbicular.

2. *Bignonia convolvuloides* (Bureau & K. Schum.) L.G.Lohmann, Ann. Missouri Bot. Gard. 99: 418. 2014. Figures 2.B, 3.F-J

Liana; branchlets cylindrical, striated, with lenticels, pubescent, without interpetiolar gland fields. Prophylls of the axillary buds bromeliad-like (minute and triangular), ca. 2 × 1 mm, glabrous. Leaves 2–3-foliolate, petioles 2–2.5 cm, pubescent, petiolules ca. 0.6 cm, tomentose, leaflets 5.5–11 × 3–6.5 cm, concolorous, chartaceous to membranaceous, elliptic or oblong, apex acuminate, rarely rounded, margins entire, base rounded to cuneate, venation penninerved, both surfaces with tector trichomes restricted on the midrib; tendrils simple. Inflorescence a raceme, peduncles ca. 2.5 cm, pilose, pedicel ca. 1.5 cm, tomentose, bracts and bracteoles inconspicuous. Calyx ca. 0.4 × 0.6 cm, base green, apex magenta, campanulate, 5-lobed, apiculate, without rifts, glabrescent, without nectaries; corolla 6–7 × 2–2.5 cm, magenta with white fauces, infundibuliform, glabrous, stamens included, dorsal filaments ca. 1.5 cm, ventral filaments ca. 1 cm, anthers ca. 10 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 6 mm; nectariferous disk inconspicuous, ovary ca. 4 × 1 mm, papillate, sessile, not ribbed, style ca. 1.7 cm, stigma ca. 3 mm. Fruits and seeds not seen.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Fazenda Serra Branca, estrada sentido a Serra Branca*, 10.XII.2008, fl., M.V.V. Romão 423 (HUNEB); *Fazenda Serra Branca, Trilha próximo ao tanque de dentro, próximo a Serra do Navio*, 04.XI.2010, fl., L.R. Silva 01 (HUNEB); *Fazenda Serra Branca, Trilha próximo a Serra do Navio*, 03.XI.2011, fl., L.R. Silva 52, 53 (HUNEB).

Bignonia convolvuloides is found in dry forest vegetation in Bolivia, Paraguay and Brazil [Bahia, Mato Grosso, Minas Gerais and Pernambuco] (Lohmann & Taylor, 2014). In Brazil is distributed in areas of Cerrado and Atlantic Forest (Lohmann, 2015).

In the EPASB it was collected in full bloom in November and December and found only in areas of well-preserved forest.

This species is recognized by branches with bromeliad-like prophylls, calyx with apiculate lobes, nectariferous disk inconspicuous and ovary papillate.

3. *Cuspidaria lateriflora* DC., Prodr. [A. P. de Candolle]. 9: 179. 1845. Figures 2.C, 3.K–N

Lianas or scandent shrubs; branchlets cylindrical, striated, with lenticels, tomentose to glabrescent, without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 3-foliolate, petioles 0.1–0.5 cm, tomentose, petiolules ca. 0.25 cm, pubescent, leaflets ca. 2.5 × 2 cm, discolorous, chartaceous, ovate or lanceolate, apex acuminate, margins entire, base rounded, venation penninerved,

adaxial surface tomentose, abaxial surface tomentose or velutinous, trichomes tector and stipitate glandular trichomes; tendrils simple. Inflorescence a thyrse; peduncles ca. 5 cm, tomentose, pedicel ca. 1.3 cm, pubescent, bracts filiform ca. 3 mm. Calyx ca. 0.6×0.4 cm, green, campanulate, 5-lobed, cuspidate, without rifts, tomentose, with glandular trichomes stipitate, without nectaries; corolla 3-4 \times ca. 1.5 cm, magenta with white fauces and lilac nectar guides, infundibuliform, vellutine, stamens included, dorsal filaments ca. 1.5 cm, ventral filaments ca. 1.1 cm, anthers ca. 8 mm, slightly pubescent, curved, connective not elongated, glabrous, staminode ca. 2 mm; nectariferous disk conspicuous, ovary ca. 2×1 mm, lepidote, sessile, not ribbed, style ca. 1.4 cm, stigma ca. 3 mm. Capsules 30-50 \times 0.7 cm, linear, slightly rounded, striated, coriaceous, margins flat, without wings. Seeds ca. 2.3×0.7 cm.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Estrada que vai da Estação Ecológica do Raso da Catarina para o Povoado Quelés*, 22.IX.2010, fr., D.D. Vieira 80 (HUNEB); *Caminho velho em direção a João Gomes, depois da porteira*, 04.XI.2011, fl., J.B. Lima 19 (HUNEB); *Fazenda Serra Branca, Trilha em direção ao tanque do coleta*, 05.X.2010, fl, L.R. Silva 08 (HUNEB); *Faz. Serra Branca, Trilha próximo ao curral*, 27.III.2012, fr., L.R. Silva 61 (HUNEB).

Cuspidaria lateriflora is found in dry to wet forest vegetation in Peru Bolivia, Paraguay, and Brazil where is distributed in Amazon Rainforest, Caatinga, Cerrado, and Atlantic Forest (Lohmann & Taylor, 2014; Lohmann, 2015). It can be easily found throughout the study area where it flowers and fruits much of the year, peaking bloom between November and January.

This species is recognized by relatively small (ca. 2.5×2 cm) leaflets with tector and glandular stipitate trichomes, which are of a sticky consistency in the fields, filiform bracts, calyx with cuspidate lobes, glandular trichomes stipitate, stamens with forward curved anthers and capsule linear striated.

4. *Fridericia dichotoma* (Jacq.) L.G.Lohmann, Ann. Missouri Bot. Gard. 99: 436-437. 2014. Figures 2.D, 4.A-E

Lianas; branchlets cylindrical, striated, with lenticels, glabrous, without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 2-3-foliolate, petioles 4-5.5 cm, petiolules 0.2-0.8 cm, both slightly pubescent; leaflets 5.5-7.5 \times 2.5-3.0 cm, concolorous, membranaceous, elliptical, apex acuminate, margins entire, base rounded or slightly cordate, venation penninerved, both surfaces with tector trichomes restricted to the midrib; tendrils simple. Inflorescence a thyrse; peduncles ca. 1 cm,

pedicel ca. 5 mm, both pubescent, bracts and bracteoles inconspicuous. Calyx ca. 0.9×0.7 cm, green and magenta base at the apex, campanulate, truncate, without rifts, tector trichomes sparse, without nectaries; corolla 3-5 \times 1-1.5 cm, lilac, lobes magenta and fauces white, infundibuliform, tomentose; stamens included, dorsal filaments ca. 1.8 cm, ventral filaments ca. 1.3 cm, anthers ca. 6 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 5 mm; nectariferous disk conspicuous; ovary ca. 2×1 mm, lepidote, sessile, ribbed, style ca. 2 cm, stigma ca. 2 mm. Fruits and seeds not seen.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Fazenda Serra Branca, caminho da vaca morta em direção a Serra Branca*, 04.XI.2010, fl., L.R. Silva 06 (HUNEB); *Trilha sentido a Serra do Navio*, 03.XI.2011, fl., L.R. Silva 54 (HUNEB).

Fridericia dichotoma is widely distributed on slopes of tropical dry forest and humid forest (Lohmann & Taylor, 2014). It occurs from Mexico to Argentina, with extremely variable blooming during the dry season (Gentry et al., 1973). In Brazil there are records from Caatinga, Cerrado, Atlantic Forest, Pantanal and Amazon Rainforest from the north to the southeast regions (Lohmann, 2015). In the EPASB it was collected in full bloom in December and is poorly represented in the area having been collected only twice.

The species can be recognized by membranaceous leaflets, truncate calyx, tomentose corolla, lilac with magenta lobes and white fauces.

5. *Fridericia erubescens* (DC.) L. G. Lohmann, Ann. Missouri Bot. Gard. 99: 437-438. 2014. Figures 2.E, 4.F-J

Lianas or scandent shrubs; branchlets cylindrical, without streaking, with lenticels, pilose, with interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 2-3-foliolate, petioles 1.5-4 cm, petiolules 0.4-1 cm, both pubescent; leaflets 3-6 \times 2.5-4.5 cm, discolorous, chartaceous, obovate, apex rounded, margins entire, base attenuate, venation penninerved, adaxial surface with sessile glandular trichomes sparse on limbo and tector trichomes concentrated on the midrib, abaxial surface pubescent; tendrils simple. Inflorescence a thyrse; peduncles ca. 1.9 cm, pubescent, pedicel ca. 0.5 cm, pilose, bracts and bracteoles filiform ca. 2 mm. Calyx ca. 0.8×0.4 cm, green, tubular, 5-lobed, cuspidate, without rifts, slightly pubescent, with tector trichomes and glandular trichomes, without nectaries; corolla 4.5-5.5 \times 1-1.3 cm, red to orange passing pink after pollination, with red to orange fauces, infundibuliform, pubescent, stamens

exserted, dorsal filaments ca. 4.4 cm, ventral filaments ca. 3.5 cm, anthers ca. 6 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 8 mm; nectariferous disk conspicuous,

ovary ca. 3×1 mm, glabrous, sessile, not ribbed, style ca. 5 cm, stigma ca. 2 mm. Capsules $5-11 \times 3-4.5$ cm, oblong, flattened, smooth, coriaceous, margins with wavy wings. Seeds ca. 2.5×1 cm.

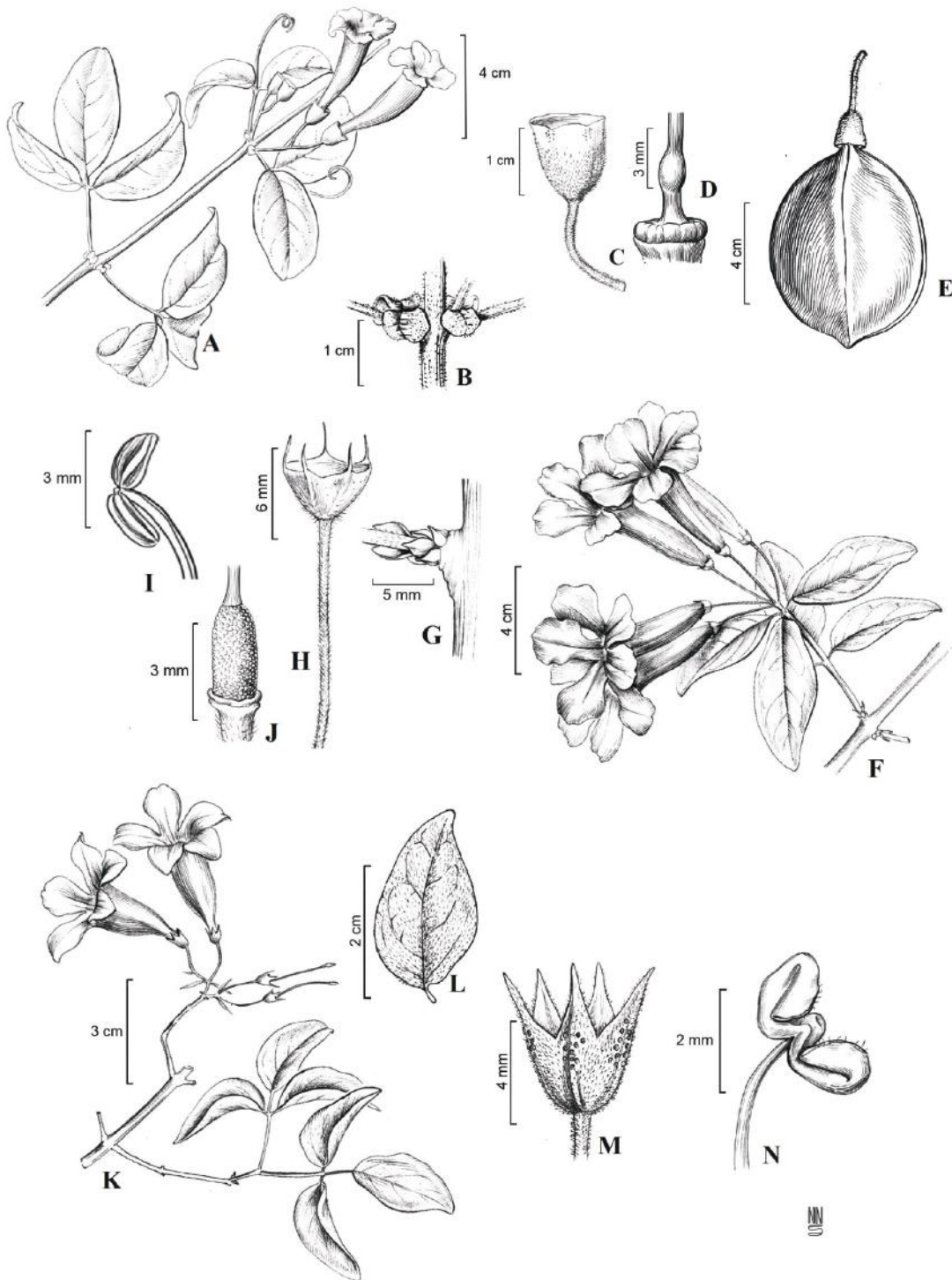


Figure 3. A-E. *Anemopaegma laeve*: A. Flowering branch. B. Prophylls of the axillary buds foliaceous. C. Calyx. D. Ovary with nectariferous disk. E. Fruit. F-J. *Bignonia convolvuloides*: F. Flowering branch. G. Branch detail with prophylls of the axillary buds bromeliad-like. H. Calyx. I. Anthers; J. Ovary. K-N. *Cuspidaria lateriflora*: K. Flowering branch with bracteoles filiform. L. Leaflet. M. Calyx. N. Anthers. (Illustrations by Natanael Santos; A-E from R. R. Varjão 19; F-J from L. R. Silva 52; K-N from L. R. Silva 08).

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Estrada que vai da Estação Ecológica do Raso da Catarina*, 22.IX.2010, fl. fr., D.D. Vieira 89 (HUNEB); *Fazenda Serra Branca, vaca morta*, 04.XI.2011, L.R. Silva 58 (HUNEB); *Caminho da Serra Branca*, 08.XII.2011, fl., L.R. Silva 17 (HUNEB); *Trilha secundária a estrada principal perto da caixa d'água*, 08.IV.2011, fl., R.R. Varjão 70 (HUNEB).

This is a species endemic to Brazil with records for Caatinga, Cerrado and Atlantic Forest and distributed from the southeast to the northeast (Lohmann, 2015). In the EPASB it was collected with flower and fruit in April, September, November and December. It is widely distributed throughout the area and is one of the most representative species.

It is characterized by obovate leaflets, corolla red to orange passing to pink after pollination, stamens exserted and fruits with winged margins.

6. *Fridericia limae* (A. H. Gentry) L. G. Lohmann, *Ann. Missouri Bot. Gard.* 99: 440. 2014. Figures 2.F, 4.K-O

Lianas; branchlets cylindrical, striated, with lenticels, glabrous, without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 2-3-foliolate, petioles 2.5-4 cm, petiolules 1 cm, both glabrous or slightly pubescent; leaflets 4.5-10 × 2.5-4 cm, concolorous, chartaceous, elliptical or oblong, apex obtuse, occasionally emarginate or retuse, margins entire, base rounded, venation penninerved, both surfaces glabrous or occasionally glabrescent, with few tector trichomes restricted to the midrib; tendrils simple. Inflorescence a thyrs; peduncles ca. 4 cm, pedicel ca. 2 cm, both glabrous, bracts and bracteoles inconspicuous. Calyx ca. 1 × 0.8 cm, light green, slightly urceolate, truncate, without rifts, glabrous, without nectaries; corolla ca. 4 × 1-8 cm, white to cream with white to cream fauces, infundibuliform, pubescent, stamens included, dorsal filaments ca. 1.7 cm, ventral filaments ca. 1.2 cm, anthers ca. 10 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 7 mm; nectariferous disk conspicuous, ovary ca. 2 × 1 mm, lepidote, sessile, not ribbed, style ca. 2.3 cm, stigma ca. 2 mm. Capsules ca. 10 × 1.5 cm, linear, compressed, slightly rounded, smooth, coriaceous, margins constricted irregularly, without wings. Seeds ca. 3.5 × 1.5 cm.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Caminho que sai da Estação Ecológica em direção ao povoado Quelés*, 653 m, 05.V.2011, fl., D.D. Vieira 148 (HUNEB); *Fazenda Serra Branca, caminho Serra Branca*, 08.XII.2011, fl., L.R. Silva 31 (HUNEB).

This is species endemic to Brazil with records only for Caatinga, is distributed in the states of Piauí, Ceará, Pernambuco, and Bahia (Lohmann, 2015). In the EPASB it was found in flower and fruit in May, November, December and January. It is widely distributed in the area.

Fridericia limae is characterized by chartaceous leaflets, with slightly urceolate, truncate calyx and corolla white passing to cream and linear and compressed capsule. In the field, it is also possible to smell the sweetish odor released by the flowers.

7. *Handroanthus impetiginosus* (Mart. ex DC.) Mattos, *Loefgrenia*. 50: 2. 1970. Figures 5.A-D

Tree, ca. 9 m; branchlets cylindrical, without streaking, without lenticels, glabrous, without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves digitate, 5-foliolate, petioles 5-8.5 cm, petiolules 1-4 cm, both glabrous; leaflets 7-10 × 2.5-4 cm, concolorous, after dried becomes blackened, chartaceous, lanceolate, apex acute, occasionally with slightly serrated apex, margins entire, base rounded or cuneate, venation penninerved, adaxial surface glabrescent, abaxial surfaces with tector trichomes and dendroid. Inflorescence a thyrs; peduncles ca. 1 cm, pedicel ca. 1 cm, both glabrous, bracts and bracteoles inconspicuous. Calyx ca. 0.6 × 0.5 cm, green to magenta, tubular to campanulate, 5-lobed, irregular lobes, without rifts, glabrous, with nectaries; corolla ca. 6.5 × 1-5 cm, magenta with yellow nectar guides on the fauces, infundibuliform, slightly pubescent; stamens included, dorsal filaments ca. 2.2 cm, ventral filaments ca. 1.3 cm, anthers ca. 6 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 10 mm; nectariferous disk conspicuous, ovary ca. 3 × 1 mm, lepidote, sessile, ribbed, style ca. 2.7 cm, stigma ca. 3 mm. Capsules 20-26 × 0.8-1 cm, linear, rounded, smooth, coriaceous, margins flat, without wings. Fruits and seeds not seen.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Fazenda Serra Branca, Vaca morta*, 01.XI.2008, fl., M.V.V. Romão 415 (HUNEB); *Fazenda Serra Branca, Caminho da vaca morta em direção a Serra Branca*, 04.XI.2010, fl., L.R. Silva 05 (HUNEB).

Handroanthus impetiginosus is distributed from northwestern Mexico to northwestern Argentina, mainly in deciduous, semideciduous and seasonally dry forests (Gentry, 1992b). It is widely distributed in Brazil being recorded in Caatinga and Atlantic Forest from the north to the southeast (Lohmann, 2015). In EPASB it blooms and bears fruit from

October to January. The species is well represented in the area and widely used as an ornamental.

It is characterized by calyx glabrous with nectaries, and magenta corolla with yellow nectar

guides. According to Espírito-Santo et al., (2013) the species exhibits broad morphological variation. The leaves after dried becomes blackened.

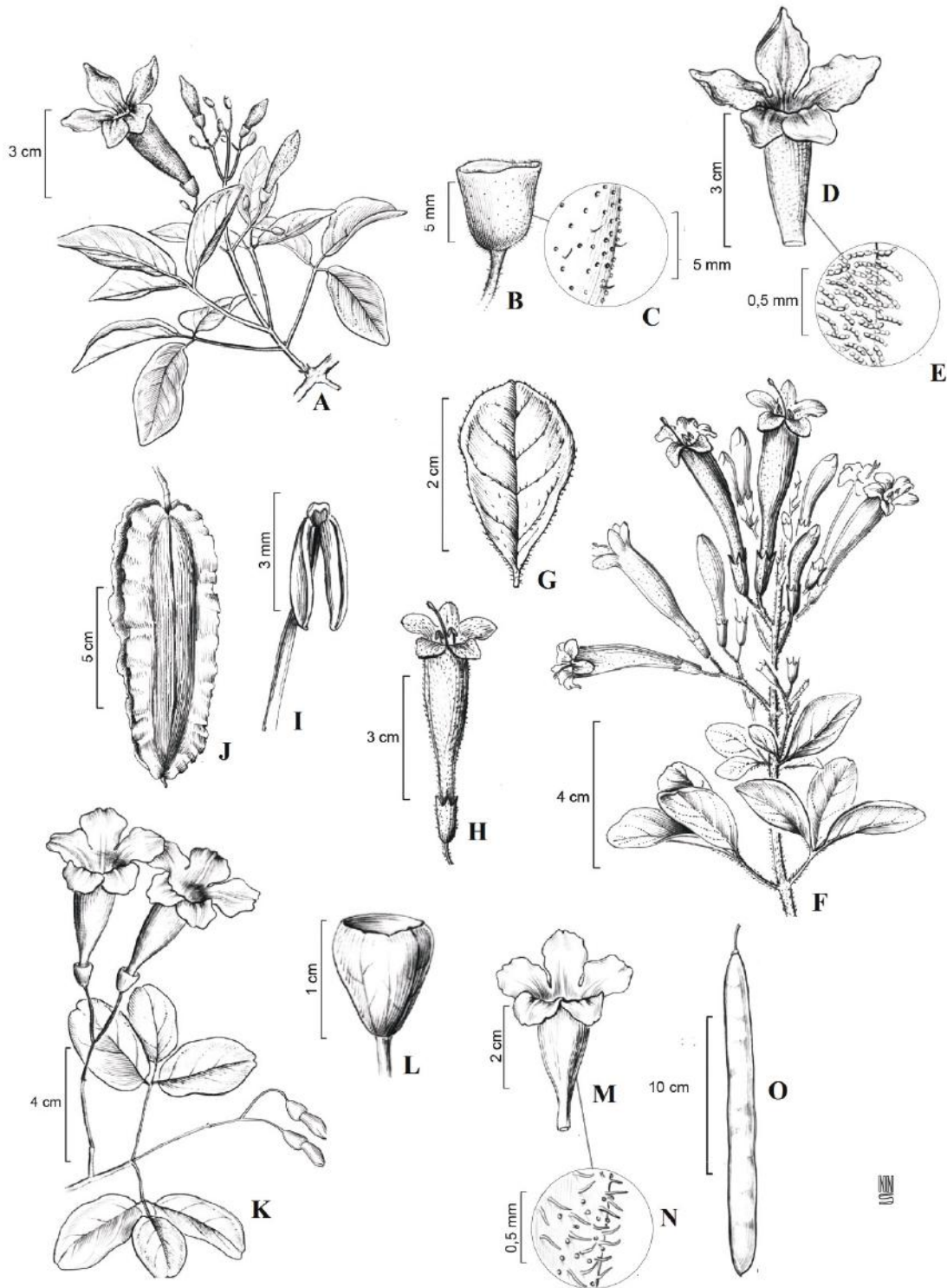


Figure 4. A-E. *Fridericia dichotoma*: A. Flowering branch. B. Calyx. C. Indument of the calyx. D. Corolla. E. Indument of the corolla. F-J. *Fridericia erubescens*: F. Flowering branch. G. Leaflet. H. Flower with stamens exerted. I. Stamens. J. Fruit. K-O. *Fridericia lima*: K. Flowering branch. L. Calyx. M. Corolla. N. Indument of the corolla. O. Fruit. (Illustrations by Natanael Santos; A-E from L. R. Silva 06; F-J from D. D. Vieira 89; K-O from L. R. Silva 31).

8. *Jacaranda jasminoides* (Thunb.) Sandwith., Recueil Trav. Bot. Néerl. 34: 232. 1937. Figures 2.G, 5.E-G

Shrub erect, ca. 3 m; branchlets cylindrical, lightly striated, with lenticels, slightly pubescent, without interpetiolar gland fields. Prophylls of the axillary buds minute. Pinnate leaves at the base and bipinnate at the apex, 7-15-foliolate, petioles ca. 3 cm, petiolules ca. 0.7 cm, pubescent, leaflets 3.5-6.5(-8) × 2-4(-4.5) cm, discolorous, chartaceous, lanceolate or ovate, apex acute and obtuse, margins entire or serrated in young leaflets, base rounded to subcordate or cuneate in young leaflets, venation penninerved, adaxial surface slightly pubescent, abaxial surface tomentose, both with tector trichomes. Inflorescence a thyrs; peduncles ca. 4 cm, pedicel ca. 1 cm, both pubescent, bracts and bracteoles inconspicuous. Calyx ca. 1 × 0.5 cm, green in the upper portion and vinaceous-magenta in the lower portion, cupulate, 5-lobed, cuspidate, without rifts, pubescent, with glandular trichomes, without nectaries; corolla ca. 6-7.5 × 1.5-2.5 cm, vinaceous-magenta with white nectar guide on the fauces, tubular-campanulate, slightly pubescent; stamens included, dorsal filaments ca. 2.3 cm, ventral filaments ca. 2 cm, anthers ca. 6 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 30 mm; nectariferous disk conspicuous, ovary ca. 3 × 1 mm, glabrous, sessile, ribbed, style ca. 2.3 cm, stigma ca. 2 mm. Capsules 3-6.5 × ca. 5 cm, ovate to obovate, compressed, smooth, coriaceous, margins flat, without wings. Seeds 0.8-1.5 × ca. 2 cm.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Fazenda Serra Branca, Baixa grande*, 19.II.2009, fr., A.S. Conceição 1563 (HUNEB); *Fazenda logradouro próximo ao limite da Estação Ecológica Raso da Catarina*, 20.III.2009, A.S. Conceição 1621 (HUNEB); *Fazenda Serra Branca, Estrada secundária principal próximo a entrada da caixa d'água*, 1.VI.2011, fl., L.R. Silva 29 (HUNEB).

This species is endemic to Brazil with records from Caatinga, Cerrado, and Atlantic Forest from northeast to southeast (Lohmann, 2015). In the EPASB it was collected with flower and fruit in February, March and June. *Jacaranda jasminoides* is widely distributed in the area and is one of the most representative species of the family.

It can easily be recognized by branches with pinnate leaves at base and bipinnate leaves at apex, leaflets with margins entire or serrate, flowers vinaceous-magenta with white nectar guides on the fauces, staminode ca. 30 mm and capsule ovate to obovate with flat margins.

9. *Lundia longa* DC., Prodr. [A. P. de Candolle] 9: 180. 1845. Figures 2.H, 5.H-L

Lianas; branchlets cylindrical, striated, with lenticels, glabrous, with interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 2-foliolate, petioles 2-4 cm, petiolules 1-2 cm, tector trichomes sparse; leaflets 5-12 × 3-5.5 cm, discolorous, chartaceous, lanceolate to cordate, apex acuminate, margins entire, base subcordate, truncate or asymmetrical, venation penninerved, adaxial surface glabrescent, abaxial surface slightly pilose, with tector trichomes; tendrils simple. Inflorescence a thyrs; peduncles 1-5.5 cm, slightly pilose, pedicel ca. 1 cm, glabrous or with tector trichomes sparse, bracts and bracteoles inconspicuous. Calyx ca. 9 × 4 cm, green to red, tubular, 5-lobed, irregular lobes, without rifts, slightly pilose, with tector trichomes, without nectaries; corolla ca. 6 × 1 cm, pink to red with yellow fauces, tubular to infundibuliform, pubescent; stamens exerted, dorsal filaments ca. 3 cm, ventral filaments ca. 2.4 cm, anthers ca. 6 mm, pilose, straight, connective not elongated, pilose, staminode ca. 5 mm; nectariferous disk absent, ovary ca. 3 × 1 mm, pilose, sessile, no ribbed, style ca. 5.3 cm, stigma ca. 3 mm. Fruits and seeds not seen.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Estrada para os Quelés, baixa da forra, depois do povoado Olhos d'água dos negros*, 19.XII.2012, fl., L.R. Silva 87 (HUNEB).

This species is found in wet sites in Atlantic forest vegetation in eastern Brazil (Lohmann & Taylor, 2014). In Brazil it is distributed widely in Caatinga, Cerrado, and Atlantic Forest environments (Lohmann, 2015). In the EPASB it was collected in flower in July and is well represented.

Lundia longa is characterized by lanceolate to cordate leaflets, flowers with pink to red corolla and yellow fauces, nectariferous disk absent, ovary, anthers and connective pilose.

10. *Mansoa paganuccii* M. M. Silva, Phytotaxa 258: 59. 2016. Figures 2.I, 6.A-D

Lianas; branchlets cylindrical, striated, with lenticels, glabrous, without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves 2-3-foliolate, petioles 1.5-2 cm, petiolules 0.2-0.8 cm, both pubescent; leaflets 4.5-8 × 2-3 cm, discolorous, chartaceous, ovate to elliptic, apex acuminate or slightly emarginate, margins entire or irregularly serrate, base rounded, venation penninerved, both surfaces with tector trichomes restricted to the midrib; tendrils trifid. Inflorescence a thyrs; peduncles ca. 2 cm, glabrescent, pedicel ca. 1.3 cm, glabrous, bracts and bracteoles

inconspicuous. Calyx ca. 0.7×0.5 cm, green with magenta apex, campanulate, truncate or 5-mucronate, lobes inconspicuous, with rifts, glabrous, with nectaries; corolla ca. $5-8 \times 1.5-2$ cm, purple with purple fauces, infundibuliform, glabrous; stamens included, dorsal filaments ca. 2.3 cm, ventral filaments ca. 1.8 cm, anthers ca. 6 mm,

glabrous, straight, connective elongated, pubescent, staminode ca. 6 mm; nectariferous disk conspicuous, ovary ca. 4×1 mm, lepidote, sessile, ribbed, style ca. 2.3 cm, stigma ca. 2 mm. Capsules ca. 14×1 cm, linear, cylindrical, veins prominent, chartaceous, margins flat, without wings. Seeds ca. 1×3.5 cm.

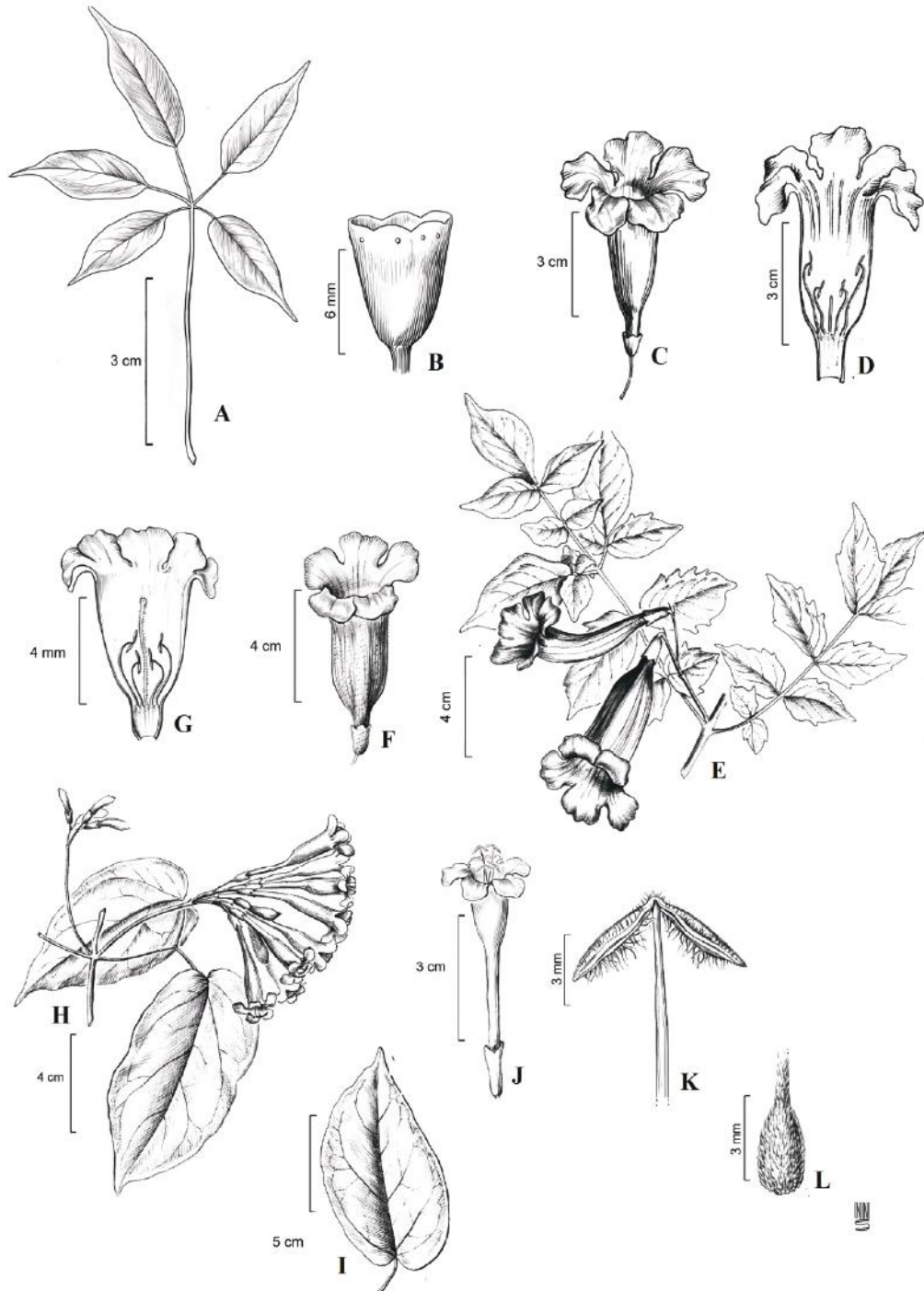


Figure 5. A-D. *Handroanthus impetiginosus*: A. Leaf. B. Calyx. C. Flower. D. Opened corolla showing stamens and staminode. E-G. *Jacaranda jasminoides*: E. Flowering branch. F. Flower. G. Opened corolla showing staminode well developed. H-L. *Lundia longa*: H. Flowering branch. I. Leaflet. J. Flower with stamens exerted. K. Anthers. L. Ovary. (Illustrations by Natanael Santos; A-D from L. R. Silva 05; E-G from L. R. Silva 29; H-L from A. S. Conceição 1777).

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Caminho que vai da Estação Ecológica em direção ao povoado Quelés*, 23.IX.2009, fl., D.D. Vieira 108 (HUNEB); *Fazenda Serra Branca, Trilha em direção ao tanque de dentro*, 04.XI.2010, fl., L.R. Silva 04 (HUNEB); *Estrada que vai para os Quelés na entrada para Estação Ecológica do Raso da Catarina*, 27.VII.2011, fl., L. R. Silva 36 (HUNEB); *Fazenda Serra Branca, trilha em direção ao Araça*, 21.VIII.2008, fl., M.V.V. Romão 262 (HUNEB).

This species is found in Caatinga vegetation of northeastern Brazil, where it occurs in the states of Rio Grande do Norte, Ceará, Piauí, Pernambuco,

Bahia, and northern Minas Gerais (Silva-Castro & Queiroz, 2016). In the EPASB it is widely distributed throughout the area forming populations. It was collected with flower and fruit from July to November.

Mansoa paganuccii is characterized by truncate calyx or 5-mucronate, purple corolla, stamens with an elongated and pubescent connective, cylindrical capsules with veins prominent.

11. *Tabebuia aurea* (Manso) Benth. & Hook f. ex Moore, Trans. Linn. Soc. London, Bot. 4: 423. 1895. Figure 6.E-I

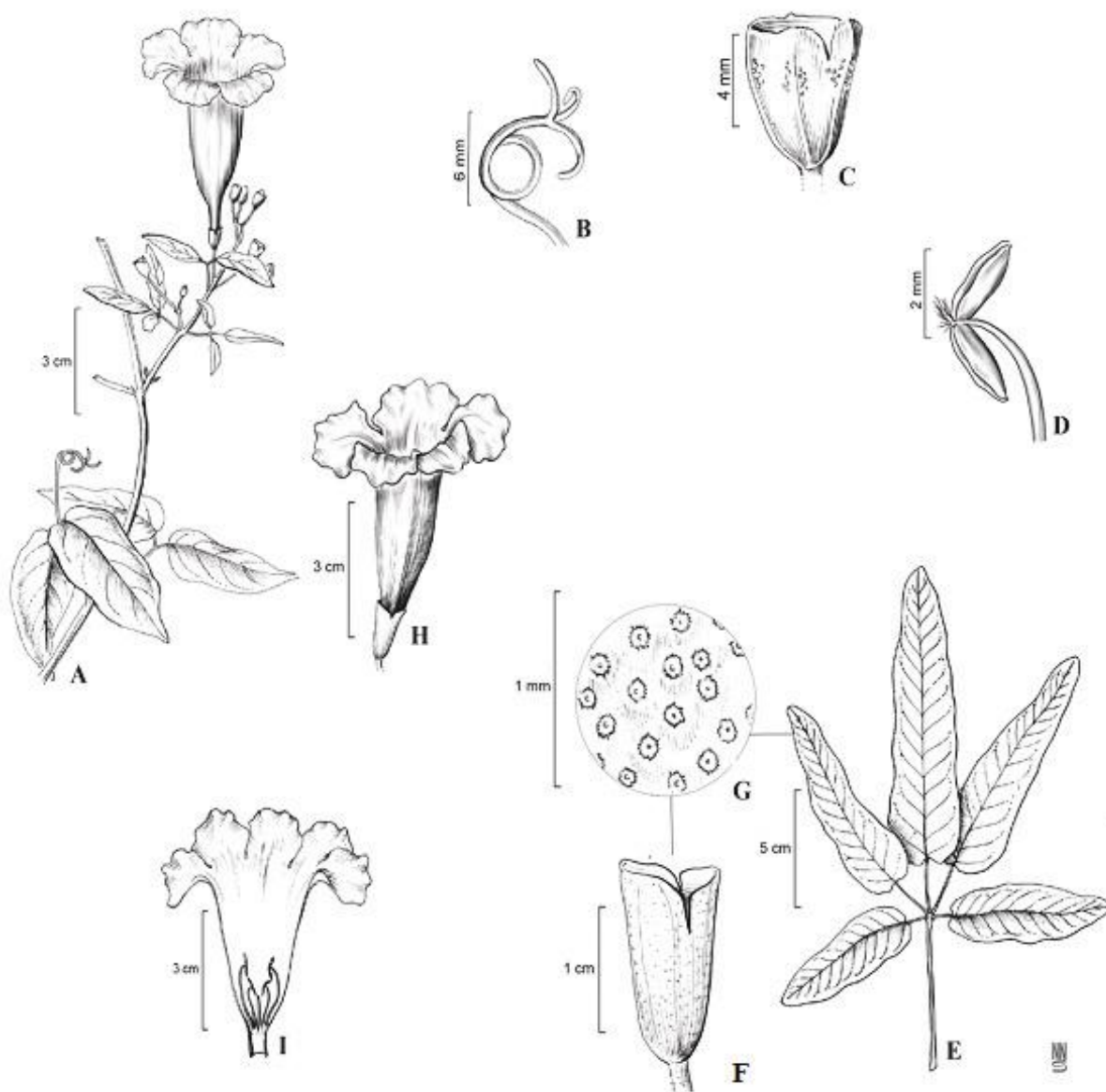


Figure 6. A-D. *Mansoa paganuccii*: A. Flowering branch. B. Tendril. C. Calyx. D. Stamens. E-I. *Tabebuia aurea*: E. Leaf. F. Calyx. G. Indument of leaflet and calyx. H. Flower. I. Opened corolla showing staminode. (Illustrations by Natanael Santos; A-D from L. R. Silva 04; E-I from M. V. V. Romão 412.).

Tree ca. 6 m; branchlets cylindrical, without streaking, without lenticels, glabrous. Without interpetiolar gland fields. Prophylls of the axillary buds minute. Leaves digitate, (3)5-foliolate, petioles 3-10 cm, petiolules 1-5 cm, glabrous or lepidote; leaflets 10-18 × 3-4 cm, concolorous, coriaceous, lanceolate or elliptic, apex cuneate or rounded, margins entire, base truncate or cuneate, occasionally cordate, venation penninerved, adaxial and abaxial surfaces lepidote. Inflorescence a thyrse; peduncles ca. 1-3 cm, pedicel ca. 1-1.5 cm, both lepidote, bracts and bracteoles inconspicuous. Calyx ca. 1-2 × ca. 0.8 cm, green, tubular, bilabiate, lepidote, without rifts, without nectaries; corolla 5-9 × ca. 2 cm, yellow with red or brown nectar guides on the fauces, infundibuliform, glabrous; stamens included, dorsal filaments ca. 1.7 cm, ventral filaments ca. 1.2 cm, anthers ca. 4 mm, glabrous, straight, connective not elongated, glabrous, staminode ca. 8 mm; nectariferous disk conspicuous, ovary ca. 4 × 1 mm, lepidote, sessile, not ribbed, style ca. 3.5 cm, stigma ca. 2 mm. Capsules 9-17 × 1.4-2 cm, linear to oblong, rounded, smooth, coriaceous, margins flat, without wings. Seeds 1.1-1.4 × 0.8-0.9 cm.

Material examined: BRAZIL. Bahia: Jeremoabo, APA Serra Branca, *Fazenda Serra Branca*, 01.XI.2008, fl., M.V.V. Romão 412 (HUNEB).

Tabebuia aurea is typical of Brazilian Cerrado, with records also from areas of Caatinga, Mata Atlantica, Pantanal, and Amazon Rainforest, occurring from the north to the southeast (Lohmann, 2015). It is also distributed in seasonal forests of Argentina, western Bolivia, and southeastern Suriname (Gentry, 1992a). In the EPASB it was collected in full bloom in November. This species is well distributed in the area and is widely used as an ornamental in the region.

It is characterized by digitate leaves with lepidote indumentum, flowers with bilabiate calyx, lepidote and corolla yellow with red or brown nectar guides on the fauces.

Conclusion

Eleven species of nine genera were cataloged from the EPA Serra Branca, among these 27% are endemic to the Caatinga. Most species are widely distributed over the area. The genus most represented in the EPASB is *Fridericia* Mart., with three species. All other genera were represented by only a single species. The species with the most occurrences were: *Anemopaegma laeve*, *Fridericia erubescens* and *Jacaranda jasminoides*, while the species with lower occurrence were: *Fridericia dichotoma* and

Bignonia convolvuloides. The peak flowering for the group encompasses the months of November to early February.

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APPENDIX

List of additional material examined

A.M. Amorim 5524 (6); **A.O. Moraes** 99 (5); **A. Rodarte** 159 (5); **A.S. Conceição** 1144 (7); **D. Cardoso** 632 (2); **E.B. Miranda** 808 (3), 861(4), 816 (6), 883 (8), 905 (9); **E. Melo** 6690 (1), 6690, 7272 (4), 6653, 7334, 7291 (5), 6739, 6615 (8), 7289 (10), 6987, 7273 (11); **F.H.M. Silva** 513 (11); **F.P. Bandeira** 135 (1); **G. Fotius** 3918 (7); **G.C.P. Pinto** 345/81 (3); **L.P. de Queiroz** 6549 (6); **L. Queiroz** 294 (3); **M. Colaço** 193 (6); **M.C. Guedes** 987 (3); **M.C. Ferreira** 607 (1), (11); **M.M. Silva-Castro** 1240 (6), 1238(11); **R.M. Castro** 1275 (5), 1282 (6); **R.P. Orlandi** 554 (1); **W. Ganev** 1431 (2).