Rodriguésia 72: e00322020. 2021
http://rodriguesia.jbrj.gov.br
DOI: http://dx.doi.org/10.1590/2175-7860202172084

Original Paper

The genus *Ipomoea* (Convolvulaceae) in the Mata da Pimenteira State Park, semiarid region of Brazil

Rosemeire Santos Costa[1,4], *Samara Silva de Matos*[2], *Yuri Rossine*[3,5,9], *Diego Santos*[3,6], *Maria Teresa Buril*[3,7] & *André Laurênio de Melo*[1,8]

Abstract
The Mata da Pimenteira State Park (MPSP) is an important remnant of caatinga vegetation in the semiarid region of Pernambuco state, Brazil. The park holds great biodiversity, but relatively few taxonomic studies have been undertaken in the area. We present a taxonomic study of *Ipomoea* in the MPSP based on field observations and collections deposited in the Herbarium of the Semiarid of Brazil - UAST / UFRPE (HESBRA). The species were identified based on the specialized literature, comparisons with type images available online, and protologues. Fourteen species of *Ipomoea* were identified - more than three times the previously known number. Two *Ipomoea* species recorded in the MPSP are endemic to Brazil (*I. bahiensis* and *I. brasiliana*), three others are exclusive to the Caatinga domain (*I. marcellia*, *I. rosea*, and *I. tenera*), and the remaining are widely distributed in South America. The habit, type and shape of leaf blade and sepals, corolla size and shapes, and presence or absence of subapical rostrum on the external sepals were the most relevant distinctive characteristics. An identification key, descriptions, comments on distribution and diagnostic characteristics, and phenological data of the species are presented.
Key words: Caatinga, *Ipomoeae*, Solanales, taxonomy.

Resumo
O Parque Estadual Mata da Pimenteira (PEMP) é um importante remanescente de caatinga na região semiárida de Pernambuco, Brasil. O parque possui grande biodiversidade, mas relativamente poucos estudos taxonômicos foram realizados na área. Apresentamos um estudo taxonômico de Ipomoea no PEMP com base em observações de campo e coleções depositadas no Herbário do Semiárido do Brasil - UAST/ UFRPE (HESBRA). As espécies foram identificadas com base em literatura especializada, comparação com imagens de tipos disponíveis online e protólogos. Foram identificadas quatorze espécies de Ipomoea - mais do que o triplo do número conhecido anteriormente. Duas espécies de Ipomoea registradas no PEMP são endêmicas do Brasil (I. bahiensis e I. brasiliana), outras três são exclusivas do domínio Caatinga (I. marcellia, I. rosea e I. tenera), e as demais são amplamente distribuídas na América do Sul. O hábito, tipo e forma da lâmina foliar e sépalas, tamanho e formato da corola, e presença ou ausência de rostro subapical nas sépalas externas foram às características distintivas mais relevantes. São apresentados uma chave de identificação, descrições, comentários sobre distribuição e características diagnósticas e dados fenológicos das espécies.
Palavras-chave: Caatinga, *Ipomoeae*, Solanales, taxonomia

[1] Universidade Federal Rural de Pernambuco, Unidade Acadêmica de Serra Talhada, José Tomé de Souza Ramos, Serra Talhada, PE, Brasil.
[2] Universidade Federal do Rio Grande do Norte, Prog. Pós-graduação em Sistemática e Evolução, Centro de Biociências, Natal, RN, Brasil. ORCID: <https://orcid.org/0000-0003-1975-6548>.
[3] Universidade Federal Rural de Pernambuco, Prog. Pós-graduação em Botânica, Depto. Biologia, Recife, PE, Brasil.
[4] ORCID: <https://orcid.org/0000-0003-4786-1898>. [5] ORCID: <https://orcid.org/0000-0002-8384-5935>. [6] ORCID: <https://orcid.org/0000-0002-0053-1333>.
[7] ORCID: <https://orcid.org/0000-0001-9615-2057>. [8] ORCID: <https://orcid.org/0000-0003-4267-5818>.
[9] Author for correspondence: yuri.lima_1@outlook.com

Introduction

Ipomoea L. is the most diverse genus of Convolvulaceae - in terms of numbers of species and morphological variation - and it comprises more than 700 taxa distributed predominantly in the tropics (Staples 2012). Approximately 150 species are currently known to Brazil, of which more than 1/3 are endemic, occurring in different vegetation types in all phytogeographical domains (BFG 2018). In a phylogenetic study using molecular data, the genus emerged as a non-monophyletic group, belonging to the tribe Ipomoeae Hallier f. (Stefanovic *et al*. 2003). The genus is distinguished from other genera of Convolvulaceae by the presence of a globose stigma, echinate and pantoporate pollen grains, and valvate capsules (Simão-Bianchini 1998).

Some species have significant economic importance for the food industry, such as the sweet potato (*Ipomoea batatas* L.), with their rich, starchy roots. Several taxa are considered ornamental and widely used in landscaping projects due to their wide color variations and high flower production, such as *I. tricolor* Cav. (Simão-Bianchini 1998). Other species are invaders of economically important crops, competing for light, spacing, and nutrients; they can also hinder mechanized harvesting, especially *I. nil* L. (Moreira & Bragança 2011) or are toxic, such as *I. asarifolia* [Desr.] Roem. & Schult. and *I. carnea* Jacq. (Chaves 2009).

Among the principal studies carried out with *Ipomoea* in Brazil, Meissner's work, published in the *Flora brasiliensis* (1869), is still the most extensive. Local treatments, however, have greatly contributed to our understanding of the genus in Brazil, including: Austin & Cavalcante (1982), who reported 55 species of this genus in their study of Convolvulaceae in the Amazon; Simão-Bianchini (1998), who studied *Ipomoea* in the southeastern region and identified 70 species; Ferreira & Miotto (2009), who elaborated a synopsis of *Ipomoea* species in the southern region, and reported 32 species; and Moura & Morim (2015), who recorded 18 species of *Ipomoea* in a treatment of the Convolvulaceae in Dense Ombrophilous Forest remnants in Rio de Janeiro state.

The intensification of studies of the family Convolvulaceae (and, consequently, of *Ipomoea*) in northeastern Brazil included: the flora of São José in Pernambuco state (Buril & Alves 2011) that identified six species of *Ipomoea*; the study of Convolvulaceae in Cariris Paraibanos, Paraíba state (Buril *et al*. 2013) that reported 11 species; the Convolvulaceae of the Catimbau Valley National Park (Delgado-Júnior *et al*. 2014), with 16 species, and the Convolvulaceae of the Upper Capibaribe Microregion (Nepomuceno *et al*. 2016), with eight species (the latter two studies in Pernambuco state). These publications doubled the number of species known up until that time for this region through floristic surveys (Nepomuceno *et al*. 2016).

In spite of the above cited works, much remains to be known concerning the genus *Ipomoea* in the Caatinga domain due to its wide territorial extension - with some areas not having yet been investigated in terms of their phytodiversity. Additionally, many new species of *Ipomoea* have been described, many of them endemic to northeastern Brazil (Vasconcelos *et al.* 2016; Wood *et al.* 2017a,b; Santos *et al.* 2019).

The Mata da Pimenteira State Park (MPSP) was the first state-level conservation area in the Caatinga domain in Pernambuco state. It harbors a rich diversity of flowering plants, although no taxonomic studies have yet been undertaken there with any plant group. In a previous inventory of the MPSP flora, Melo *et al.* (2013) listed 251 species, nine of which were Convolvulaceae, including four *Ipomoea* species. Analyses of the herborized material, however, indicated that the species diversity of the genus was underestimated. Thus, *Ipomoea* was chosen as object of the present research, to examine more closely the taxonomy of the species of that genus in the MPSP, Serra Talhada, Pernambuco state.

Materials and Methods

Study area

The MPSP is located in the municipality of Serra Talhada (07°53'49"S, 38º18'14"W) in the semiarid Pajeú microregion of Pernambuco state, Brazil (Fig. 1). The regional climate is hot and dry (type BSwh' by the Köppen classification system), with a mean annual temperature of approximately 23.8 ± 0.92 °C; the mean annual rainfall rate is 653.2 mm, and regional elevations vary from 500 to 820 m. The predominant soil classes are cambisols, litholic, and podzols (Silva & Almeida 2013). Caatinga vegetation predominates in the area, varying from arboreal to shrub-arboreal, with herbaceous forms growing on rock outcrops (Melo *et al.* 2013). There is also a buffer zone planted with crops in the Agronomic Research Institute (ARI) and in the Serra Talhada Academic Unit campus.

Material analyzed

Monthly excursions to collect *Ipomoea* specimens in the MPSP were undertaken between August/2016 and June/2017, sampling diverse environments within the park. All the collected specimens were herborized following the techniques proposed by Mori *et al*. (1989). Environment data, including type of vegetation, soil, herbivory, and human activity, were noted in the field, as well as plant characteristics such as phenology, frequency of which the plant is found, flower color and production of latex. The specimens collected were incorporated into the Brazilian Semiarid Herbarium (HESBRA) at the Serra Talhada Academic Unit (UAST) of the Federal Rural University of Pernambuco. In addition to the field material, collections belonging to the same herbarium were analyzed (all the examined material is deposited in this herbarium). Identifications were made by consulting specialized literature (Simão-Bianchini 1998; Buril *et al*. 2013; Delgado-Júnior *et al*. 2014; BFG 2018; Nepomuceno *et al*. 2016), by comparisons with type specimen images available online, and by consulting species protologues. The terminologies of Simpson (2006) were used to designate the shape of the structures and indument types. Geographic distributions are according Austin & Huaman (1996) and the Flora do Brasil (BFG 2018). Consultations of specimens' labels at herbaria and available at the SpeciesLink (<http://www.splink.org.br>) were made to determine the geographical distribution of the species in Pernambuco state.

Results and Discussion

Fourteen *Ipomoea* species were found in the MPSP, which is more than three times the total previously recorded by Melo *et al.* (2013) in their floristic inventory of the area. Of the *Ipomoea* species recorded in the MPSP, two are endemic to Brazil (*I. bahiensis* and *I. brasiliana*), and three others are exclusive to the Caatinga domain (*I. marcellia*, *I. rosea*, and *I. tenera*); the remaining taxa are widely distributed throughout South America. Most of the species in the MPSP were associated with anthropogenic environments; *I. asarifolia*, *I. nil*, and *I. rosea* are commonly found, and occur even as invasive species of commercial crops. *Ipomoea tenera* and *I. triloba* are exclusively

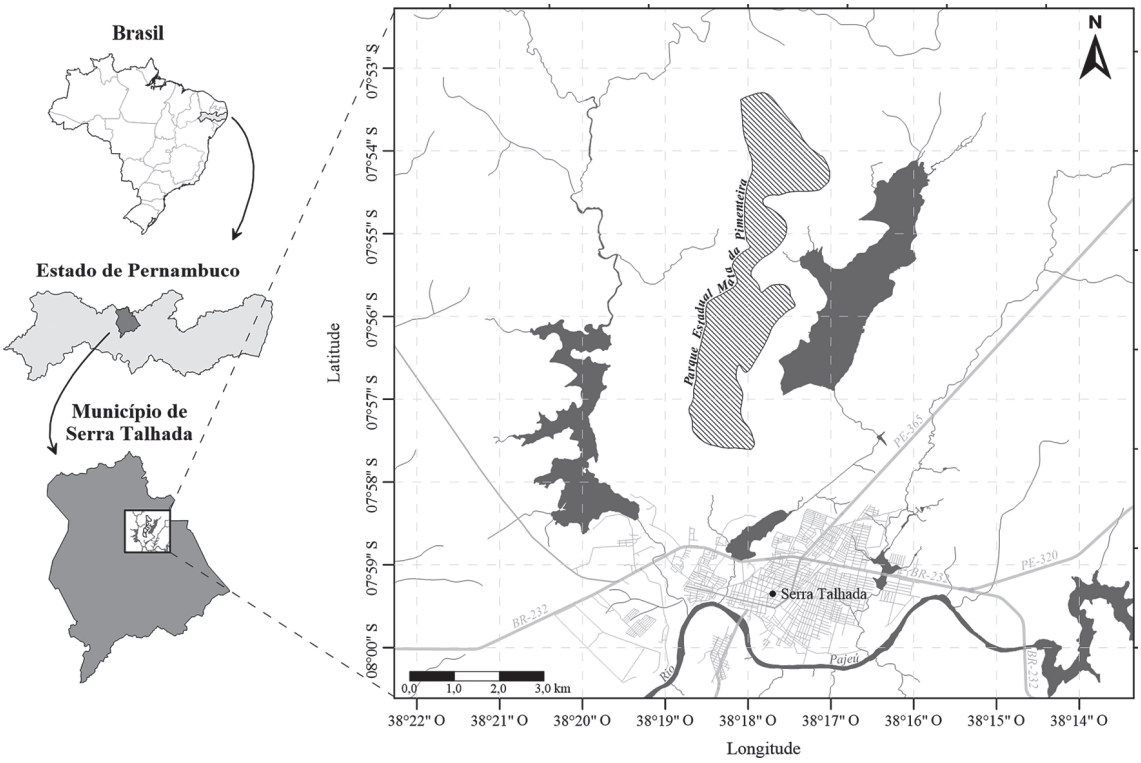

Figure 1 – Location of MPSP in Pernambuco state. (Matos *et al.* 2019).

associated with vernal pools. The registered taxa were differentiated mainly through resources of the type and shape of the leaf blade, the shape of the sepals, the dimensions, shape, and colors of the corolla, and the presence / absence of trichomes, mainly in sepals.

Ipomoea L., Sp. Pl. 1: 159. 1753.

Herbaceous vines, lianas, prostrate subshrubs or erect shrubs. Latex present or absent. Branches glabrous to hirsute, trichomes simple. Leaves simple, entire to 3–5-lobed, or composite, 3–5-foliolate; leaf or leaflet blade entire or toothed at margins, sometimes ciliate, glabrous or pubescent. Inflorescence generally a dichasial cyme, rarely monochasial. Pedicellate flowers. Sepals equal or unequal in size, glabrous, pubescent, tomentose or hirsute, trichomes simple, smooth, rarely rostrate, nectary and crests hardly present. Corolla infundibuliform, rarely hypocrateriform, pinkish, lilac, purplish, blue, rarely red, white or yellow, glabrous, sericeous or puberulent. Stamens 5, included, rarely exserted of different sizes. Filaments with tomentose base, anthers elliptic, lanceolate or oblong. Style entire, persistent or deciduous, stigmas 2, globose. Capsule usually globose. Seeds 4, glabrous, pubescent, tomentose, lanuginose or pilose.

Identification key to the species of *Ipomoea* in the Mata da Pimenteira State Park

1. Leaves composite 2
   2. Blade 3-foliolate; dichasial inflorescence with up to 5 flowers; homomorphic sepals, with subapical rostrum ..... 12. *Ipomoea rosea*
   2’. Blade 5-foliolate; monochasial inflorescence with 1 flower; unequal sepals, with crests ..... 13. *Ipomoea tenera*

1’. Leaves simple 3
   3. Prostrate subshrubs or erect shrubs 4
      4. Prostrate subshrubs; leaf blade reniform to deltoid ..... 1. *Ipomoea asarifolia*
      4’. Erect shrubs; leaf blade lanceolate ..... 4. *Ipomoea carnea*
   3’. Vines 5
      5. Leaf blade entire to slightly lobed 6
         6. External sepals with subapical rostrum 7
            7. Subapical rostrum ≤ 1 mm long; corolla infundibuliform, lilac ..... 2. *Ipomoea bahiensis*
            7’. Subapical rostrum 3–5 mm long; corolla hypocrateriform, red ..... 5. *Ipomoea hederifolia*
         6’. External sepals without subapical rostrum 8
            8. Leaf blade glabrous or trichomes restricted to veins 9
               9. Stems with lenticels; external sepals with longitudinal striae ..... 6. *Ipomoea incarnata*
               9’. Stems without lenticels; external sepals without longitudinal striae 10
                  10. External sepals rugose and glabrous ..... 11. *Ipomoea piurensis*
                  10’. External sepals smooth and hirsute ..... 14. *Ipomoea triloba*
            8’. Leaf blade puberulent to tomentose or villous 11
               11. Sepals gibbous ..... 9. *Ipomoea megapotamica*
               11’. Sepals not gibbous 12
                  12. Sepals tomentose; stamens exserted ..... 8. *Ipomoea marcellia*
                  12’. Sepals glabrous or glabrescent; stamens included ..... 3. *Ipomoea brasiliana*
      5’. Leaf blade 3–5 lobed 13
         13. Leaf blade 5-lobed; yellow corolla with vinaceous faucal area ..... 7. *Ipomoea longeramosa*
         13’. Leaf blade 3-lobed; blue corolla with white faucal area ..... 10. *Ipomoea nil*

1. *Ipomoea asarifolia* (Desr.) Roem. & Schult., Syst. Veg. 4: 251. 1819. Fig. 2a-e

Prostrated subshrub, white latex, cylindrical branches, striated, glabrous. Leaves simple; petiole 0.2–9 cm long, canaliculate, glabrous, sometimes with conical projections; leaf blade entire, 0.5–7.5 × 0.4–12 cm, reniform to deltoid, base rounded to emarginated, apex retuse, margin entire, membranaceous, glabrous on both faces, venation actinodromous, imperfect, marginal. Dichasium up to 9 flowers; peduncle 0.5–9 cm long, glabrous; pedicel 0.2–4 cm long; bracteoles 2–3 × 2–2.5 mm, deltoid; unequal sepals, external 0.4–0.6 × 0.3–0.5 cm, orbicular, base truncate, apex rounded, glabrous, without subapical rostrum, without crests, without nectary, internal 1–1.5 × 0.8–1 cm, oboval to orbicular, base truncate, apex rounded to obtuse, glabrous; corolla 6–8 cm long, infundibuliform, pinkish, glabrous, tube 3–4.5 cm long, lobes 2.5–4 cm long; stamens included, filaments 0.6–1.8 cm long, base tomentose, anthers 6–7 × 2–3 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule ca. 1 × 0.9 cm, widely elliptic, calyx persistent, non-accrescent, persistent style ca. 3 mm long; seeds 6–7 × 4–0 mm, triangular, smooth, glabrous.

Examined material: Fazenda Saco, 9.III.2012, fl., *W. Cordeiro 366*; 24.IV.2012, fl., *W. Cordeiro 243*; 9.IV.2017, fl., *R.S. Costa 22*; topo da Serra Talhada, 2.VI.2016, fl., *D.F. Magalhães 1*; 25.IV.2017, fl., *R.S. Costa 39*.

Additional examined material: BRASIL. PERNAMBUCO: Triunfo, Sítio Brejinho, 21.III.2018, fl. and fr., *R.S. Costa 54*.

Widely distributed in the Americas (Austin & Huaman 1996). In Brazil, it is present mainly in the North and Northeast regions, in the Amazon, Caatinga and Atlantic Forest domains (BFG 2018). In Pernambuco state, it occurs from the eastern coast (including the Fernando de Noronha Archipelago) to the extreme west (semiarid), being present at *restinga* formations, *caatinga*, ombrophilous forests, semideciduous forests and montane forest borders and, principally, in anthropized and wetland environments. It is observed in open areas of the MPSP, mainly where the native vegetation has been degraded, including on the UAST campus and in abandoned fields and roadsides, at elevations of 500–800 m, growing on clayey-sandy and sandy soils, rock outcrops, and associated with vernal pools.

Ipomoea asarifolia is well defined and can be easily recognized as the only MPSP species with a prostrate subshrub habit and leaves varying from reniform to deltoid. Although its populations become reduced during the dry season, several individuals can still be observed during that period. It was found with flowers between March and July.

2. *Ipomoea bahiensis* Willd. *ex* Roem. & Schult., Syst. Veg. 4: 789. 1819. Fig. 2f-j

Vine, white latex, branches cylindrical to flat, sometimes striate, mature glabrous to pubescent, young pubescent to tomentose, trichomes with broad turgescent base. Leaves simple; petiole 1.5–7 cm long, canaliculate, pubescent; leaf blade entire, 2–13 × 1.3–6.5 cm, cordate to sagittate, base cordate to sagitate, apex acuminate, margin entire, membranaceous, glabrous to pubecent on both faces, venation, actinodromous imperfect, reticulate. Dichasium up to 8 flowers, peduncle 2.5–11 cm long, pubescent; pedicel 0.2–0.8 cm long; bracteoles 1–2 × 1–1.5 mm, linear; unequal sepals, external 0.4–0.6 × 0.3–0.4 cm, oboval to orbicular, base truncate, apex apiculate, ciliated margin, glabrous, subapical rostrum ca. 1 mm long, without crests, without nectary, internal 0.6–0.8 × 0.2–0.5 cm, rounded, base truncate, apex rounded, pilose margin, glabrous; corolla 4–4.5 cm long, infundibuliform, lilac, glabrous, tube 2.5–3 cm long, lobes 1–1.5 cm long; stamens included, filaments 1–1.9 cm long, base tomentose, anthers 4–5 × 1–2 mm, elliptic, narrowly oblong; ovary ovoid, glabrous, 2-locular. Capsule 0.8 × 0.8 cm, cylindrical, calyx persistent, non-accrescent persistent style ca. 5 mm long; seeds 5–8 × 4–6 mm, widely triangular, smooth, lanuginose.

Examined material: Topo da Serra Talhada, 2.VI.2016, fl., *F.C. Sabino 1*.

Additional examined material: BRASIL. PERNAMBUCO: Santa Cruz da Baixa Verde, Serra da Madeira, 8.VIII.2013, fl., *A.C.L. Araujo 1*; 18.IV.2017, fl. and fr., *R.S. Costa 29*; Sítio Santo Antônio, 18.IV.2017, fl., *R.S. Costa 26*; Triunfo, Mata do Brejinho, 4.II.2013, fl., *A. Laurênio 3113*.

This species is endemic to Brazil, found in all phytogeographic domains (BFG 2018). It is widely distributed in Pernambuco state, occurring from the coast to the inland semiarid region, along the edges of humid forests or caatinga vegetation. It was found only at the top of the Serra Talhada Mountain in the MPSP area, at approximately 800 m, in a deforested area and on clayey soils with boulders.

Ipomoea bahiensis can be easily recognized among species of the genus in MPSP by having leaf blade cordate to sagittate, and sepals with a

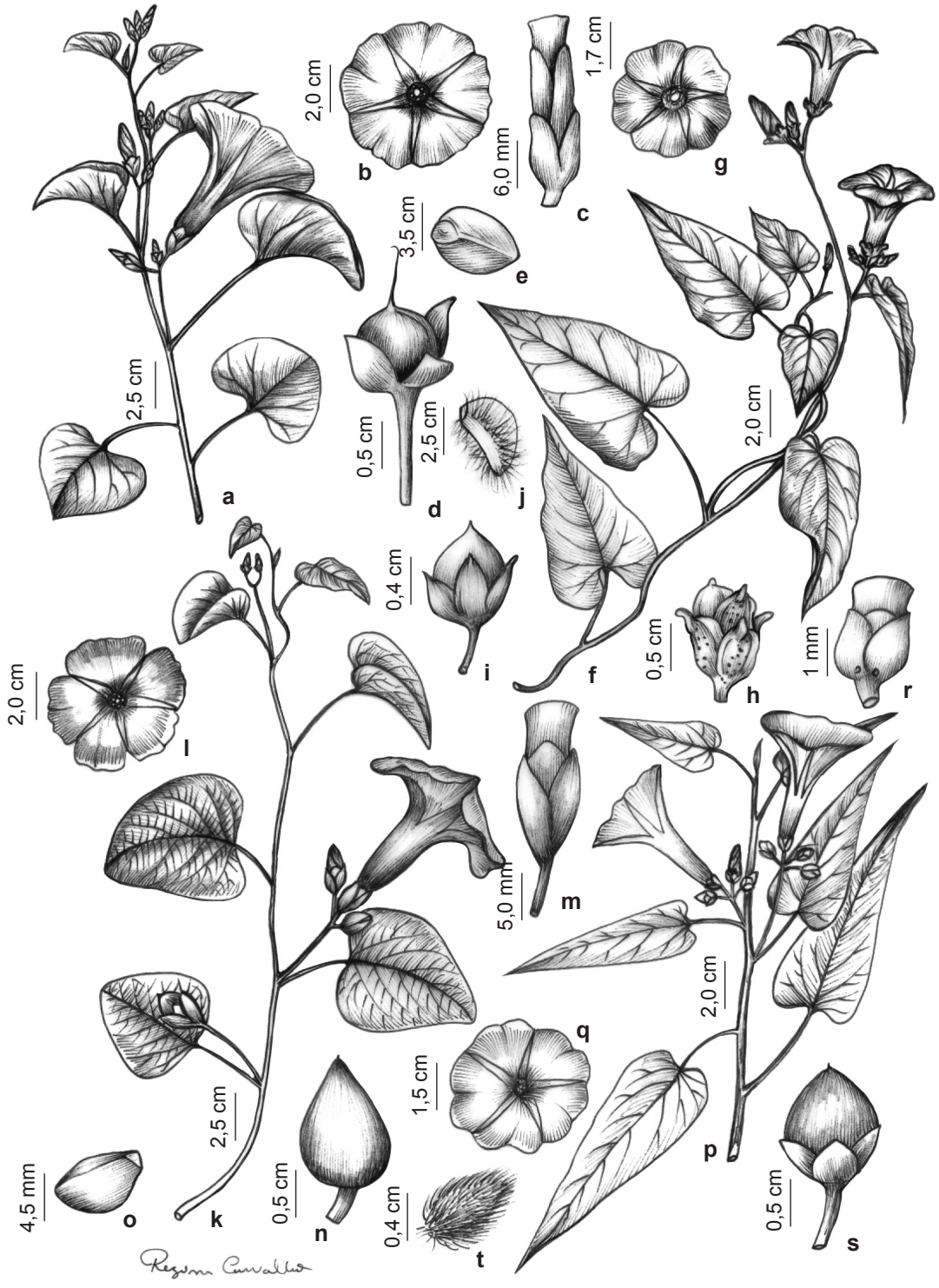

Figure 2 – a-e. *Ipomoea asarifolia* – a. flowered branch; b. corolla, frontal view; c. calyx, lateral view; d. fruit; e. seed, frontal view. f-j. *I. bahiensis* – f. flowered branch; g. corolla, frontal view; h. calyx, lateral view; i. fruit; j. seed, lateral view. k-o. *I. brasiliana* – k. flowered branch; l. corolla, frontal view; m. calyx, lateral view; n. fruit; o. seed, frontal view. p-t. *I. carnea* subsp. *fistulosa* – p. flowered branch; q. corolla, frontal view; r. calyx, lateral view; s. fruit; t. seed, vertical view. (a-e. *W. Cordeiro 243*; f-j. *F.C. Sabino 1*; k-o. *M.S. Santos 1*; p-t. *T.G.C. Menezes 257*).

subapical rostrum ca. 1 mm long. It was found with flowers in June.

3. *Ipomoea brasiliana* (Choisy) Meisn. in Mart., *Fl. bras.* 7: 261. 1869. Fig. 2k-o

Vine, white latex, furrowed branches, mature pubescent to tomentose, young tomentose to villous. Leaves simple; petiole 1.5–4.2 cm long, canaliculate, tomentose to villous; leaf blade entire, 2.5–8.5 × 1.5–8 cm, cordate, base cordate to reniform, apex acute to obtuse, margin entire, membranaceous, tomentose to villous on both faces, venation actinodromous, imperfect, marginal. Dichasium up to 6 flowers; peduncle 2.5–4.5 cm long, tomentose to villous; pedicel 0.5–1.3 cm long; bracteoles 5–22 × 4–7 mm, nailed; unequal sepals, external 0.5–1.5 × 0.4–1.3 cm, widely elliptic to orbicular, base and apex rounded, glabrous, without subapical rostrum, without crests, without nectary, internal 0.4–1.8 × 0.6–1.1 cm, orbicular, base and apex rounded, glabrous; corolla 8–9 cm long, infundibuliform, purplish, glabrous, tube 5.5–6 cm long, lobes 2.5–3 cm long; stamens included, filaments 1.5–3 cm long, base tomentose, anthers 6–7 × 1.5–2 mm, elliptic, lanceolate; ovary obovoid, glabrous, 2-locular. Capsule 0.8–1.7 × 0.7–1.3 cm, oval, calyx persistent, accrescent, 1.5–2 cm long; seeds 10–13 × 6–8 mm, triangular, smooth, glabrous.

Examined material: Serra Branca, 24.V.2011, fr., *M.S. Santos 1*; Fazenda Saco, 9.IV.2017, fl. and fr., *R.S. Costa 20*; 11.IV.2017, fl. and fr., *R.S. Costa 17*; topo da Serra Talhada, 25.IV.2017, fl. and fr., *R.S. Costa 38*.

Endemic to Brazil, in the Caatinga and Cerrado domains (BFG 2018). In Pernambuco it appears to be associated mainly with the Caatinga domain, occurring in several semiarid municipalities, although it can also occur in the Atlantic Forest domain (in the municipalities of Primavera and São Lourenço da Mata) in semi-deciduous formations. It is widely distributed in the study area, being observed in both lowland areas and higher elevation sites (up to 800 m).

Ipomoea brasiliana in the study area can be confused with *Turbina cordata* (Choisy) D.F. Austin & Staples. However, the species differs from this by its glabrous corolla in *I. brasiliana* (*vs*. villous in *T. cordata*), widely elliptic to orbicular sepals, glabrous (*vs*. oblong, tomentose), and dehiscent (*vs*. indehiscent) capsule. It can be found with flowers and fruits between April and May.

4. *Ipomoea carnea* subsp. ***fistulosa*** (Mart. *ex* Choisy) D.F.Austin, Taxon 26: 237. 1977. Fig. 2p-t

Erect shrub, white latex, cylindrical branches, puberulent. Leaves simple; petiole 0.5–6 cm long, canaliculate, pubescent; leaf blade entire, 1.5–15.3 × 0.4–4.8 cm, lanceolate, base truncate to subcordate, apex acuminate, margin entire, chartaceous, puberulent to glabrescent on both sides, venation actinodromous, imperfect, marginal. Dichasium up to 11 flowers; peduncle 1.3–11 cm long, pubescent; pedicel 0.2–2.7 cm long; bracteoles 3.2–7 × 1.4–4.2 mm, linear; unequal sepals, external 0.5–0.7 × 0.5–0.6 cm, rounded to widely oval, base and apex rounded, pubescent, without subapical rostrum, without crests, 1 elliptical nectary at the base of each sepal, internal 0.5–0.7 × 0.4–0.7 cm, oval, base rounded, apex rounded to obtuse, pubescent; corolla 6.5 cm long, infundibuliform, pinkish, puberulent, tube 2.3–3.5 cm long, lobes 1.5–2 cm long; stamens included, filaments 1–1.5 cm long, tomentose base, anthers 6–8 × 0.8–1 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule 0.8–1.4 × 1–1.5 cm, widely elliptic, calyx persistent, non-accrescent, stigma obsolete; seeds 8–10 × 6–8 mm, triangular, smooth, lanuginose.

Examined material: Pimenteira, VI.2011, fl. and fr., *T.G.C. Menezes 257*; 19.IV.2017, fl., *R.S. Costa 36*; Fazenda Saco, 9.IV.2017, fl., *R.S. Costa 18*.

Ipomoea carnea is a Central and South American species, occurring in Bolivia, Brazil, Costa Rica, Ecuador, Nicaragua, Peru, and Venezuela (Austin & Huaman 1996). In Brazil it is registered in all regions and phytogeographic domains (BFG 2018). It is widely distributed throughout Pernambuco state, including as a cultivated species in gardens and backyards; it is often associated with the margins of vernal pools. In the MPSP, it was only seen near the margins of flooded areas, at elevations of 500 m on sandy-humus soil.

Ipomoea carnea can be easily distinguished from other species of the genus in the MPSP by having an erect shrub habit, leaf blade lanceolate, and seeds with trichomes lanuginose. Flowering between April and June and fruiting in June.

5. *Ipomoea hederifolia* L., Syst. Nat., ed. 10, 2: 925. 1759. Fig. 3a-e

Vine, latex not seen, branches grooved, glabrous to glabrescent. Leaves simple; petiole 2–4.5 cm long, canaliculate, glabrous; leaf blade entire, 9–10 × 7.5–8 cm, cordate, base deeply

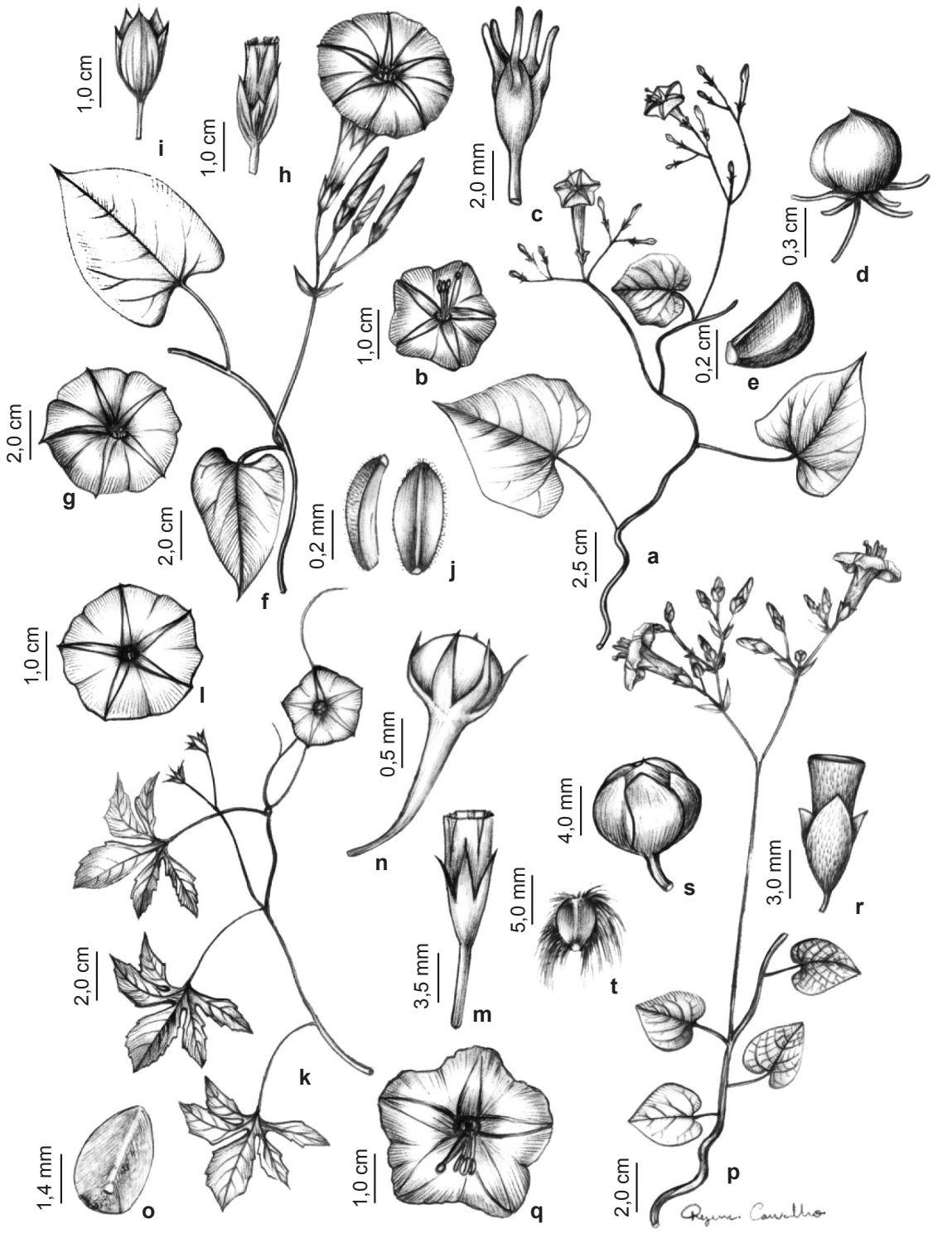

Figure 3 – a-e. *Ipomoea hederifolia* – a. flowered branch; b. corolla, frontal view; c. calyx, lateral view; d. fruit; e. seed, lateral view. f-j. *I. incarnata* – f. flowered branch; g. corolla, frontal view; h. calyx, lateral view; i. fruit; j. seeds, lateral and frontal view. k-o. *I. longeramosa* – k. flowered branch; l. corolla, frontal view; m. calyx, lateral view; n. fruit; o. seed frontal view. p-t. *I. marcellia* – p. flowered branch; q. corolla, frontal view; r. calyx, lateral view; s. fruit; t. seed, frontal view. (a-e. *S.S. Matos 540*; f-j. *T.G.C. Menezes 246*; k-o. *S.S. Matos 503*; p-t. *R.S. Costa 54*).

rooted, apex acute, margin entire, sometimes 2–5 dentate, chartaceous, glabrous on both faces, venation actinodromous, perfect, reticulated suprabasal. Dichasium up to 9 flowers; peduncle 2.5–14 cm long, glabrous; pedicel 0.2–0.8 cm long; bracteoles 1–2 × 1.5–2 mm, deltoids; unequal sepals, external 0.2–0.3 × 0.1–0.2 cm, oboval to orbicular, base and apex rounded, glabrous, subapical rostrum 3–5 mm long, without crests, without nectary, internal 0.3–0.5 × 0.2–0.3 cm, rounded, base truncate, apex rounded, glabrous; corolla 2–2.3 cm long, hipocrateriform, red, glabrous, tube 1.5–2 cm long, lobes 0.5–0.7cm long; stamens exserted, filaments 1–1.5 cm long, tomentose base, anthers 2–3 × 0.8–1 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule 0.5–0.7 × 0.6–0.8 cm, widely elliptic, calyx persistent, accrescent, 0.5–0.7 cm, deciduous style; seeds 4–5 × 4–5 mm, triangular, smooth, glabrous.

Examined material: Pimenteira, 15.IV.2014, fl., *S.S. Matos 540*; Fazenda Saco, 9.VI.2017, fl. and fr., *R.S. Costa 46*.

Widely distributed in the Americas, from the United States to Argentina (Austin & Huaman 1996). Registered for all regions and phytogeographic domains (BFG 2018). Although it does not have a wide distribution in Pernambuco state, it is found sporadically in both the Atlantic as Caatinga domains. In the study area, it was observed in areas of well-preserved shrub-arboreal caatinga, at elevations between 500–580 m, on clayey-sandy soils with boulders and rock outcrops.

Ipomoea hederifolia can be easily distinguished from other species of the genus occurring in the MPSP, mainly by its small (2–2.3 cm long), red, hypocrateriform corolla and exserted stamens. It was found with flowers between April and June, and fruits in June.

6. *Ipomoea incarnata* Choisy, Prodr. Syst. Nat. Reg. Veg., 9: 360. 1845. Fig. 3f-j

Vine, white latex, cylindrical to flat branches with lenticels, glabrous. Leaves simple; petiole 1.2–6.5 cm long, canaliculate, glabrous; leaf blade entire, 3.5–8.8 × 1.6–7 cm, cordate, base cordate, sometimes truncated, apex acuminate to acute, margin entire, chartaceous, glabrous on both sides, venation actinodromous, marginal. Dichasium up to 11 flowers; peduncle 2–15 cm long, glabrous; pedicel 1.8–4.2 cm long; bracteoles 10–15 × 3–4 mm, lanceolate; unequal sepals, external 1.5–2 × 0.5–0.7 cm, lanceolate with longitudinal striae, base truncate, apex acuminate, glabrous, without subapical rostrum, without crests, without nectary, internal 1.2–1.6 × 0.5 –0.7 cm, lanceolate-oval, base truncate, apex acute, glabrous; corolla, 5.6–10.5 cm long, infundibuliform, purplish, glabrous, tube 2.8–4.5 cm long, lobes 3.7–5.8 cm long; stamens included, filaments 0.7–2 cm long, tomentose base, anthers 6–8 × 1–1.5 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule 0.5–0.7 × 1–1.2 cm, ellipsoid, calyx persistent, non-accrescent, deciduous style; seeds 7–8 × 2–3 mm, triangular, smooth, pubescent.

Examined material: Pimenteira, VI.2011, fl., *T.G.C. Menezes 246*; 17.VI.2011, fr., *G.C. Nascimento 4*; 30.V.2012, fl., *D.R.M. Caldas 56*; 27.VI.2012, fl., *W. Cordeiro 401*; 9.VI.2016, fl., *L.F. Borges 1*; 19.IV.2017, fl., *R.S. Costa 33*.

Found only in the Americas, in Brazil, Colombia, Ecuador, Peru and Venezuela (Austin & Huaman 1996). It occurs in the Northeastern and Southeastern regions of Brazil, in the Atlantic Forest, and Caatinga domains (BFG 2018). In Pernambuco, it appears to occur mainly in the Caatinga domain, although there are records of collections in the Atlantic Forest (Maraial). In the study area, it is observed principally in better-preserved environments, growing vigorously on caatinga trees and shrubs, on clayey-sandy soils, at elevations of 500 m.

Ipomoea incarnata is well defined and can be easily distinguished from other species of the genus in MPSP because it is the only species to present branches with lenticels and longitudinal striae in the external sepals. Flowers in May and June, and fruits in June.

7. *Ipomoea longeramosa* Choisy, Prodr. Syst. Nat. Reg. Veg., 9: 384. 1845. Fig. 3k-o

Vine, latex absent, branches furrowed, hirsute. Leaves simple; petioles 1.3–5.7 cm long, canaliculate, pilose; leaf blade 5-lobed, 4.5–6.5 × 5.2–8 cm, lobes oval to elliptic, base sagitate, apex acute to obtuse, margin entire, sometimes ciliated, membranaceous, glabrescent on both faces, with tricomas restricted to the veins, venation actinodromous, perfect, marginal suprabasal. Monochasium up to 2 flowers; peduncle 1.5–5.2 cm long, pilose; pedicel 0.5–1.6 cm long; bractoles 3–4.1 × 1–1.5 mm, lanceolate; unequal sepals, external 0.8–1 × 0.2–0.4 cm, lanceolate, base truncate, apex acuminate, glabrous, without subapical rostrum, without crests, without nectary,

internal 0.6–0.9 × 0.2–0.3 cm, lanceolate, base truncated, apex acuminate, glabrous; corolla, 2.5–3 cm long, infundibuliform, yellow with vinaceous faucal area, glabrous, tube 1–1.5 cm long, lobes 1.5–2 cm long; stamens included, filaments 0.6–1.1 cm long, tomentose base, anthers 2.5–3 × 1.5–2.5 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule 1–1.3 × 0.7–0.9 cm, oval, calyx persistent, non-accrescent, persistent style ca. 4 mm long; seeds 4–5 × 4–6 mm, triangular, smooth, glabrous.

Examined material: Fazenda Saco, 29.VI.2012, fl., *W. Cordeiro 416*; 15.IV.2014, fl., *S.S. Matos 503*; 19.IV.2017, fl., *R.S. Costa 34*; 12.VII.2017, fl. and fr., *R.S. Costa 48*.

Additional examined material: BRASIL. PERNAMBUCO: Flores, Distrito de Nossa Senhora de Fátima, 27.III.2017, fl., *R.S. Costa 12*.

A South American species, occurring only in Brazil and Venezuela (Austin & Huaman 1996). This species is distributed throughout Brazil, except in the Southern region, present in the Caatinga and Cerrado domains, in open fields, and in anthropogenic environments (BFG 2018). In Pernambuco state, it is found in semiarid environments. In the study area, it was observed in open environments with sandy soils along roadside and at the edges of vernal pools at elevations of 500 m.

Ipomoea longeramosa is well defined and can be easily identified, as it is the only species of the genus in the MPSP with 5-lobed leaves and a yellow corolla with a vinaceous faucal area. It was found with flowers between April and July, and fruits in July.

8. *Ipomoea marcellia* Meisn. in Mart., *Fl. bras.*: 257. 1869. Fig. 3p-t

Lianas, white latex, branches cylindrical, striate, mature tomentose, young tomentose to villous. Leaves simple; petiole 5–7.2 cm long, canaliculate, villous; leaf blade entire, 2.6–6.5 × 2.2–5.3 cm, cordate, base cordate, apex acute, margin entire, chartaceous, villous on both sides, venation actinodromous, reticulated, imperfect. Dichasium up to 11 flowers; peduncle 14.4–36.8 cm long, villous; pedicel 0.3–0.8 cm long; bracteoles 15–18 × 5–7 mm, elliptic; unequal sepals, external 1.1–1.3 × 0.7–0.8 cm, elliptic to orbicular, base rounded, apex rounded to obtuse, tomentose, without subapical rostrum, without crests, without nectary, internal 0.8–0.9 × 0.6–0.7 cm, broadly elliptic, base rounded, apex rounded, villous; corolla 5.2–5.8 cm long, infundibuliform, yellowish white, sericeous, and glabrous on the mesopetal vein, tube 3.8–4 cm long, lobes 1.4–1.8 cm long; stamens exserted, filaments 4 cm long, tomentose base, anthers 8–9 × 2 mm, elliptic, lanceolate; ovary ovoid, glabrous, 2-locular. Capsule 1.2–1.5 × 0.8–0.9 cm, widely ovate, calyx persistent, accrescent 1.8–2.4 cm, persistent style ca. 3 mm long; seeds 4–5 × 0.4–4.5 mm, triangular, smooth, long trichomes on the dorsal margin.

Examined material: Fazenda Saco, Trilha dos Polinizadores, 31.VII.2018, fl. and fr., *R.S. Costa 54*.

Additional examined material: BRASIL. PERNAMBUCO: Triunfo, próximo ao SESC, 30.VI.2017, fl., *A. Laurênio.*

Endemic to the Caatinga domain and found exclusively in northeastern Brazil, associated with caatinga (*stricto sensu*) and carrasco vegetation (BFG 2018). Found exclusively in low montane forests in the study area on rock outcrops at elevations of approximately 1,100 m.

Ipomoea marcellia can be easily differentiated from the other species studied here by having corolla infundibuliform, yellowish white, sericeous, glabrous only on the mesopetal veins, and stamens exserted. It was found with flowers and fruits in July.

9. *Ipomoea megapotamica* Choisy, Prodr. 9: 375. 1845. Fig. 4a-d

Vines, white latex, cylindrical branches, sometimes striated, mature pubescent to puberulent puberulous, young tomentose. Leaves simple; petiole 3.5–8.2 cm long, canaliculate, puberulent to tomentose; leaf blade entire, 4.2–9.5 × 4.1–9.2 cm, cordate, base reniform, apex acute to obtuse, margin entire, membranaceous, pubescent to tomentose on both faces, venation actinodromous, imperfect, reticulate. Dichasium up to 65 flowers; peduncle 7.2–18.3 cm long, puberulent to tomentose; pedicel 0.3–0.9 cm long; bracteoles 6–8 × 3–5 mm, lanceolate; unequal gibbous sepals, external 0.8–1 × 0.4–0.6 cm, oval to truncate, base obtuse, apex acute, tomentose, without subapical rostrum, without crests, without nectary, internal 0.6–0.8 × 0.3–0.5 cm, broadly oval, base and apex obtuse, tomentose; corolla 4–4.5 cm long, infundibuliform, pinkish, pubescent, tube 2.9–3.2 cm long, lobes 1.1–1.3 cm long; stamens included, filaments 1.1–2.2 cm long, tomentose base, anthers 3–5 × 2–3 mm, elliptic, lanceolate; ovary ovoid, glabrous, 2-locular. Capsule 0.8–1.1 × 0.6–0.8 cm, oval to

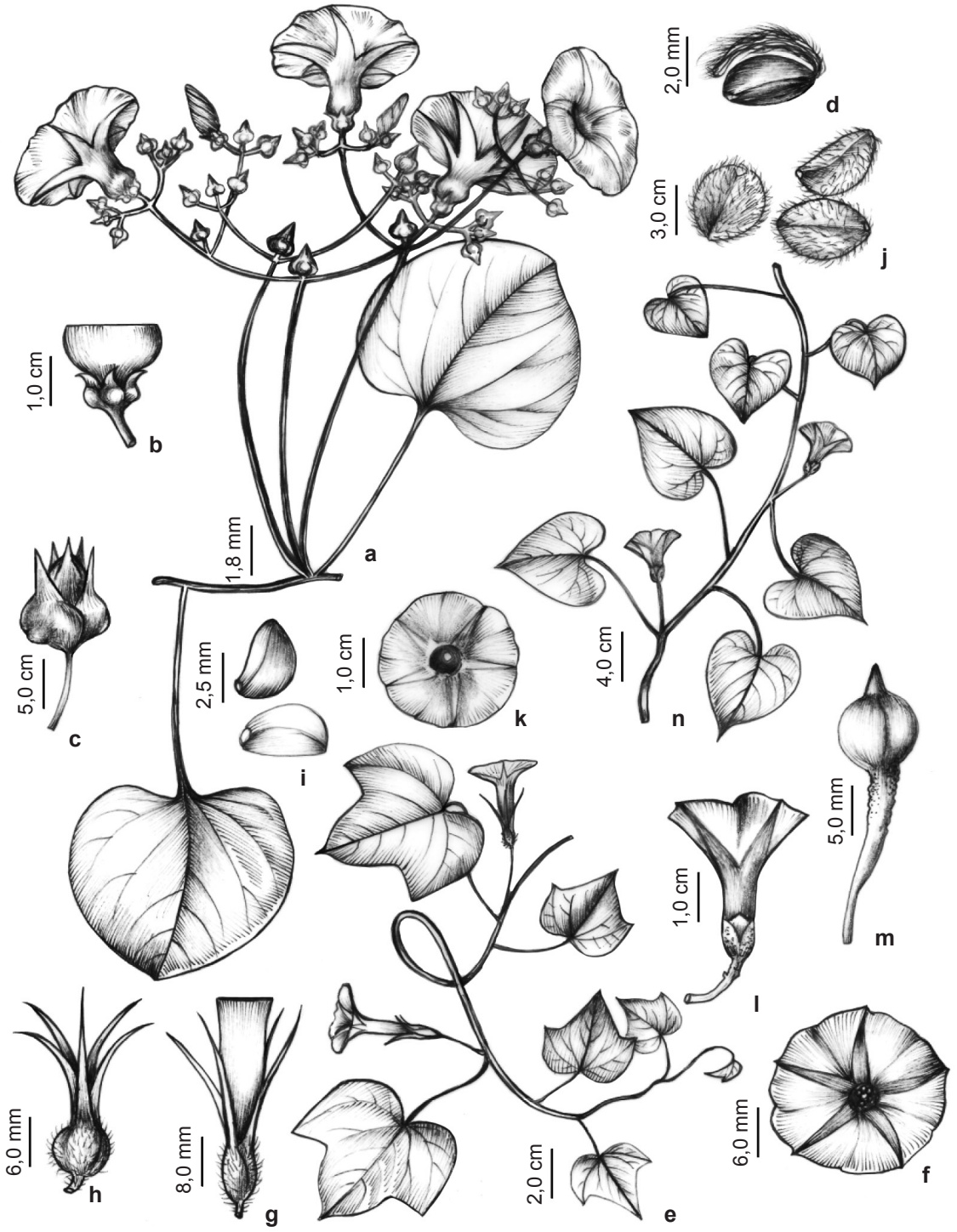

Figure 4 – a-d. *Ipomoea megapotamica* – a. flowered branch; b. calyx, lateral view; c. fruit; d. seed, lateral view. e-i. *I. nil* – e. flowered branch; f. corolla, frontal view; g. calyx, lateral view; h. fruit; i. seeds, lateral and frontal view. j-n. *I. piurensis* – j. flowered branch; k. corolla, frontal view; l.calyx, lateral view; m. fruit; n. seeds, vertical, lateral and frontal view. (a-d. *T.G.C. Menezes 264*; e-i. *A.M. Santos 1*; j-n. *S.S. Matos 516*).

widely elliptic, calyx persistent, non-accrescent, persistent style ca. 2 mm long; seeds 3–5 × 3–4 mm, triangular, smooth, pilose.
Examined material: Pimenteira, VI.2011, fl. and fr., *T.G.C. Menezes 264*; 19.IV.2017, fl., *R.S. Costa 35*.

Found in Bolivia and Brazil, the latter being recorded for all regions, where it occurs in the Caatinga, Cerrado, and Atlantic Forest domains (BFG 2018). In Pernambuco, it is found mainly in the Caatinga domain, up to its contact with the Atlantic Forest (in the municipalities of São Lourenço da Mata and Vitória de Santo Antão). In the MPSP, it was observed in better-preserved environments, growing vigorously on caatinga shrubs in clayey-sandy soils, at elevations of 500 m.

Ipomoea megapotamica can be easily identified by having leaf blade cordate, indumentum pubescent to tomentose on both surfaces, gibbous sepals and by having well-developed dichasium with up to 65 flowers. Flowering between April and June, and fruiting in June.

10. *Ipomoea nil* (L.) Roth., Catal. Bot., 1: 36. 1797. Fig. 4e-i

Vine, latex absent, furrowed branches, hirsute. Leaves simple; petiole 0.8–4 cm long, canaliculate, hirsute; leaf blade 3-lobed, 1.5–8 × 1.6–7.5 cm, cordate to lightly, base cordate, apex acuminate to acute, margin entire, membranaceous, hirsute on both faces, venation actinodromous, perfect, marginal basal. Dichasium up to 2 flowers, peduncle 0.6–13 cm long, hirsute; pedicel 0.4–1 cm long; bracteoles 4–8 × 0.5–0.8 mm, linear; equal sepals, 1.5–3.5 × 0.2–0.8 cm, lanceolate to oval, base rounded, apex caudate, hirsute, without subapical rostrum, without crests, without nectary; corolla 4–5 cm long, infundibuliform, blue with white faucal area, glabrous, tube 2.2–2.3 cm long, lobes 1.6–2 cm long; stamens included, filaments 1.2–2.1 cm long, tomentose base, anthers 2.5–3 × 1.2–1.5 mm, elliptic, lanceolate; ovary obovoid, glabrous, 4-locular. Capsule 0.6–0.8 × 1–1.2 cm, widely elliptic, calyx persistent, accrescent 3.5–4.1 cm, persistent style ca. 6 mm long; seeds 4–5 × 3–4 mm, widely triangular, smooth, glabrous.
Examined material: Campus da UAST, 25.V.2009, fl., *A.M. Santos 1*; 21.V.2010, fl., *G.P. Silva 100*; Estação Experimental IPA, Pimenteira, 17.VI.2011, fl., *E.A. Queiroz 7*; Fazenda Saco, 29.VI.2012, fl. and fr., *W. Cordeiro 412*; 9.VI.2016, fl., *L.L.R. Aquino 1*; 9.IV.2017, fl., *R.S. Costa 19*; 11.IV.2017, fl., *R.S. Costa 15*; topo da Serra Talhada, 25.IV.2017, fl., *R.S. Costa 37*.

Distributed throughout the Americas, from the United States to Argentina (Austin & Huaman 1996). In Brazil, it is widely distributed in all regions and phytogeographical domains (BFG 2018). In Pernambuco, it has been recorded in both the Atlantic Forest and Caatinga domains, occurring in semideciduous seasonal forests, ombrophilous forests, mixed ombrophilous forests, *caatinga*, and anthropic areas. It is one of the most widely distributed species in the MPSP, occurring in both better-preserved areas, abandoned fields, and sometimes as an invasive species in planted fields. It occurs in clayey and rocky soils, at elevations generally below 600 m.

Among the *Ipomoea* species of the MPSP, *I. nil* can be easily recognized by having leaf blade 3-lobed, lanceolate to oval sepals, equal in size with a caudate apex, thickly hirsute, and by a blue corolla with a white faucal area. Flowering in April and June and fruiting in June.

11. *Ipomoea piurensis* O'Donell, Lilloa 26: 382-384, t. 13, f. 1. 1953. Fig. 4j-n

Vine, latex absent, cylindrical branches, sometimes striated, mature glabrous, young pubescent. Leaves simple; petiole 2–8.5 cm long, canaliculate, glabrous, sometimes with conical projections; leaf blade entire, 2.8–9 × 2–8 cm, cordate, base cordate, apex acute to obtuse, margin entire, sometimes 1–4 dentate, chartaceous, glabrous on both faces, venation actinodromous, perfect, reticulate suprabasal. Dichasium up to 9 flowers; peduncle 1–5.5 cm long, glabrous; pedicel 0.3–0.7 cm long; bracteoles 1.5–3 × 1.8–2.4 mm, deltoid; unequal sepals, external 0.5–0.9 × 0.3–0.6 cm, oval, base rounded, apex acute, glabrous, without subapical rostrum, rugose, without crests, without nectary, internal 0.6–1 × 0.4 –0.7 cm, oval to elliptic, base oval, apex acute to obtuse, glabrous; corolla 2.2–3 cm long, infundibuliform, pinkish, glabrous, tube 1.3–1.6 cm long, lobes 0.8–1.4 cm long; stamens included, filaments 0.5–1.1 cm long, tomentose base, anthers 3–4 × 1–1.5 mm, elliptic, lanceolate; ovary ovoid, glabrous, 2-locular. Capsule 0.8 –1.1 × 0.8–1.2 cm, cylindrical, calyx persistent, non-accrescent, persistent style ca. 7 mm long; seeds 6–7 × 4–5 mm, triangular, smooth, lanuginose.
Examined material: Estação Experimental IPA, Pimenteira, 17.VI.2011, fl., *C.S. Morais Júnior 1*; Parque Estadual Mata da Pimenteira, 30.V.2012, fl. and fr., *D.R.M. Caldas 62*; 15.IV.2014, fl., *S.S. Matos 516*; 9.VI.2016, fl., *E.B. Sá 1*; 9.VI.2016, fr., *T.F. Silva*

2; 19.IV.2017, fl., *R.S. Costa 31*; 25.IV.2017, fl., *R.S. Costa 40*.

Distributed in South American, in Brazil, Colombia, Ecuador, Guyana, Peru, and Venezuela (Austin & Huaman 1996). In Brazil, it has been recorded in the Northern and Northeastern regions, in the Amazon, Caatinga, and Atlantic Forest domains (BFG 2018). It has been cited for caatinga, ombrophilous forest, and restinga vegetation as well as anthropized environments (BFG 2018), with a wide distribution in Pernambuco state. In the MPSP, it was only found along the edges of vernal ponds growing on sandy-clayey soils.

Ipomoea piurensis is principally characterized by the cordate leaf blade with entire or sometimes 1–4-dentate margin and rugose external sepals. Flowering between April and June and fruiting between May and June.

12. *Ipomoea rosea* Choisy, Prodr. Syst. Nat. Reg. Veg., 9: 384. 1845. Fig. 5a-e

Vine, white latex, cylindrical branches, glabrous to glabrescent. Leaves composite; petiole 0.5–3.8 cm long, canaliculate, glabrous; leaf blade 3-foliolate, lateral folioles 0.5–2.8 × 0.2–0.8 cm, terminal 1.2–4.5 × 0.5–1.5 cm, elliptic to oval, base cuneate, apex acute, margin entire, membranaceous, glabrous on both sides, venation actinodromous, imperfect, marginal. Dichasium up to 5 flowers, peduncle 0.6–4 cm long, glabrous; pedicel 0.4–2 cm long; bracteoles 2–2.5 × 1–1.5 mm, deltoids; equal sepals, 0.4–0.7 × 0.2–0.4 cm, elliptic to oval, base truncated, apex rounded, margin non-ciliated, glabrous, subapical rostrum ca. 2 mm long, without crests, without nectary; corolla 6–8.5 cm long, infundibuliform, pinkish, glabrous, tube 3.5–3.5 cm long, lobes 2.5–3 cm long; stamens included, filaments 0.8–2.4 cm long, tomentose base, anthers 2.8–3 × 1 mm, elliptic, lanceolate; ovary ovoid, glabrous, 2-locular. Capsule 0.4–0.5 × 0.5–0.6 cm, cylindrical to widely elliptic, calyx persistent, non-accrescent, persistent style ca. 5 mm long; seeds 5–6 × 3–4 mm, triangular, smooth, pilose.

Examined material: Serra Branca, 30.III.2009, fl., *T.D.N. Silva 3*; 24.V.2011, fl. and fr., *E.L.E. Barros 1*; 13.VII.2011, fl. and fr., *A. Laurênio 3227*; 29.III.2012, fl., *L.R.B. Melo 1*; 14.VI.2012, fl., *A. Laurênio 3500*; 5.V.2014, fl., *A.C.L. Carvalho 7*; 5.V.2014, fl., *B. Ferreira 1*; Fazenda Saco, 9.IV.2011, fl., *W. Cordeiro 4b*; 9.IV.2017, fl., *R.S. Costa 21*; 11.IV.2017, fl., *R.S. Costa 16*; Pimenteira, VI.2011, fl. and fr., *T.G.C. Menezes 218*; topo da Serra Talhada, 2.VI.2016, fl., *D.F. Magalhães 2*; 25.IV.2017, fl., *R.S. Costa 43*.

Endemic species of the Northeastern region of Brazil, found in the Caatinga, Cerrado, and Atlantic Forest domains (BFG 2018). In Pernambuco state, it has been recorded exclusively in the semiarid region. Widely disseminated in the MPSP in several environments, especially in shrub-arboreal caatinga, on clayey-sandy soils or on rocks, at elevations between 500 and 800 m.

Ipomoea rosea can be readily recognized in the MPSP as the only species of the genus with leaves 3-foliolate and sepals with a subapical rostrum. Flowering between March and July and fruiting in June and July.

13. *Ipomoea tenera* Meisn., *Fl. bras.*, 7: 289. 1869. Fig. 5f-j

Vine, latex not seen, branches forrowed, glabrous. Leaves composite; petiole 1.3–6.4 cm long, furrowed, glabrous, sometimes with conical projections; leaf blade 5-foliolate, lateral folioles 1.2–3.8 × 0.1–0.3 cm, terminal 1.5–4.2 × 0.1–0.3 cm, linear, sometimes irregularly lobed, base narrowly cuneate, apex acute to narrowly acute, margin entire, sometimes ciliated, membranaceous, glabrous on both sides, venation palinactinodromous. Monochasium 1 flower; peduncle 0.5–2 cm long, glabrous; pedicel 0.4–0.8 cm long; bractoles 1.5–2 × 0.5–0.8 mm, lanceolate; unequal sepals, external 0.5–0.8 × 0.3–0.5 cm, oval, base truncated, apex acute to acuminate, glabrous, without subapical rostrum, longitudinal crests on external face, close to the base, without nectary, internal 0.4–0.6 × 0.3–0.5 cm, elliptic to lanceolate-oval, base truncated, apex acute to acuminate, glabrous; corolla 2–2.5 cm long, infundibuliform, purplish, glabrous, tube 1–1.5 cm long, lobes 0.8–1 cm long; stamens included, filaments 0.5–0.7 cm long, tomentose base, anthers 2–3 × 0.9–1 mm, elliptic, lanceolate; ovary ovoid, glabrous, 4-locular. Capsule 0.6–0.8 × 0.5–1 cm, widely elliptic, calyx persistent, non-accrescent, persistent style 4 mm. Seeds 4–5 × 4–5 mm, triangular, smooth, glabrous.

Examined material: Pimenteira, 29.III.2012, fl., *K.K.M. Silva 1*; 30.V.2012, fl., *D.R.M. Caldas 60*; 30.V.2012, fr., *W. Cordeiro 361*; 19.IV.2017, fl., *R.S. Costa 32*; 25.IV.2017, fl., *R.S. Costa 41*.

This species is found exclusively in Northeastern Brazil and restricted to the Caatinga domain (Austin & Huaman 1996; BFG 2018). In Pernambuco, it had been registered in the semiarid region in the municipalities of Petrolina and Santa Maria da Boa Vista. In the study area, it was

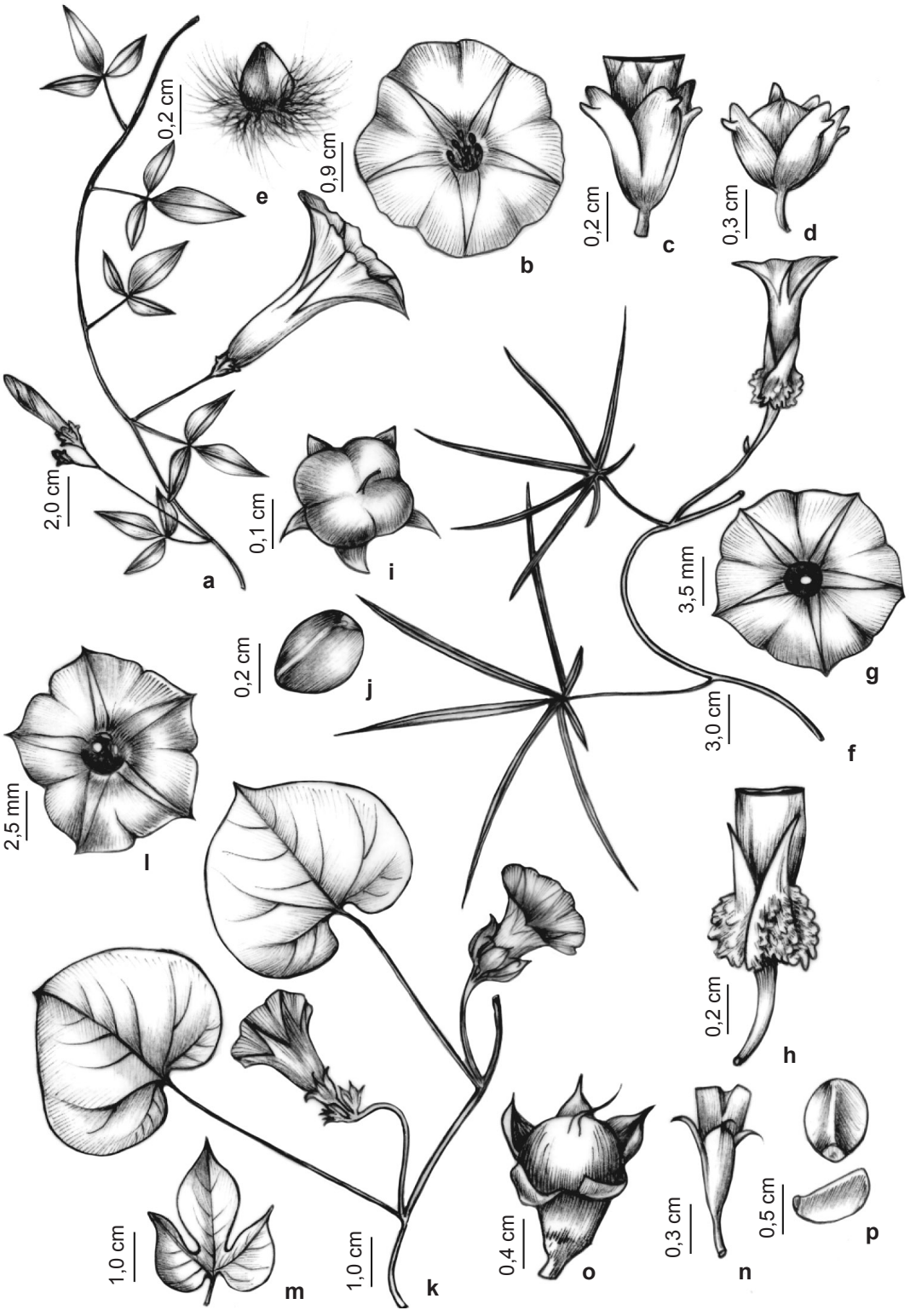

Figure 5 – a-e. *Ipomoea rosea* – a. flowered branch; b. corolla, frontal view; c. calyx, lateral view; d. fruit; e. seed, frontal view. f-j. *I. tenera* – f. flowered branch; g. corolla, frontal view; h. calyx, lateral view; i. fruit; j. seed, frontal view. k-p. *I. triloba* – k. flowered branch; l. corolla, frontal view; m. trilobate leaf; n. calyx, lateral view; o. fruit; p. seeds, frontal and lateral view. (a-e. *T.G.C. Menezes 218*; f-j. *W. Cordeiro 361*; k-p. *R.S. Costa 45*).

observed only in the flooded area of a vernal pool, on sandy-humus soils, at ca. 500 m. Its underground organs appear to remain submerged, then sprouting as the pond dries (when it reproduces). The aerial portion disappears during the dry season.

Ipomoea tenera is easily identified among other MPSP species by its 5-foliolate leaves, monochasial inflorescence, and sepals with crests. Flowering from March to May and fruiting in May.

14. *Ipomoea triloba* L., Sp. Pl. 1:161. 1753. Fig. 5k-p

Vine, white latex, furrowed branches, sometimes striated, hirsute, broad-based trichomes. Leaves simple; petiole 5.5–7.5 cm long, canaliculate, slightly hirsute; leaf blade entire to 3-lobed, 3–10 × 2.2–9.8 cm, cordate, base reniform to cordate, apex acuminate to acute, margin entire, sometimes ciliated, chartaceous, trichomes restricted to veins, venation actinodromous, imperfect, reticulate. Dichasium up to 5 flowers; peduncle 5.2–7.5 cm long, glabrous; pedicel 0.4–1 cm long; bracteoles 4–6 × 0.5–1 mm, narrowly triangular; unequal sepals, external 0.8–1.1 × 0.4–0.5 cm, rounded, base obtuse, apex acute, hirsute, without subapical rostrum, without crests, elliptical nectary, internal 0.9–1.2 × 0.4–0.6 cm, long elliptic, base rounded, apex acute, tomentose; corolla 1.5–2 cm long, infundibuliform, white, glabrous, tube 0.8–1.2 cm long, lobes 0.6–0.8 cm long; stamens included, filaments 0.6–0.8 cm long, tomentose base, anthers 1.5–2 × 1–1.3 mm, elliptic, lanceolate; ovary ovoid, hirsute, 2-locular. Capsule with hirsute apex 0.5–0.8 × 0.5–0.7 cm, cylindrical, calyx persistent, slightly accrescent 0.8–1.3 cm, persistent style ca. 3 mm long; seeds 5–7 × 6–7 mm; triangular, smooth, glabrous.

Examined material: Pimenteira, 19.V.2017, fl., *R.S. Costa 45*.

Additional examined material: BRASIL. PERNAMBUCO: Serra Talhada, Centro, 18.VI.2017, fl. and fr., *R.S. Costa 47*.

Occurs in the Americas from the United States to South America (Austin & Huaman 1996). In Brazil, it occurs in all states and Phytogeographic domains (BFG 2018). In Pernambuco, it has been disjunctly collected in the Atlantic Forest and Caatinga domains, with records only from the municipalities of Recife, Buíque, and Águas Belas. In the MPSP, it is found exclusively along the margins of vernal pools on sandy-humus soils, at elevations of ca. 500 m.

Ipomoea triloba is characterized as the only species with leaf blade ranging from cordate to 3-lobed, white corolla with stamens included, and capsule with hirsute apex. Flowering in May and June and fruiting in June.

Acknowledgements

We thank the Programa de Institucional de Bolsas de Iniciação Científica (PIBIC-UFRPE), for awarding a fellowship to the first author. We are also grateful to Regina Carvalho, for preparing the illustrations; and the anonymous reviewers, for the careful considerations in the earlier version of the manuscript.

References

Austin DF & Cavalcante P (1982) Convolvuláceas da Amazônia. Publicações Avulsas do Museu Goeldi 36: 3-134.

Austin DF & Huaman ZA (1996) Synopsis of *Ipomoea* (Convolvulaceae) in the Americas. Taxon 45: 3-38.

BFG - The Brazil Flora Group (2018) Brazilian Flora 2020: innovation and collaboration to meet Target 1 of the Global Strategy for Plant Conservation (GSPC). Rodriguésia 69: 1513-1527.

Buril MT & Alves M (2011) Flora da Usina São José, Igarassu, Pernambuco: Convolvulaceae. Rodriguésia 62: 93-105.

Buril MT, Delgado G, Barbosa MRV & Alves M (2013) Convolvulaceae da Região do Cariri Paraibano. Revista Nordestina de Biologia 21: 3-26.

Chaves DP (2009) Intoxicação experimental por *Ipomoea asarifolia* em ovinos: achados clínicos, laboratoriais e anatomopatológicos. Tese de Doutorado. Universidade Estadual Paulista, São Paulo. 82p.

Delgado-Júnior GC, Buril MT & Alves M (2014) Convolvulaceae do Parque Nacional do Catimbau, Pernambuco, Brasil. Rodriguésia 65: 261-278.

Ferreira PPA & Miotto STS (2009) Sinopse das espécies de *Ipomoea* L. (Convolvulaceae) ocorrentes no Rio Grande do Sul, Brasil. Revista Brasileira de Biociências 7: 440-453.

Matos SS, Melo AL & Santos-Silva J (2019) Clado Mimosoide (Leguminosae-Caesalpinioideae) no Parque Estadual Mata da Pimenteira, Semiárido de Pernambuco, Brasil. Rodriguésia 70: 1-17.

Meissner CF (1869) Convolvulaceae. *In*: Martius CFP & Eichler AG (eds.) *Flora brasiliensis*. Frid Fleischer, Lipsiae. Vol. 7, pp. 199–730, tab. 72-124.

Melo AL, Lima ALA, Menezes TGC, Cordeiro RS, Santos ES, Farias SGG, Silva FV, Caldas DRM, Matos SS, Melo R, Lima LR, Cordeiro WPFS, Gomes APS & Rodal MJN (2013) Flora Vascular Terrestre. *In*: Santos EM, Melo-Júnior M, Silva-Cavalcanti JS & Almeida GVL (2013) Parque

Estadual Mata da Pimenteira: riqueza natural e conservação da caatinga. Edufrpe, Recife. Pp. 83-103.

Moreira HJC & Bragança HBN (2011) Manual de identificação de plantas infestantes: hortifrúti, Horlandezan Belirdes Nippes Bragança. FMC Agricultural Products, São Paulo. Pp. 278 -322.

Mori AS, Silva LAM, Lisboa G & Coradin L (1989) Manual de manejo do herbário fanerogâmico. Ilhéus, Centro de Pesquisa do Cacau. 2a ed. Centro de Pesquisas do Cacau, Ilhéus. 104p.

Moura ALO & Morim MP (2015) Convolvulaceae em remanescentes de Floresta Ombrófila Densa, Rio de Janeiro, Brasil. Rodriguésia 66: 779-805.

Nepomuceno SC, Athiê-Souza SM & Buril MT (2016) Convolvulaceae da microrregião do Alto Capibaribe, PE, Brasil. Hoehnea 43: 371-386.

Santos FDS, Delgado-Junior GC, Báez M, Pedrosa-Harand A, Queiroz JA, Quirino ZGM, Machado IC & Buril MT (2019) *Ipomoea vespertilia* (Convolvulaceae), a new species revealed by pollinator observation. Brittonia 71: 190-195.

Silva TGF & Almeida AQ (2013) Climatologia e características geomorfológicas. *In*: Santos EM, Melo-Júnior M, Silva-Cavalcanti JS & Almeida GVL (eds.) Parque Estadual Mata da Pimenteira: Riqueza Natural e Conservação da Caatinga. Edufrpe, Recife. Pp. 29-36.

Simão-Bianchini R (1998) *Ipomoea* L. (Convolvulaceae) no sudeste do Brasil. Tese de Doutorado. Universidade de São Paulo, São Paulo. 476p.

Simpson MG (2006) Plant systematic: plant morphology. Elsevier Academic Press,Burlington. Pp. 347-403.

Staples GW (2012) Convolvulaceae Unlimited. Available at <http://convolvulaceae.myspecies.info/>. Access on 12 December 2019.

Stefanovic S, Austin DF & Olmstead RG (2003) Classification of Convolvulaceae: a phylogenetic approach. Systematic Botany 28: 791-806.

Wood JRI, Muñoz-Rodríguez P, Degen R & Scotland RW (2017a) New species of *Ipomoea* (Convolvulaceae) from South America. PhytoKeys 88: 1-38.

Wood JRI, Vasconcelos LV, Simão Bianchini R, Scotland RW (2017b) New species of *Ipomoea* (Convolvulaceae) from Bahia. Kew Bulletin 72: 1-20

Area Editor: Dra. Tatiana Carrijo
Received in March 31, 2020. Accepted in August 29, 2020.