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Convolvulaceae on the coast of São Paulo State, Brazil

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Abstract: The state of São Paulo has the largest remnants of Atlantic Forest in the country, despite there being few studies on the family in the biome. Thus, this taxonomic survey increases knowledge of this family in the region, which is affected by deforestation. Samplings were performed in different municipalities along the coast of São Paulo on 19/02/2022 and 05/02/2023 and deposited in herbaria. A total of 36 species were recorded in 7 genera from samplings, herbarium reviews and surveys on virtual platforms. The results includes an identification key, description, photographic plates and comments for the taxa.

Key words: *Ipomoea*, ruderal, taxonomy, vine, coastal vegetation.

Introduction

Convolvulaceae is a monophyletic group comprising around 1900 species grouped into approximately 60 genera, with a cosmopolitan distribution with greater diversity in the tropics (Stefanovic *et al*. 2002; Judd *et al*. 2009). In Brazil, it occurs in all biomes, and 24 genera and almost 430 species have been recognised (Simão-Bianchini *et al*. 2020; Flora e Funga do Brazil 2024).

They are herbaceous or woody vines without tendrils, herbs and subshrubs but rarely shrubs or holoparasites (*Cuscuta* L.). It has alternate phyllotaxis, with leaves that are usually simple with an entire margin, sometimes lobed or compound, without stipules, or aphyllous. The flowers are dichlamydeous, pentamerous, dialysepalous, gamopetalous, campanulate, infundibuliform, salverform or rotate, with characteristic midpetaline areas, epipetalous stamens, a superior ovary and dry fruit of the valve or indehiscent capsule type, and the pericarp is rarely fresh (Simão-Bianchini & Pirani 1997; Austin *et al*. 2012).

The coast of the state of São Paulo has the largest remnants of preserved Atlantic Forest in the country, mainly in the Ribeira Valley, where more than half of its territory is native vegetation, and on the south coast, where the entire territory is protected in conservation units (Braga 1999; Sztutman & Rodrigues 2000).

Although the Atlantic Forest is the second most representative biome in terms of number of species for the family, there are still few studies that focus on it or its environmental and ecological importance (Simão-Bianchini 2009). The main studies comprise taxonomic surveys for local flora, some conservation units and some unprotected forest fragments (*e.g*., Simão-Bianchini 2005; Buril & Alves 2011; Moura & Morim 2015; Simão-Bianchini *et al*. 2016; Santos *et al*. 2017; Silva *et al*. 2018). Thus, the objective of this

work was to carry out a taxonomic survey of Convolvulaceae species on the coast of the state of São Paulo, contributing to the knowledge of the family's diversity. Identification keys, morphological descriptions, photographic plates, distribution maps, habitat, and flowering and fruiting information for the taxa are provided.

Methodology

The study was based on a bibliographical review, morphological study, consultation of herbaria and virtual platforms, and collections and observations in the field. In this work, the coast of the state of São Paulo encompasses 36 municipalities, in accordance with the State Coastal Management Plan. Collections were carried out between February 2022 and May 2023 in 19 of the 36 municipalities on the coast of the state of São Paulo.

Information obtained in person from collections deposited in the herbaria BOTU, ESA, HUFABC, HUSC, IAC, PMSP, R, RB, SP, SPF, SPSF, UEC and virtually via the Specieslink, Jstor and Flora do Brazil platforms was also aggregated, obtaining the GDC, GOET, HCF, HRCB, K, MBM, MO, NY, P, S, SJRP and US herbaria (acronyms according to Thiers 2009), for viewing the type materials and obtaining collection data after confirming the species and whether identification was completed by another specialist in the family (Daniel F. Austin, Bernard Verdcourt, Carlos Alberto O'Donell). Additional materials from other locations were also reviewed and will be available as an attachment.

The botanical samples were photographed in the field and herbarised using procedures typical for plant taxonomy (Fidalgo & Bononi 1984; Mori *et al*. 1989; Davies *et al*. 2023) and taxonomic studies of phanerogams. They were included in the Herbarium SP collection.

Identification was carried out with the aid of a specific bibliography (Yuncker 1932; Ooststroom 1934; O'Donell 1941; Austin & Huázman 1996; Simão-Bianchini 1998; Pastore & Simão-Bianchini 2017) in comparison with samples previously identified by experts and material types. The terminology used followed Radford *et al*. (1974), Payne (1978), and Harris & Harris (1994).

Results

A total of 36 species and 7 genera of Convolvulaceae were recorded on the coast of the state of São Paulo, with *Ipomoea* (20 species) being the most representative. Most species are

widely distributed in the state of São Paulo, but some, such as *Cuscuta obtusiflora* Kunth, have a distribution restricted to small areas.

Taxonomic treatment

Key for the genera of Convolvulaceae on the coast of São Paulo State

1. Holoparasitic plants, yellow to orange branches, reduced leaves..... ***Cuscuta***
1. Autotrophic plants, green, brown to vinaceous branches, well-developed leaves..... 2
2. Ascending or prostrate herbs, rare subshrubs; two styles free or forked near the base... 3
3. Style branches of different sizes, each one with a globose stigma..... ***Dichondra***

3. Style branches equal in size, each branch with two cylindrical and elongated stigmas..... ***Evolvulus***

2. Herbaceous or woody climbers, prostrate, decumbent or erect subshrubs; single style.. 4
4. Indument formed by trifid trichomes; blue to violet flowers; flattened ellipsoid stigmas; 8-valvate capsule..... ***Jacquemontia***
4. Indument formed by simple or stellate trichomes (more than 3 branches), rare bifid; lilac, pink, purple or white flowers; globose stigmas; 4-valved capsule..... 5
5. Capsule with operculum opening; angled peduncle..... ***Operculina***
5. Dehiscent capsule without operculum; cylindrical peduncle..... 6
6. Leaves compound, digitate, 5-11 leafleted or deeply 5-7 lobed; anthers twisted after anthesis; ovary tetralocular, one ovule per locule..... ***Distimake***
6. Leaves simple, entire to sub trilobate, rarely palmatisect (see I. cairica); anthers straight; ovary bilocular, two ovules per locule..... ***Ipomoea***

Cuscuta L., Sp. Pl. 1: 124. 1753.

Cuscuta has around 200 species and an almost cosmopolitan distribution but with the centre of diversity in the Americas (Yuncker 1932; Silva et al. 2021). Brazil has 27 registered species, 8 of which are endemic. In the country, the biome with the most species is the Cerrado, followed by the Atlantic Forest, Caatinga, Pampa and Amazon, while the Pantanal has no records of this genus (Ferreira 2024).

Key to the species

1. Smooth branches; ovate bracts; calyx with non-overlapping lobes, obtuse apex, and the same size in relation to the corolla tube..... ***C. obtusiflora***
1. Papillose to smooth branches; elliptical bracts; calyx with slightly overlapping lobes, rounded apex, and shorter than the corolla tube..... ***C. racemosa***

Cuscuta obtusiflora Kunth, Nov. Gen. Sp. 3: 122. 1818.

Fig. 1a-b; 2a.

Branches smooth. Inflorescence in dense glomerulus, 5–18 subsessile flowers; pedicels absent; bracts 1 at the base of clusters and 0–1 at the base of flowers, elliptical, 0.6–1.5 × 0.2–1.3 mm, apex obtuse, glands present. Flowers 2–2.5 mm long; calyx yellow to greenish, shallowly cupulate, glands present, almost equal as the corolla tube, lobes not overlapped, ovate, margins entire, apex obtuse reflexive on fruit. Corolla campanulate, 1–1.7 mm, white or cream, ovate lobes, reflexes, acute apex. Stamens exserted, shorter than corolla lobes. Infrastaminal scales oblong, fimbriated at the apex; stigmas globose. Capsules indehiscent, depressed-globose. Seeds globose.

Examined material: Ubatuba, 21.VIII.2016, fl., *E.H.P. Barretto & R.J.F. Garcia 892* (PMSP); 21.XI.2016, fl., *S. Braga 42* (PMSP); 7.II.1996, fl. H.F. *Leitão Filho 34318* (SP, UEC).

Additional material: São Paulo, 25.III.1932, fl., *A. Gehrt* (SP 29305); IV.1985, fl., *L. Rossi 586* (SP, SPF, UEC).

It occurs sparsely through South America, in Colombia, Ecuador, Peru, Paraguay, north Argentina, south and southeast Brazil and Mato Grosso state. In São Paulo state, it only occurs in the Atlantic Forest in the Praia da Fazenda region in the municipality of Ubatuba. It can be found in shrubby fields and along forest edges.

Yuncker (1932) recognises three varieties, of which *C. obtusiflora* var. *obtusiflora* is the only one that occurs in the studied area (Fig. 2).

The variety *C. obtusiflora* var. *glandular* Engelm was once considered *Cuscuta glandulosa* (Engelm.). It is small, distinguished by its more glandular flowers, with sepals and broad, ovate petals. The infrastaminal scales are deeply fimbriated and exserted. Its distribution is restricted to Mexico, the United States and some Caribbean islands. The variety *C. obtusiflora* var. *latiloba* Engelm. is still questioned, as it is known only by type, from Burma, and described as immature material (Yuncker 1932).

According to Ferreira *et al*. (2021), *C. obtusiflora* morphologically resembles *C. incurvata*, as they have non-overlapping calyx lobes. The latter does not occur in São Paulo, but they are differentiated mainly by a corolla with an acute apex and oblong infrastaminal scales in *C. obtusiflora* (Fig. 1) and a corolla with an obtuse apex and obovate infrastaminal scales in *C. incurvata*.

Fig. 1: a-b *C. obtusiflora*. a- open flower, focusing on infrastaminal scales; b- Fruit (*Leitão Filho 303896*). Scale bar = 1.5mm.

Cuscuta racemosa Mart., in Spix & Martius, Reise Bras. 1: 286. 1823.

Fig. 2b-d.

Smooth to papillose branches. Compound dichasium, 6-9 flowers; pedicels 0.3–1 mm long; bracts 1.9–1.7mm, elliptical to oblanceolate, apex obtuse, margin entire. Flowers 2–3.5mm,

pentamerous; calyx green much smaller than corolla tube, 0.9–1.7mm, lobes equal, not overlapped at base, ovate, papillose, apex rounded, striated; corolla tubular-campanulate, lobes acuminate, straight or reflexed, apex inflexed, margin entire, papillate, cream, yellow or reddish. Stamens exerted longer than the corolla tube. Infrastaminal scales ovate, 2mm long, apex round. Stigma depressed-globose. Fruit indehiscent, globose to ovoid, 1.5 × 1.2 mm.

Examined material: Barra do Chapéu, 09.III.2019, fl., *V.C. Souza & G.D. Colleetta 42513* (ESA); Peruíbe, 08.III.2017, fl., *L.O. Moreira & T.R. Souza 35* (HUSC); Santos, 21.X.2014, fl., *P. Sampaio & G.S. Jesus 932* (HUSC); 26.III.2023, fl. e fr., *C.P. Perito 54* (SP); São Vicente, 27.IV.1947, fl., A.B. Joly (SPF 17836).

Additional material: Assis, 17.I.1996, fl., *G.A.D.C. Franco 1352* (SPSF); Bom Sucesso de Itararé, 27.V.1995, fl., *P.H. Miyagi 568* (SP, ESA, UEC); Campinas, 15.I.2003, fl., *L.C. Bernacci 3366* (IAC); 19.III.1946, fl., *A.R. Campos* (SPSF 2497); Cotia, VI.1930, fl., *A. Gehrt* (SP 25323); Itapeva, 13.V.2010, fl., *J.B. Baitello et al. 2413* (SPSF); 23.II.2010, fl., *N.O. Costa et al. 2* (SPSF); Itararé, 10.III.2015, fl., *F.A.R.D.P. Arzolla et al. 1764* (SPSF); 19.X.2008, fl. *A.L.R. Silva 11* (ESA); Monte Alegre do Sul, 18.XII.1942, fl., *M. Kuhlmann 159* (SP); São Carlos, 04.VIII.1888, fl., *A. Loefgren CGG824* (SP); São José do Barreiro, 30.IV.1926, fl., *W. Hoehne & A. Gehrt* (SP 17644); São Paulo, 05.V.1956, *W. Hoehne* (SPF 15641); 09.II.2018, fl., *A. Maruyama & L. Cicco 1003* (SPSF); 23.III.1907, fl., *A. Usteri* (SP 10976). Vinhedo, 01.IX.2002, fl., *J.R. Guillaumon* (SPSF *30326).*

It is endemic to Brazil and quite common in the South and Southeast Regions, rare in the Northeast and Central-West Regions. It can be found in bushy and clean fields, Cerrado, soybean crops, forest edges and anthropic areas (Fig. 2).

Yuncker (1932) recognizes three varieties, *C. racemosa* var. *miniata* (Mart.) Engelm., differentiated by papillose branches and overlapping lobes, while *C. racemosa* var. *racemosa* and *C. racemosa* var. *nuda* Engelm. are distinguished by subtle differences in the fruits. The materials examined did not have fruits so we did not consider the varieties for this study.

Dichondra J.R. Forst. & G. Forst., Char. Gen. Pl. (ed.2) 39-40, pl. 20. 1776.

Dichondra sericea Sw., Prodr. 54. 1788.

Fig. 2e-f.

Reptant weed, branches 2 mm, sericeous to glabrescent, whitish to golden adpressed trichomes. Leaves reniform or suborbicular 1–1.8 × 1.2–2.4 cm, abaxial surface pubescent, adaxial glabrescent; petioles 3–7 cm longs, sericeous, apex rounded or shallowly emarginate. Solitary flowers, rarely grouped up to 3 flowers, peduncle 1–6 cm, sericeous to glabrescent, pedicels 12–22 cm, sericeous. Sepals equal in length to the size of the corolla, outer slightly larger in width 0.4–0.6 × 0.4 cm, oblanceolate, apex rounded, inner 0.4–0.5 × 0.2–0.4 cm, apex rounded to truncated, sericeous. Corolla rotate-infundibuliform, white, lanceolate lobes, reflexing at the apex, persistent in the fruit. Stamens equal in length, pale yellow to white. Ovary densely pilose, globoid. Fruit Schizocarpic.

Examined material: São Sebastião, 06.01.2023, *C.P. Perito* 29 (SP).

Additional material: Cunha, 05.I.1876, fl., *A.F.M. Glaziou 8187 b* (R); 23.III.1999, fl., *A. Loefgren & G. Edwall CGG2401* (SP); Itararé, 22.V.1993, fl., *V.C. Souza et al. 3976* (ESA); São José do Barreiro, 06.V.1997, fl., *R. Simão-Bianchini 1126* (S*P, SPF).*

Dichondra sericea occurs from the southern United States to Panama and in Argentina, Bolivia, Chile, Paraguay and in the south and southeast regions of Brazil. In São Paulo state, it is frequent in the interior; this work presents the first registration of the species on the coast of São Paulo. It can be found in bushy and clean fields, Cerrado, forest edges and anthropic areas (Fig. 2).

Dichondra species present a subtle delimitation due to their phenotypic plasticity, which has been observed in several species of the genus. In relation to the size of the internodes, petioles and peduncles, the size of the leaves and apex of the sepals, the records of the genus in herbaria present problems for identification. *Dichondra sericea* morphologically resembles *D. macrocalyx* Meisn. and *D. parvifolia* Meisn. but can be differentiated from *D. macrocalyx* because it has a calyx larger or almost larger than twice the size of the corolla. This does not occur in *D. sericea* and *D. parvifolia*, which have a corolla and calyx of almost the same size. The apex of the sepals differs between these species, with *D. sericea* having a rounded or obtuse apex and *D. parvifolia* having a short, pointed apex (Tharp & Johnston 1961).

In some herbaria, *D. sericea* is confused with *D. repens* J.R.Forst. & G.Forst., but this species does not occur in Brazil. The two can be easily separated by the density of the indument, contrast of leaf faces and apex of the sepals. In *D. repens*, the indument is glabrescent to short sericeous, the leaf faces are not strongly contrasted. and the sepals are

elliptical to oblong or slightly obovate with a short, pointed apex. In *D. sericea*, the indument is sericeous or densely sericeous, the leaf faces are strongly contrasted, and the sepals are oblong with a rounded apex.

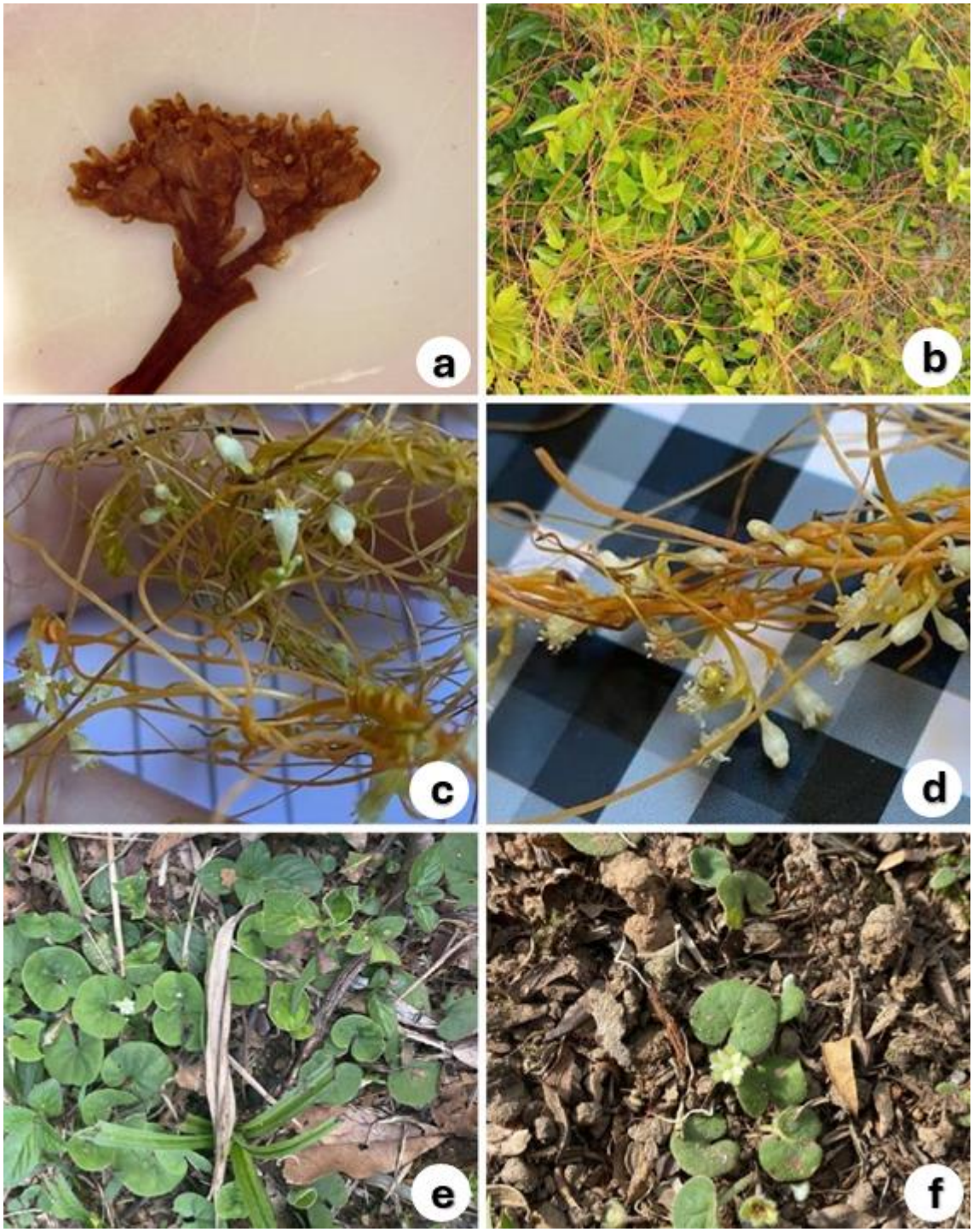

Fig. 2: a. *Cuscuta obtusiflora*, fruits *(Leitão Filho 34318*). b-d. *C. racemosa*, b. Holoparasitic habit; c. flowers; d. flowers and fruits. e-f. *Dichondra sericea*, e. creeping habit; f. flower. (Photos Simão-Bianchini & Paixão).

Distimake Raf., Fl. Tellur. 4: 82. 1836[1838].

Distimake contains around 45 species, with a pantropical distribution. There are 18 species in Brazil, 9 of which are endemic. The biome with the highest concentration of species is the Cerrado, followed by the Caatinga, Amazon, Atlantic Forest, Pampa and Pantanal (Petrongari & Simões 2024).

Key to the species

1. Leaves compounds digitate, 5-leafleted ..... ***D. macrocalyx***
1. Leaves simple, deeply 5-7 lobed
2. Corolla white with yellow tube; hirsute to glabrous plant; leaves with entire to sinuous margins ..... ***D. dissectus* var. *edentatus***
2. Corolla totally yellow; glabrous plant; leaves with entire margins ..... ***D. tuberosus***

Distimake dissectus (Jacq.) A.R. Simões & Staples, **var. *edentatus*** (Meisn.) Petrongari & Sim.-Bianch., Phytotaxa 340(3): 297. 2018.

Figs 3a-c.

Herbaceous climber, woody at base, 1–4 mm diam., green to vinaceous, erect trichomes. Leaves simple, broad ovate, 5-9 lobed 6–12 × 9–12 cm, margin entire to sinuous, base chordate, apex acuminate, glabrescent, sericeous or sparsely hirsute on both sides; petiole 2–8 cm, glabrous or glabrescent. Dichasium of 2-6 flowers; peduncle 1,7–4.3 cm, hirsute or glabrous; pedicel 1.5– cm, hirsute or glabrous; bracteoles lanceolate, caducous. Unequal sepals, outer larger, ovate, 15–23 × 6–10 mm, apex rounded, glabrous or hirsute, internal ovate, 14–18 × 6–7 mm, apex acuminate, glabrous, added to the fruit; Corolla Infundibuliform limb campanulate, white with yellow tube, midpetaline area glabrous. Capsule egg-shaped, crescent sepals. Seed glabrous.

Examined material: Cananéia, 26.03.2005, *A.C.C. Destefani et al.* 138 (SP); Eldorado, 26.12.2002, *R. Simão-Bianchini* 1531 (SP); *ibid*., 02.03.2023, *C.P. Perito* 33 (SP); Guarujá, 05.1962, *M.A.B. Andrade s.n.* (SPF); Iguape, 29.01.1996, *M. Groppo Jr.* 92 (SPF); Iporanga, 28.02.2013, *L B. Benitez* 26 (SP); Itanhaém, 05.03.2015, *A.M. Magalhães & L.G.S. Amorim* 85 (SP); *ibid*., 05.04.1920, *A. Amaral & Domingues* 3885 (SP); *ibid*., 12.04.1995, *V.C. Souza et al.* 11050 (SP, SPF); *ibid*., 24.01.1997, *G.O. Joaquim Jr.* 111 (RB); Jacupiranga, 02.03.2023, *C.P. Perito* 34 (SP); Miracatu, 20.04.1994, *J.R. Pirani & R.J.F. Garcia* 3160 (SP, SPF); Pariquera-Açu, 12.02.1995, *H.F. Leitão Filho et al.* 32804 (SP); *ibid*., 19.04.1995, *N.M. Ivanauskas* 151 (SP); Pedro de Toledo, 06.03.2023, *C.P. Perito* 50 (SP); *ibid*., 06.03.2023, C.P. Perito 51 (SP); Santos, 16.04.2007, *R.J.F. Garcia* 3023 (SP); *ibid*., 19.03.2019, *J.P.A.D. Nina & M.D. Vita* 26 (HUSC); São Vicente,

04.12.2003, *C. Moura & F.A.R.D.P. Arzolla* 56 (SPSF); São Sebastião, 20.03.1892, *G. Edwall CGC* 1737 (SP).

Distimake dissectus is widely distributed, native to region from the southern United States to Argentina, and has been introduced in Africa, the Middle East, India, China, Indonesia and Australia. In Brazil, there are collections in all regions, but they are less frequent in the north. In São Paulo, it is present in the Cerrado and Atlantic Forest in clean and bushy fields, anthropised regions, forest edges and restinga.

Distimake dissectus has two varieties, *D. dissectus* var. *dissectus* and *D. dissectus* var. *edentatus* (Meisn.) Petrongari & Sim.-Bianch. The *dissectus* variety is differentiated by the sinuous-toothed leaf margin and white flowers with a purple tube and is found in Central America. In contrast, the *edentatus* variety has an entire sinuous margin with white flowers and a yellow tube and is found most frequently in South America (Fig. 3).

Distimake macrocalyx (Ruiz & Pav.) A.R. Simões & Staples, Bot. J. Linn. Soc. 183(4): 574. 2017.

Figs 3d-f.

Herbaceous climber, woody at base, 2–4 mm, glabrous, rare simple trichomes near the petiole, latex absent. Leaves compound, 5-palmatifid 1.2–8 × 0.6–3.2 cm, elliptical to narrow oblong, obtuse base, entire to sinuous margin, acute apex, mucronate up to 4 mm, rare glabrous adaxial surface with sparse simple trichomes, glabrous abaxial surface; petiole 1–12 cm, glabrous. Dichasium of 2-9 flowers; peduncle 3–12 cm, glabrous; bracteoles lanceolate, 3 mm long, apex acute, glabrous, generally caducous; pedicels 0.5–3 cm, glabrous. Sepals subequal, outer 15–25×5–8 mm lanceolate, oblong or ovate, glabrous; inner sepals 2 × 1.2 cm, oblong to elliptical, margin hyaline, apex rounded to acute, glabrous. Corolla 4.5–7cm compr., campanulate-infundibuliform, white, glabrous, yellow interior. Capsule elliptical, 1 cm long, glabrous. Black seeds, 3 per capsule, elliptical, pubescent, trichomes simple and strigose.

Examined material: Iporanga, 30.I.2013, fl., *L.P. Benitez 10* (SP); Ubatuba, 17.IV.1979, fl., *P.P. Jouvin 467* (RB); 01.V.2023, fl., *C.P. Perito 65* (SP).

Additional material: Cabreuva, 16.III.1994, fl., *K.D. Barreto 2171* (RB); Campinas, 07.V.1982, fl., *C S. Takatori 13633* (SP); Campos do Jordão, IV-1937, fl., *L. Lanstyack* (RB 264605); Cunha, 23.III.2018, fl., *A. Maruyama & L. Cicco 1061* (SPSF). Itapetininga,

28.IV.1998, fl., *L.C. Souza 332* (SPSF); Paulo de Faria, 20.V.1994, fl., *V. Stranghetti 345* (SPSF); Pedregulho, 18.V.1995, fl., *J.R. Guillaumon & E.E.Macedo 155* (SPSF); Piracicaba, 02.VI.1993, fl., *K.D. Barreto et al.* (RB 1215027); Porto Ferreira, 18.XI.1997, fl., *E.P. Dickfeldt 51* (RB); Rio Claro, 19.IV.2001, fl., *R.G. Udulutsch 275* (RB); São José do Barreiro, 28.IV.1983, fl., *G. Martinelli 9274* (RB); São José do Rio Preto, 16.IV.1992, fl., *G. Hashimoto* (SP 339531); São Paulo, 26.V.1993, fl. e fr., *R.J.F. Garcia et al. 353* (PMSP); Sorocaba, 02.I.1954, fl., *A.S. Grotta* (SPF 15201); Vinhedo, 24.III.2002, fl., *J.R. Guillaumon* (SPSF 29939); 05.IV.2003, fl., *J.R. Guillaumon* (SPSF 32249).

Distimake macrocalyx occurs throughout South America, except in Chile, southern Argentina and Uruguay. In Brazil, it is well represented in all regions, with less frequency in the south. In São Paulo it is more frequent in the countryside; on the coast, it is only found in the municipalities of Iporanga and Ubatuba.

It is morphologically similar to *Distimake dissectus* and is distinguished by its leaves. *D. dissectus* has deeply lobed leaves, and *D. macrocalyx* has composed leaves (Fig. 3).

Distimake tuberosus (L.) A.R. Simões & Staples, Bot. J. Linn. Soc. 183(4): 577. 2017.

Figs 3g-h.

Twining herb, woody at base, smooth branches, glabrous. Leaves 5-7 lobed, broad ovate 08–13 × 10–18cm, chordate base, acuminate apex, glabrous on both sides; petiole 10–14 cm, glabrous. Monochasium cyme with more than 3 flowers; peduncle 10–15 cm long, glabrous; pedicel 2–4 cm long, glabrous; bracteoles 0.2–0.6 cm, caducous, lanceolate glabrous. Sepals subequal, outer 1–3.8 × 1.4–2 cm, ovate, glabrous, base truncated, apex rounded to mucronate, inner 1–3.2 × 0.6–1.4 cm, elliptical, base truncated, apex rounded to mucronate, glabrous, crescent in fruit; Corolla, 3.5–6 cm, campanulate-infundibuliform, yellow, glabrous. Capsule ca. 0.6 cm compr., globose. Seeds pubescents.

Examined material: Cananéia, 30.04.2012, *M. G. Caxambu et al.* 4151 (HCF).

Additional material: Campinas, 06.VIII.2003, fl., *F. A. L. Moraes* (IAC 43300, RB 1407478); Iacanga, 01.IX.1985, fl., *G. Hashimoto* (SP 339508); Piracicaba, 05.II.1993, fl., *K. D. barreto 24* (RB); 29.I.2015, fl., *F. S. Petrongari 20* (SP); 05.V.2017, fl., *F. S. Petrongari 45-A* (SP); São Paulo, 12.IV.1963, fl., *A. S. Grotta 287* (SPF); 12.IV.1967, fl., *S. Panizza* (SPF *17731*); V-2002, fl., *G. M. P. Ferreira 260* (PMSP).

Distimake tuberosus is native to Mexico and Central America and is cultivated in several countries around the world (Austin 1998). Introduced in other countries, it can be found throughout the Americas, some countries in Africa, Pakistan, India and southwest Asia. In Brazil, it occurs in the Atlantic Forest and Cerrado biomes in southeast and northern Paraná. In São Paulo, it can be found in clearings, forest edges and riparian forests, always cultivated or as an invasive species, according to Moraes (2021) (Fig. 3).

Fig. 3: a-c. *Distimake dissectus*, a. flower; b. simple, deeply lobed leaf with sinuous-toothed margin; c. fruits. d-f. *D. macrocalyx*, d. climber habit; e. flower; f. composed leaves. g-h. *D.tuberosus*, g. climber habit; h. flower focusing on the calyx. (Photos Simão-Bianchini & Paixão).

Evolvulus L., Sp. Pl. (ed.2) 1: 391. 1762.

Evolvulus is comprised of about 100 species, the majority of which are on the New World (Ooststroom 1934). There are 72 species in Brazil, 49 of which are endemic. The biome with the highest concentration of species of this genus is the Cerrado, followed by the Caatinga, Atlantic Forest, Amazon, Pampa and Pantanal (Simão-Bianchini & Silva 2024).

Key to the species

1. Spiciform inflorescence; corolla blue, salverform ……...…..... ***E. glomeratus***
1. Uniflorous inflorescences; corolla white, rotated ..... ***E. pusillus***

Evolvulus glomeratus Nees & Mart., Nov. Act. Nat. Cur. 11(1): 81. 1823.

Figs. 4a-c.

Subshrub, 17–30 cm, erect to semi-prostrate branches, villous to glabrescent. Leaves 4–18 × 3–12 mm, elliptical to oblong, base acute, rounded or attenuated, apex acute to obtuse, sericeous to glabrescent; petiole 2mm or absent, villous. Inflorescence spiciform, terminal, which may be axillary near the apex; peduncle and pedicel absent; Bracteoles leaf-like at the base of the cob, 0.7–1 cm compr., narrow-ovate. Sepals 6 × 1.7 mm, linear to lanceolate, base cuneate, apex long acuminate, sericeous. Corolla 0.7–1.2 cm diam., hipocrateriform, limb entire or slightly lobed, blue, midpetaline area glabrescent. Capsule globose or sub-globose.

Examined material: São Sebastião, 05.I.2023, fl., *C.P. Perito 30* (SP); Ubatuba, 30.IV.2023, fl., *C.P. Perito 55 e 56* (SP).

Additional material: Araraquara, 07.XII.1888, fl., *A. Loefgren CGG1143* (SP); 10.XII.2004, fl., *F. B. Santos* (ESA 51339); Brotas, 27.I.2007, fl., *S. A. Nicolau 3153* (SP); Campinas, 15.VIII.1968, fl., *H.F. Leitão Filho 507* (IAC); Piracicaba, 12.I.1993, fl., *V.C. Souza 2139* (ESA, HUSC, SP); 17.IV.2004, fl., *J. R. Manesco* (ESA 50960); 28.XI.2004, fl., *G. Yamasaki* (ESA 50937); 26.IX.2007, fl., *M. F. Whateley 2* (ESA); Rio Claro**,** 28.XII.2004, fl., *P. Y. C. Chang* (ESA 51443); São Paulo, 08.X.1986, fl., S. Honda 125 (SPF); 26.III.2010, fl., *V.C. Silva 157* (SP); Serra Negra, 23.VI.1993, fl., *C. Aranha 10029* (IAC, SP).

Evolvulus glomeratus is native to Argentina, Brazil, Bolivia, Guyana, French Guiana, Paraguay, Suriname and Venezuela but has been introduced in several countries due to its use as an ornamental crop. In Brazil, it can be found in all regions but occurs more frequently in the warmer areas of the northeast region. In São Paulo, all records for the species were made in anthropogenic areas, experimental stations or universities, and botanical gardens (Fig. 4).

Three subspecies are recognised in *E. glomeratus*, but only *E. glomeratus* Nees & Mart. subsp. *glomeratus* and *E. glomeratus* subsp. *grandiflorus* (Parodi) Ooststr. are present in São Paulo. *Evolvulus glomeratus* subsp. *obtusus* (Meisn). Ooststr. is only found only in Bahia and Rio de Janeiro. The subspecies present in the state can be differentiated by their inflorescence, in which the *glomeratus* subspecies is compact, forming glomerulus with 12–15 mm flowers, and the *grandiflorus* subspecies is pauciflorus at the apex of the branches, with 15–20 mm flowers.

Evolvulus pusillus Choisy, Mém. Soc. Phys. Genève 8:77. 1837.

Figs 4d-f.

Prostrate herb, 15–72 cm, woody base with many villous to glabrescent prostrate branches, rooting at the nodes. Leaves 3–11 × 2–7 mm, oblong, elliptical or orbicular, base rounded to subcordate, apex obtuse to truncated or slightly emarginate, abaxial surface villous, adaxial adpressed-pilose; petioles 0.3–1 mm or absent. Axillary cyme with 2 flowers or solitary; peduncle 1.4–3.2 mm, villous; pedicels 10–13mm long, trichomes erect; bracteoles linear, apex mucronate, villous. Sepals narrow-ovate to oblong 3–4 × 2–3 mm, apex acute, sparse-hairy. Corolla 7–11 mm, rotated, slightly lobed, white, midpetaline area sericeous. Capsule globose, 2 mm diam.

Examined material: Cananéia, 23.VIII.1979, fl. e fr., *A. Custódio Filho & S.F.C. Muniz 173* (SP); 25.X.1989, fl., *M.C.H. Mamede et al. 196* (SP); 06.IV.1982, fl., *S. Romaniuc Neto et al. 18* (SP); Guarujá, 29.II.1997, fl., *E.L.M. Catharino 2155* (SP); Itanhaém, 02.IV.1952, fl., *G. Hashimoto 20696* (SP); 02.X.1976, fl., *M. Kirazawa 19* (SP); 09.IX.1958, fl., *M. Kualmann* (SP 156371); Praia Grande, 26.V.1946, fl., *P.M. Dancereau* (SPF 17933).

Additional material: Botucatu, 30.VIII.1970, fl., *Gottsberder Ilse 320 (SP)*; Piracicaba, 24.XI.2004, fl., *M. P. B. de Freitas* (ESA 50868); 27.XII.2004, fl., *C.P. Santos* (ESA 50651); Salto, 05.XI.1943, fl., *A. S. Lima* (IAC 7312).

E. pusillus is endemic to the South and Southeast Regions, occurring from Rio de Janeiro to Santa Catarina. It can be found in the Atlantic Forest biome, anthropogenic areas, Restingas and dunes, preferring sandy soils.

It is morphologically similar to *Evolvulus nummularius* (L.) L., a species with wide distribution, generating problems for herbaria identification. Evolvulus pusillus can be differentiated by the presence of a peduncle and entire to slightly lobed corolla (Fig. 4), whereas *E. nummularius* lacks a peduncle and has 5-lobed corolla.

Fig. 4: a-c. *E. glomeratus*, a. subshrub habit; b. inflorescence; c. flowers. d-f. *E. pusillus*, d. creeping habit; e. flower; f. inflorescence focusing on presence of the peduncle (*L.L. Vieira s.n.* (*SPF 46419*))(Photos Simão-Bianchini & Paixão).

Ipomoea L., Syst. Ed. 1. 1735.

Ipomoea contains around 630 species, being the genus with the largest number of species in Convolvulaceae, and is distributed in pantropical and some temperate regions (Austin 1997). In Brazil, 160 species of the genus have been recorded, 64 of which are endemic. The biome

with the highest concentration of *Ipomoea* species is the Cerrado, followed by the Atlantic Forest, Caatinga, Amazon, Pampa and Pantanal (Wood *et al*. 2020; Simão-Bianchini *et al*. 2024).

Key to the species

1. Subshrub to shrub, erect or virgate ..... ***Ipomoea carnea***
1. Climbing plants with voluble branches or prostate..... 2
2. Salverform corollas..... 3
3. Branches with thorns; milky latex; white corollas..... ***I. alba***
3. Branches without thorns; latex missing; red to orange corollas..... 4
4. Pinnatisect leaves; sepals without rostrum; pubescent seeds..... ***I. quamoclit***
4. Ovate leaves, rare trilobed; sepals with subapical rostrum; tomentose seeds..... 5
5. Sepals ca. 4 x 2mm, long subapical rostrum, ca. 4mm..... ***I. hederifolia***
5. Sepals ca. 5 x 4mm, short subapical rostrum, ca. 2mm..... ***I. indivisa***
2. Campanulate to infundibular corollas..... 6
6. Branches and leaves pubescent, sericeous or tomentose..... 7
7. Thyrse inflorescence; sepals glabrous or with scattered stellate trichomes..... 8
8. Plant with stellate trichomes; hyaline latex; leaves with rounded apex; ovate sepals; rose to pink corollas ..... ***I. bonariensis***
8. Plant with simple trichomes; milky latex; leaves with acute apex; elliptic to obovate sepals; white corollas..... ***I. saopaulista***
7. Dichasium inflorescence; sepals sericeous or hirsute, simple trichomes..... 9
9. Sericeous sepals ..... ***I. indica***
9. Hirsute sepals..... 10
10. Sepals with acute to acuminate apex..... ***I. purpurea***
10. Sepals with cuspidate apex ..... ***I. nil***
6. Branches and leaves glabrous or glabrescent..... 11
11. Corolla bigger than 5cm..... 12
12. Palmate leaves, pseudostipule present..……..…..... ***I. cairica***
12. Leaves entire to sub-trilobate, pseudostipule absent..... 13
13. Prostates stems, rooting in the nodes; calyx with sepals of equal size; velutinous seeds..... ***I. pes-caprae***
13. Voluble stems; calyx with sepals of different sizes; seed glabrous to pubescent..... 14
14. Two persistent bracteoles; sepals with three wings..... ***I. setifera***
14. Caducous bracteoles; smooth sepals (without wings)..... 15
15. Two outer sepals larger than the inner, ovate, vinaceous; corolla vinaceous or pink..... ***I. philomega***
15. One or two outer sepals smaller than inner ones, lanceolate, greenish; corolla pinkish or purple..... 16
16. Lianas; one outer sepal smaller than the others; sepals with obtuse to acute apex; native..... ***I. tiliacea***
16. Herb voluble; two outer sepals smaller than the three inners; sepals with acuminate apex; cultivated..……..……..... ***I. batatas***
11. Corolla smaller than 5cm..... 17

17. Stoloniferous herb; solid pith; white to cream corolla, with yellowish or salmon interior tube ..... ***I. imperati***
17. Voluble; semi-fistulous to fistulous pith; pink corolla..... 18
18. Ovate large bracteoles; winged sepals; pubescent seeds..... ***I. fimbriosepala***
18. Linear or lanceolate bracteoles; smooth sepals; glabrous seeds……..... 19
19. Outer sepal elliptic to obovate, mucronate apex, without central vein..... 20
20. Ovoid capsule, larger than the sepals, hairy at the apex..... ***I. cynanchifolia***
20. Capsule depressed subglobose, smaller than the sepals, glabrous..... ***I. ramosissima***
19. Outer sepal lanceolate to oblong, apex acuminate to caudate, 3 to 5 central veins..... 21
21. Corolla bigger than 4cm, constricted above the calyx; tuberous roots...…..... ***I. batatas***
21. Corolla smaller than 2.5 cm, not constricted above the calyx; taproots..... ***I. triloba***

Ipomoea alba L., Sp. Pl. 1: 161. 1753.

Figs 5a-b.

Liana or climbing weed, woody branches, glabrous, aculeate, milky latex. Leaves 4–15 × 4–13 cm, entire, ovate, cordate base, acuminate and mucronate apex, abaxial and adaxial face glabrous or rare trichomes on the veins; petioles 3–18 cm. Cyme of 1-3 flowered, axillary; peduncles 3–13 cm, glabrous; bracteoles lanceolate, caducous, glabrous; pedicels 5–16 mm glabrous. Sepals unequal, outer 16–22 × 4–6 mm, green, oblong to ovate, hyaline margin, obtuse apex, mucronate 5–12 mm, inner sepals 13–18 mm, mucronate 3–5 mm. Corolla hipocrateriform, white with a cream or greenish inner tube, 8–14 cm long, limb 6–10 cm in diam., glabrous midpetaline area. Capsules ovoid, ca. 3 cm long, glabrous, tetralocular, apiculate. Black ovoid seeds, rarely white or bronze, glabrous, pubescent only at the hilum, short trichomes.

Examined material: BRAZIL. Guarujá, 17.XI.1997, fl., *R. Simão-Bianchini 1183* (SP); Iguape, 12.I.1964, fl., *E. Pereira 8184* (MBM, RB); 04.III.2023, fl., *C.P. Perito 46* (SP); Pariquera-Açu, 12.II.1995, fl., *H.F. Leitão Filho et al. 32805* (SP); Pedro de Toledo, 06.III-2023, fl., *C. P. Perito 52* (SP); Peruíbe, 16.VI.1990, fl., *S. Bianchini 1* (SPF); Praia Grande, 25.X.2007, fl., *A. Lobão 1439* (RB); 27.I.2017, fl., *A. Maruyama & I. Cicco 762* (SPSF); Ribeira, 19.IX.1951, fl., *G. Hatschbach 2832* (MBM, US); Santos, 17.V.1907, fl., *Dr. A. Usteri* (SP 11101); São Vicente, 17.X.2003, fl., *J.A. Pastore & C. Moura 1273* (SPSF); Ubatuba, 22.VIII.1976, fl., *P.H. Davis et al. 59865* (UEC); 10.VIII.2007, fl., *E. Ramos et al. 331* (IAC, RB).

Ipomoea alba is widely distributed and native in the region from Mexico to northern Argentina. It has been introduced in Africa, the United States, the Middle East, Pakistan,

India, China, southwest Asia, the Philippines and Japan (Austin 2013). In Brazil, it is frequent in all biomes, except for the Caatinga. In São Paulo, it can be found in the Cerrado and Atlantic Forest in anthropic areas, such as ornamental areas, fields, semideciduous seasonal forests, dense ombrophilous forests, clearings and forest edges, riparian forests, and restinga (Fig 5).

Ipomoea alba can be easily recognised by the branches with spikes and salverform white flowers, with a long, large tube, and is typically pollinated by butterflies and moths. Due to the sweet odour emitted by the floral nectary and anthesis of the flowers starting at dusk, it has the popular name of lady-of-the-night and flower-of-the-moon (according to Ramos *et al*. 331).

Ipomoea batatas (L.) Lam., Tabl. Encycl. 1: 465. 1793.

Figs 5c-d.

Tuberous roots. Creeping herb, rooting from the stem, with storage roots; cylindrical, angular or compressed branches, fistulous, glabrescent, simple, erect trichomes, milky latex. Leaves variable in form, entire ovate or 3-5 lobed, lanceolate to ovate, 4–15 × 5–14 cm, base truncated to cordate, apex acuminate, acute or obtuse, sparse sericeous to glabrescent, trichomes adpressed on both the abaxial and adaxial surface, prominent veins; petioles 5–13 cm. Inflorescence of dense umbellate cymes, axillary; peduncles 11–27 cm long; bracteoles filiform, 2 mm long, caducous; secondary peduncles 5–13 mm; pedicels 3–8 mm, glabrous. Sepals unequal, outer 7–11 × 4–6mm, narrow oblong to elliptical, mucronate to caudate 2 mm long, inner 8–11 × 4–6 mm, broad elliptical or oblong, pubescent to ciliated, apex acuminate, caudate 2 mm long. Corolla campanulate-infundibuliform, 4–4.7 cm long, abruptly constricted under the calyx, lilac or light purple with dark tube, glabrous midpetaline area. Capsules ovoid to depressed globose, glabrous. Seeds black, sub-globose, glabrous.

Examined material: Cananéia, 10.VI.1953, fl., *N. Hanazaki et al. 18* (UEC); 16.XI.1998, fl., *N. Hanazaki et al. 22 e 67* (UEC); 17.XI.1998, fl., *N. Hanazaki et al. 79* (UEC); 22.VI.1999, fl., *N. Hanazaki et al. 154* (UEC); 24.VI.1999, fl., *N. Hanazaki, et al. 194 e 195* (UEC); Caraguatatuba, 24.V.1966, fl, *J. Mattos* 13749 (SP); Iguape, 04.VII.1989, fl., *O.A. Fávero & G.C.C. Born 159* (SP); Ilha Comprida, 22.VI.1999, fl., *N. Hanazaki et al. 145, 152* e *153* (UEC); Santos, 19.IX.2018, fl., *I.M. Villaça 125* (HUSC). Ubatuba, 31.I.2017, fl.,

C. Braga 63 (PMSP); 30.VI.1972, fl., *M.A.C. Lucena & E.A.O. Santos* (IAC 26100); 21.V.2017, fl., *T.H. Sauini 68* (PMSP).

Ipomoea batatas is widely distributed, native to Central America, Colombia, Ecuador and Venezuela, and has been introduced in Brazil, the United States, Australia, almost all of Africa, Iberia, the Middle East, some countries in central Asia, Pakistan, India, Indonesia, southwest Asia, the Philippines and the Korean peninsula. In Brazil, it occurs in all biomes and is related to traditional people and quilombos (Simão-Bianchini & Ferreira 2020). In São Paulo, it can be found in anthropogenic areas, botanical gardens, experimental stations and some quilombos on the coast of São Paulo and Vale do Ribeira (Fig. 5).

Ipomoea batatas is morphologically similar to *I. triloba* L. and native to Brazil. They can be differentiated by the shape of the calyx and the apex of the sepals. In *I. batatas*, the calyx compresses the beginning of the corolla, and the apex of the sepals are acuminate and mucronate. In contrast, in *I. triloba*, the corolla is not compressed by the calyx, the apex of the sepals are almost acuminate, and caudates or internal ones may have a rounded to truncated and mucronate apex. The flowers are much smaller in *I. triloba*, and it does not form tubers.

Ipomoea bonariensis Hook., Bot. Mag. 65: t. 3665. 1839.

Figs 5e-f.

Herbaceous vine, sometimes woody at the base, hyaline latex, semi-fistulous, sparsely or densely hirsute with stellate hairs. Leaves, entire or 3-5 lobed, 3–9 × 4–9 cm, ovate to suborbicular, chordate base, acute, obtuse or rounded apex, mucronate, pubescent to tomentose stellate hairs; petioles 1–7 cm, glandular apex. Inflorescence in axillary cymes of 1-12 flowers; peduncles 2–9 cm, hirsute-stellate; bracteoles ovate, scale like, pubescent-stellate; secondary peduncles 1–3 mm; pedicels 3–11 mm. Sepals coriaceous, 4–8 × 4–5 mm, ovate to elliptical, convex, apex obtuse, glabrous to pubescent-stellate, margin hyaline; Corolla campanulate-infundibuliform, 4–7 cm long, limb ca; 4 cm diam., pink with darker tube, midpetaline area glabrous. Capsule ovoid, glabrous. Seeds 5–7 mm long, with long trichomes on the margins.

Examined material: Iguape, 13.IV.1994, fl. e fr., *E. A. Anunciação & I. Cordeiro 492* (SP); 06.III.1993, fl. e fr., *S. Aragaki et al. 30* (SP, SPSF); 19.III.1991, fr., *E.L.M. Catharino et al. 1564* (SP, SPSF); 25.IV.1991, fr., *M.R.F. Melo & M.C. Carvalhães 958* (SP, SPSF);

11.III.1992, fl. e fr., *S.A. Nicolau et al. 246* (SP, SPSF); 19.III.1991, fl. e fr., *L. Rossi et al. 828* (SP, SPSF); 01.II.1993, fl., *L. Rossi et al. 1264* (SP); Peruíbe, 30.I.1989, fl., *V.C. Souza 482* (ESA); 31.I.1989, fl., *V.C. Souza 514* (ESA); Ilhabela, 12.II.2013, fl., *M. Pastore & R.M. Brito 231* (SP, SPSF, UEC); Ubatuba, 11.III.1989, fl. e fr., *A. Furlan et al. 714* (HRCB).

Ipomoea bonariensis is native to South America occurring in Argentina, Bolivia, Brazil, Paraguay and Uruguay. In São Paulo, it can be found in clean fields, Semideciduous Seasonal Forest and dense Ombrophilous Forest on the edges and clearings, mainly on the coast and Serra do Mar, but also in some inland regions in conservation units, such as Botucatu and Ribeirão Preto (Fig. 5). It differs from other species in the region due to its stellate trichomes (rare in the genus).

Ipomoea cairica (L.) Sweet., Hort. Brit. 1: 287. 1827.

Figs 5g-h.

Twining herbs. Stems fistulous, glabrous. Leaves divided into 5-7 leaflets, 1–6 × 0.6–1.4 cm, lanceolate to oval-lanceolate, acute and mucronate, glabrous or with short trichomes on the margin, also having glandular punctuations throughout the blade; petiole muricate with two pseudostipule leaf-like at base, much smaller. Flowers solitary or 2-3 flowered cymes; peduncle 0.5–2 cm, glabrous; bracteoles oblong, caducous; pedicel 0.5–3.5 cm, glabrous. Sepals slightly unequal, glabrous, outer 4–7 × 3–4 mm, ovate to elliptical, acute, inner 6–8 × 4 mm, slightly larger, rugose on exposed parts. Corolla 5–7 cm long, limb 4 cm diam., infundibuliform, light purple, violet or lilac, darker tube, glabrous. Capsule subglobose, glabrous. Seeds globose to ovoid, densely short tomentose hairs, and long marginal trichomes.

Examined material: Bertioga, 22.IV.1999, fl. e fr., *S.E. Martins et al. 452* (HUSC, SP); 20.V.2002, fl., *P.S.P. Sampaio & S.E. Martins 624* (HUSC); 03.I.2000, fl., *S.E. Martins & P.S.P. Sampaio 647* (HUSC, SP); 23.V.2002, fl., *P.S.P. Sampaio & S. Waeny 652* (HUSC); 21.V.2002, fl., *P.S.P. Sampaio et al. 672* (HUSC); Cananéia, 17.IV.2005, fl., *R. Simão-Bianchini 1582* (SP); Cubatão, 15.IX.2015, fl., *M. Alves et al. 20* (HUSC); Guarujá, 12.IX.2013, fl., *P.S.P. Sampaio & L.F.S. Bezerra 857* (HUSC); Itanhaém, 23.I.1997, fl., *G.O. Joaquim Jr 133* (RB); 1991, fl., *A.P. Martins* (SP 293577); Pariquera-Açu, 05.I.1999, fl., *E.R. Batista et al. 2* e *12* (SPSF); Peruíbe, 24.IV.2005, fl., *A. Mirage & M. Nakasato* 15 (HUSC); São Vicente, 01.III.2002, fl., *J.A. Pastore & C. Moura 1150* (SPSF); Ubatuba,

10.XI.1993, fl., *A.C. Araújo 30022* (SP); 31.III.1986, fl., *D.S. Menezes* (SPSF 10544); 07.IX.2008, fl., *V.B. Zipparro 2503* (ESA); São Sebastião, 22.III.1951, fl., *T. Kurihara 4923* (SPF).

Ipomoea cairica is native to East Africa, Sub-Saharan Africa, India and Southeast Asia, but has been introduced to the Americas and Oceania (Austin & Huaman 1996). In Brazil, it is frequently found in the South and Southeast. In São Paulo, it can be found in anthropic areas, Cerrado, Semideciduous Seasonal Forest, Ombrophilous Forest in clearings and forest edges and restinga (Fig. 5). *I. cairica* is considered an invasive plant in South China, and elevated temperatures can accelerate its expansion (Wang *et al.* 2011; Sun *et al.* 2015).

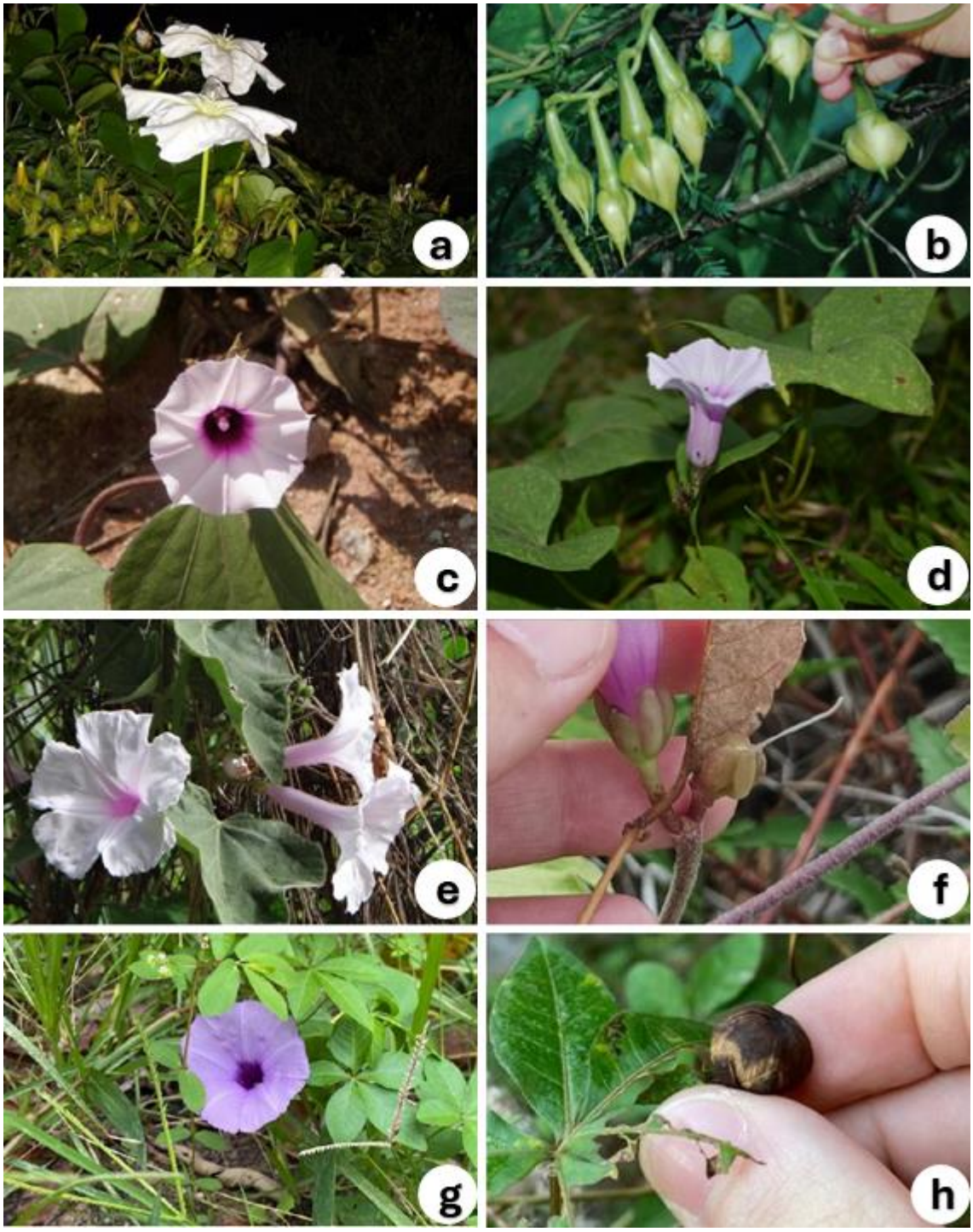

Fig. 5: a-b. *I. alba*, a. flower; b. fruit. c-d. I. batatas, c. flower; d. inflorescence focusing on the calyx. e-f. *I. bonariensis*, e. Inflorescence; f. sepals (L.Th. Dombrowski 6725). g-h. *I. cairica*, g. flower and leaves; h. fruit (Photos Simão-Bianchini & Paixão).

Ipomoea carnea Jacq. Enum. Syst. Pl.: 13. 1760.

Figs. 6a-c.

Erect Subshrub, branches erect to voluble, hollow, glabrous, abundant white latex. Leaves simple, 10–22 × 3–12 cm, ovate to lanceolate, base cordate to subcordate, apex acute to

acuminate, both sides pubescent-canescent; petioles 4–10 cm. Inflorescence in cymes; peduncles 3–15 cm, glabrescent; bracteole ovate; secondary peduncle 4–7 mm; pedicels 5–13 mm. Sepals sub equal, outer sepals smaller than the internal ones, ovate to orbicular, sericeous, rounded apex; inner sepals orbicular, glabrescent; Corolla campanulate-infundibuliform, pink, white, with darker tube, pubescent midpetaline area. Capsule ovoid, glabrous. Seed tomentose-sericeous.

Examined material: Iguape, 06.III.2023, fl., *C. P. Perito 49* (SP); Peruíbe, 11.X.1987, fl., *G. Hashimoto 4933* (SPF).

Additional material: Campinas, 21.X.1951, fr., *A.S. Grottas* (SPF 14224); 22.IX.1983, fl., *J. Heraldo 56* (IAC); Cerquilho, 03.III.2022, fl., *C.P.Perito et al. 18* (SP); Porangaba, 28.II.2022, fl., *C. P. Perito et al. 01 e 03* (SP); São Paulo, 12.XI.1946, fl., *W. Hoehne* (SPF 11672); 04.II.2009, fl., *T. Popak et al. 3* (PMSP); 11.V.2016, fl., *C.M. Furlan 74* (SPF); 17.X.2017, fl., *J. Hughes* (PMSP 18814).

Ipomoea carnea is a widely distributed species, occurring from Mexico to northern Argentina. It has been introduced in several regions of the world, such as Australia, the United States, East Africa, the Middle East, Iran, Pakistan, China and southeast Asia. In Egypt and India, *I. carnea* has a major negative impact on the local flora (Amer 2021; Kumar *et al*. 2023). In Brazil, it is present in all regions, with a greater concentration in the northeast, central west and southeast. In São Paulo, it can be found in anthropic areas, grasslands, savannah, riparian forests or galleries, semideciduous seasonal forests, and floodplain forests (Fig. 6).

Ipomoea carnea Jacq. has two subspecies: *Ipomoea carnea* Jacq. subsp. *carnea* and *Ipomoea carnea* subsp. *fistulosa* (Mart. ex Choisy) D.F. Austin. The *carnea* subspecies does not occur in Brazil, but it differs in that it has prostrate branches and cordiform leaves. The *fistulosa* subspecies is an erect shrub with ovate to lanceolate leaves and a chordate to subcordate base.

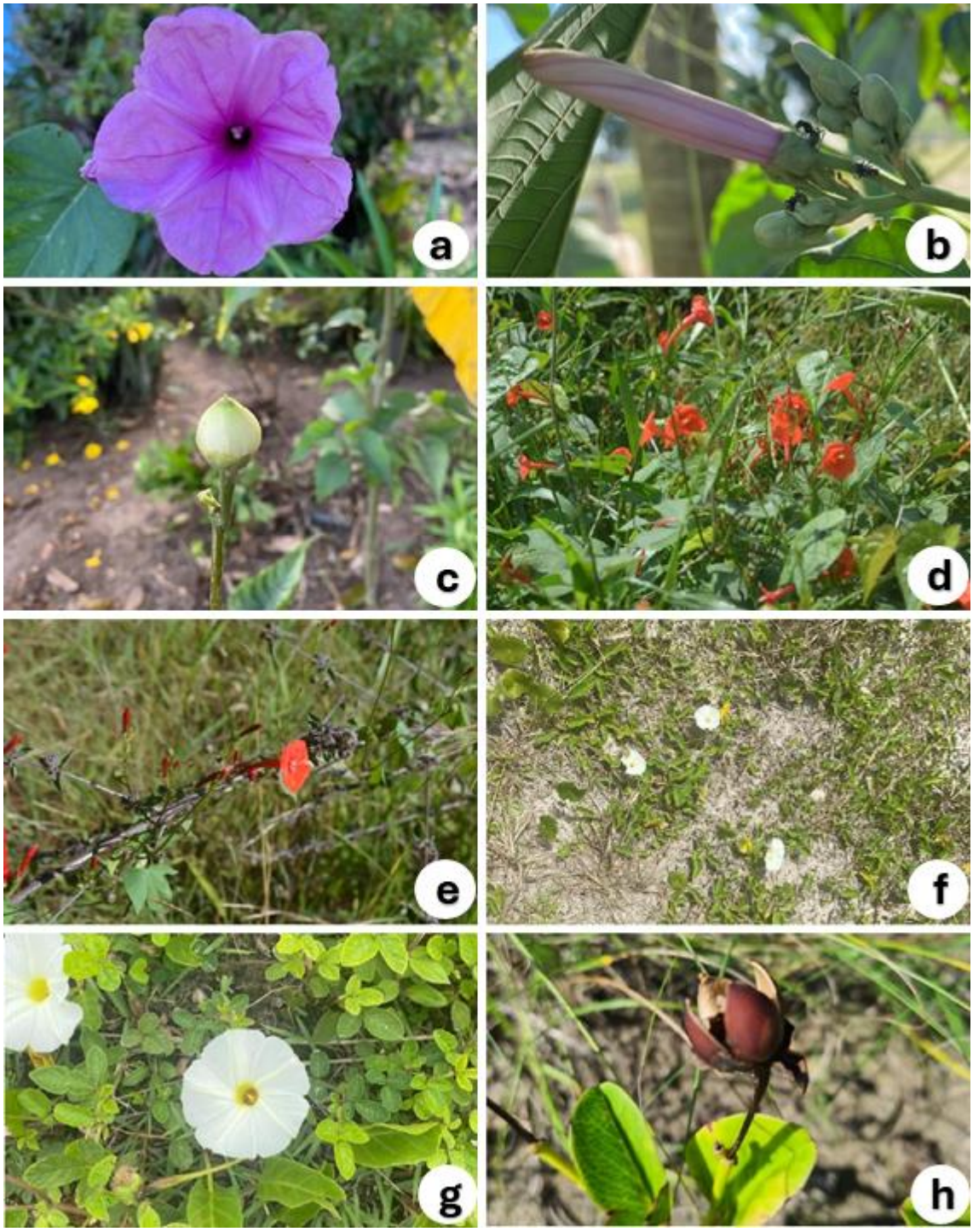

Fig. 6: a-c. *I. carnea*, a. flower; b. inflorescence focusing on the calyx; c. fruit. d-e. *I. hederifolia*, d. habit; e. flower. f-h. *I. imperati*, f. creeping habit; g. flower; h. fruit (Photos Simão-Bianchini & Paixão).

Ipomoea cynanchifolia Meisn., Fl. Bras. 7: 274. 1869.

Fig. 7a.

Twining herb, fistulous, glabrous or sparsely pubescent, hyaline latex. Leaves 3–6 × 2–4.8 cm, ovate or shallowly 3-lobed, base chordate, apex acuminate, mucronate, glabrous to

sparsely pubescent on both sides; petioles 2–6 cm. Inflorescence in dichasium of 2–12 flowers, axillary; peduncles 3–10 cm, glabrous to sparsely pubescent; bracteole linear, sparsely ciliate, caducous; pedicel 5–13 mm, glabrous to sparsely ciliate. Sepals equal or subequal, outer equal to smaller than the inner ones, 3.6–6.2 mm, obovate, glabrous to glabrescent, apex rounded, mucronate 0.2–0.6, inner sepals ovate; Corolla campanulate-infundibuliform, 1.4–1.9 cm diam., lilac, purplish, darker tube, glabrous midpetaline area. Capsule ovoid, larger than the sepals, hirsute at the apex. Seeds, ellipsoid, glabrous.

Examined material: Barra do Turvo, 08.II.1995, fl., *H.F. Leitão-Filho et al. 32751* (ESA, HRCB, SP, SPF, UEC).

Additional material: ESPÍRITO SANTO: Divino de São Lourenço, 17.XI.2011 , fl. e fr., *R.F. Almeida et al. 431* (SP). MINAS GERAIS: Ouro Preto, 23.VI.2013 , fl. e fr., *L.V. Vasconcelos et al. 500* (SP). MATO GROSSO: Várzea Grande, 27.VI.1987, fl. e fr., *G. Pedralli et al. 2763* (SP). SÃO PAULO: Campinas, 29.III.1979, fl. e fr., *M. Polo 10038* (UEC).

Ipomoea cynanchifolia occurs sparsely in Brazil and Bolivia. In Brazil, it normally occurs in the Cerrado biome but can also be found in transitional environments with other biomes. In the state of São Paulo, it can be found in grasslands, the Cerrado and on the edge of ombrophilous forests.

Ipomoea cynanchifolia is very similar to *I. ramosissima* and can be separated by the presence of fruits. *Ipomoea cynanchifolia* is distinguished by its ovoid capsules, which are larger than the sepals (Fig. 7a). In *I. ramoissima*, the capsules are subglobose, flat, and never larger than the sepals (Fig. 7b). According to O'Donell (1952), *I. cynanchifolia* flowers from March to May, which occurs much earlier than in *I. ramosissima*. This species is under-registered in herbaria.

Fig. 7: Fruit differences in a- *I. cynanchifolia* (*C.R.P. Pinto 198/84*); and b- *I. ramosissima* (*M.B. Vasconcellos 12575*).

On this map (Fig. 8), the distribution of *I. cynanchifolia* and *I. ramosissim*a overlap. *Ipomoea* sp. represents the materials examined in the herbarium that could not be differentiated because there is no presence of fruit.

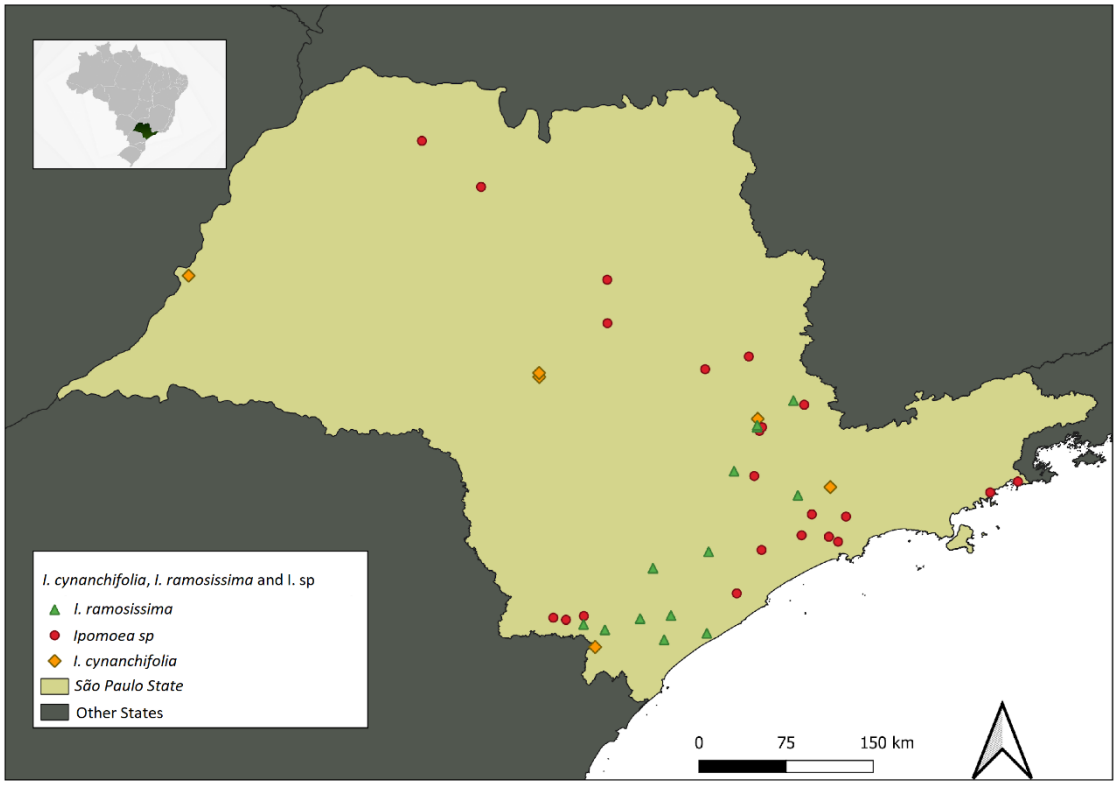

Fig. 8: Distribution of *Ipomoea cynanchifolia*, *I. ramosissima* and *Ipomoea* sp.

Ipomoea fimbriosepala Choisy, Prodr. 9: 359. 1845.

Fig. 9a-b.

Herbaceous vine, fistulous, white latex. glabrous to setose. Leaves entire, 4–10 × 3–6 cm, ovate to lanceolate, glabrous, base hastate to sagittate, auricles acute to obtuse, apex obtuse, mucronate, glands on the connection with petiole; petiole 2.5–8 cm. Inflorescence 1-5 flowered cyme, axillary; peduncle 1–4 cm, sparsely setose; bracteoles 10–15 × 3–5 mm, ovate, acuminate, glabrous, persistent; pedicels 1–3 cm. Sepals unequal, outer larger, 14–21 × 8–10 mm, ovate, flat, base truncate, abaxially 3-winged, apex mucronate, glabrous, inner sepals shorter ca. 3–4 mm, unwinged. Corolla campanulate-infundibuliform, 2.3–4 cm long, limb ca. 5 cm diam., pink with a darker tube, glabrous midpetaline area. Capsule 10–14 × 10–13 mm, enclosed by sepals, ovoid, glabrous. Seeds ca. 6 cm long, sparsely pubescent.

Examined material: Cananéia, 06.IV.1986, fl., *S. Romaniuc Neto et al. 13* (SP, SPF).

Additional material: São Caetano, 28.III.1914, fl., *A.C. Brade 6993* (SP); São Paulo, 22.III.1949, fl., *A.B. Joly* (SP 269288, SPF 17004).

Ipomoea fimbriosepala has a wide distribution and is located in pantropical regions but with scattered occurrence. In Brazil, it occurs in the south, southeast, Bahia, Mato Grosso, Mato Grosso do Sul and Amazonas. In São Paulo, it can be found in anthropic areas and is related to water systems, clean fields and riparian forests.

It is morphologically similar to *I. setifera* Poir., differing in its large flowers without glands at the base, with external and internal sepals that are similar in size. In *I. fimbriosepala*, the flowers are smaller with glands at the base, and the internal sepals are smaller than the external sepals (Fig. 9). Generally, the leaves of *I. setifera* are much wider than those of *I. fimbriosepala*.

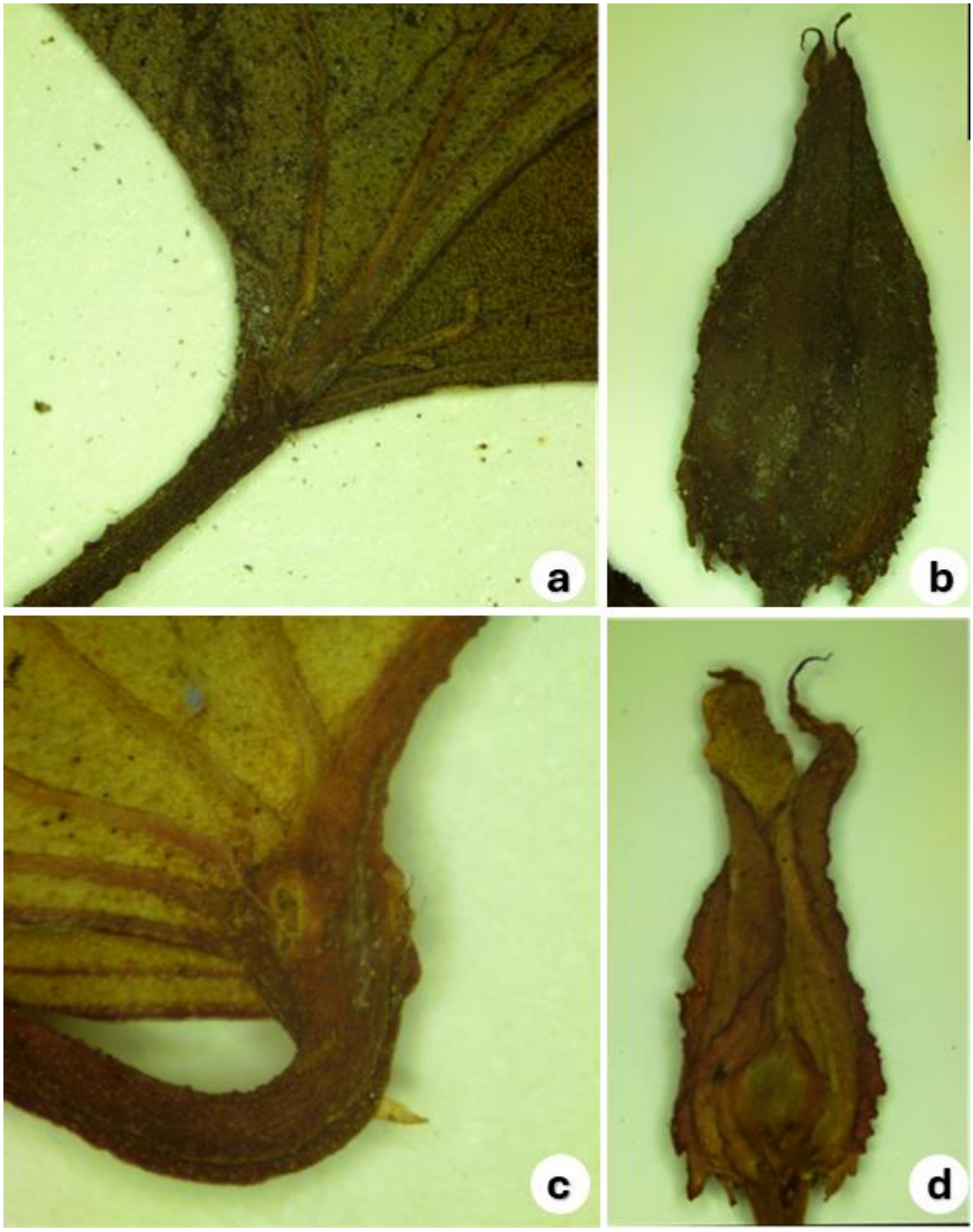

Fig. 9: a-b. *I. fimbriosepala*, a. flower base; b. calyx (*Guimarães et al. 76-24483*). c-d. *I. setifera*, c. flower base; d. calyx (*Romaniuc Neto et al. 13*).

Ipomoea hederifolia L., Syst. Nat. (ed. 10) 2: 925. 1759.

Figs 6d-e.

Twining herb, stems glabrous to pilose. Leaves simple 4–13 × 4–12 cm, entire to sub-trilobate, ovate or suborbicular lobes, base chordate, apex acute to obtuse, glabrous or

glabrescent with trichomes concentrated on the veins, sessile shiny glands; petioles 1–7 cm, glabrous. Inflorescence of axillary cyme; peduncle 4–13 cm; bracteoles ovate, caducous; secondary peduncle 1–3 cm; pedicel 2–10 cm, glabrous, erect in fruit. Sepals equal, 1.5–3 mm, elliptical to oblong, apex rounded with mucron 3–5 mm long. Corolla hipocrateriform, tube 2–5 cm long, limb ca. 2 cm diam., red or orange tube, rare orange with red tube, glabrous midpetaline area. capsules subglobose, ca. 6 mm. Seeds sub lobose with several tufts of dense trichomes.

Examined material: Pariquera-Açu, 23.V.1968, fl., *H.F. Leitão Filho & C. Aranha 73* (IAC); São Sebastião, 20.V.1934, fl. e fr., *H. Zellibor 9* (SP).

Additional material: Pitangueiras, 22.VI.1947, fl., *J. P. Coelho 3065* (SPSF); Santa Cruz da Conceição, 21.V.1994, fl., *R. Simão-Bianchini 443* (SP); São Bernardo do Campo, 02.IV.2008, fl., *R. T. Shirasuna et al. 1201* (SP); São Paulo, 27.IV.1933, fl., *A. Gehrt* (SPF 10279); São Roque, 24.IV.1995, fl., *L.C. Bernacci 1461* (IAC, SP); Valinhos, 14.VI.1994, fl., *S.L. Jung-Mendaçolli et al. 458* (IAC).

Ipomoea hederifolia is widely distributed, native from the southern United States to northern Argentina. It was introduced in Australia, central African countries, Madagascar, Pakistan, India and Southeast Asia. In Brazil, it occurs in almost all states, except in Acre, Roraima and Rio Grande do Sul. In São Paulo, it can be found in anthropic areas, clean and bushy fields, high altitude fields, Cerrado and Ombrophilous Forest edges.

It is morphologically similar to *I. indivisa* (Vell.) Hallier f., distinguished by larger sepals with short rostrums, smaller flowers and fruits with reflexed peduncles. In *I. hederifolia* has smaller sepals and flowers, long rostrums, and fruits with erect peduncles (Fig. 6).

Ipomoea imperati (Vahl) Griseb., Cat. Pl. Cub. 203. 1866.

Figs 6f-h.

Prostrate herbs, stoloniferous, halophyte, latex absent, pith solid. Stems trailing, glabrous, rooting at the nodes. Leaves simple, 1.8–3.2 × 0.6–2 cm, elliptical to oblong, fleshy, glabrous, base truncated or chordate to subcordate, apex emarginate; petioles 1–5.5 cm. Flowers solitary, axillar; peduncles 1–3 cm; bracteoles 2 mm, lanceolate, acuminate, glabrous, caducous; pedicels 7–13 mm, glabrous. Sepals unequal, outer smaller 8–12 mm, elliptical to oblong, acute, inner 12–16 mm ovate to oblong, apex acute to obtuse, glabrous. Corolla campanulate-infundibuliform, 3.5–5 cm, white with yellow tube, midpetaline areas

glabrous. Capsule subglobose, ca. 10 mm, glabrous. Seed tomentose with long hairs on margins.

Examined material: Bertioga, 19.I.1999, fl., *S.E. Martins et al. 383* (ESA, HUSC, SP); 17.XI.1997, fl., *R. Simão-Bianchini 1181* (SP); 19.XI.2000, fr., *A.C.B. de Paula* (SP 351848); Cananéia, 19.V.1988, fl., *H.F. Leitão Filho et al. 20312* (SP, UEC); 15.IV.2005, fl., *R. Simão-Bianchini et al. 1578* (SP); Guarujá, V-1962, fl., *M.A.B. Andrade* (SPF 86462); Guarujá, 24.XI.1907, fl., *A. Usteri* (SP *10808*); Iguape, 21.III.1982 fl., *F.R.N. Knoll 14975* (ESA, UEC); Ilha Comprida**,** 11.II.1995, fl., *H.F. Leitão-Filho 33042* (SP, UEC); 08.IX.1994, fl., *C.A. Monteiro et al. 18* (ESA, SP, UEC); III.2023, fl., *C.P. Perito 37, 38 e 42* (SP); Itanhaém, 23.VII.1929, fl., *A. Gehrt 24133* (SP); VI.1994, *H. Luederwaldt 10811* (SP); 07.X.1995, fl., *V.C. Souza et al. 9213* (ESA, SP); Mongaguá, 27.IV.1985, fl., *A. Amaral et al.* (BOTU 13210); Peruíbe, 10.II.2009, fl., *C. de Moura & T.C.C. Camargo 251* (SPSF); 14.X.1995, fl., *S. L. Proença et a. 112* (SP); Praia Grande, 15.XI.1898, fl., *A. Loefgren CGG4099* (SP); Santos, 16.V.1932, fl*., F.C. Hoehne* (SP *30670*); São Sebastião, 1953, fl., *G. Hashimoto* (SPF *20646*); Ubatuba, 08.XII.2008, fr., *C. de Moura et al. 229* (SPSF).

Ipomoea imperati has a wide distribution, native to coastal regions of the Americas, Australia, Africa, Mediterranean, and Southeast Asia. In Brazil, it occurs along the entire coast (Fig. 6).

The records of *I. imperati* on Pará and Maranhão have slightly different morphological characters. The internodes are shorter, with longer petioles and the leaves are smaller in length and longer.

Ipomoea indica (Burm. f.) Merr., Interpr. Herb. Amboin. 445. 1917.

Figs 10a-b.

Twining herb, fistulous, white latex, pubescent. Leaves 6–17 × 5–17 cm, ovate, or shallowly trilobed, chordate base, apex acuminate, short mucronate, both sides pubescent, sometimes tomentose abaxially; petioles 2.5–12 cm, glabrous. Inflorescence in axillar dichasia, sometimes solitary flowers; peduncles 6–10 cm, pubescent; bracteoles linear lanceolate apex acuminate; secondary peduncles 3mm; pedicel 4–7 mm, pubescent. Sepals subequal, 12–18 × 3–4 mm, ovate, apex caudate to aristate, pubescent to sericeous. Corolla 5–7 cm long, campanulate-infundibuliform, limb, 5 cm diam., purple to blue, midpetaline area pink,

glabrous. Capsule subglobose ca. 9mm diam., glabrous. Seeds black, pubescent to sparsely tomentose.

Examined material: Apiaí, 06.V.1986, fl., *G. Andrade Filho* (FUEL 2549, SPF 205504); Bertioga, 30.III.1997, fl., *R. Simão-Bianchini 1047* (SP); Cananéia, 08.IX.1994, fl., *C.A. Monteiro 19* (SP); Pariquera-Açu, 27.XI.1968, fl., *H.F. Leitão Filho 637* (RB); Pariquera-Açu, III.2023, fl., *C.P. Perito 35* (SP); Pedro de Toledo, III.2023, fl., *C.P. Perito et al. 53* (SP); Ribeira, 06.IX.1984, fl., *J.R. Pirani et al. 968* (SPF); São Vicente, 28.VI.2002, fl., *J.A. Pastore & C. Moura 1169* (SP, SPSF).

Ipomoea indica is widely distributed, ocurring from the southern United States to Argentina. It has been introduced in several countries of the world due to its ornamental use. In Brazil it occurs in all biomes except for Pantanal. In São Paulo, it can be found throughout the state, mainly in urban areas and forest edges, but also in clean fields, Cerrado, Semideciduous Seasonal Forest and riparian forest (Fig. 10).

It is morphologically similar to *Ipomoea purpurea* (L.) Roth differing in its hirsute sepals with acute apex. In *I. indica* the sepals are sericeous with caudate apex.

Ipomoea indivisa (Vell.) Hallier f., Meded. Rijks-Herb. 46: 20. 1922.

Fig. 10c-d.

Twining herb, stems angular, glabrous to pilose. Leaves simple, 4–10 × 4–8 cm, entire to dentate, ovate, base chordate, apex acute to obtuse, glabrous or glabrescent abaxial face with trichomes concentrated on the veins, adaxial face with sessile and shiny glands at the base of the leaf; petioles 1–7 cm, glabrous. Inflorescence of axillary cyme; peduncle 4–13 cm; bracteoles ovate, caducous; pedicel 2–10 cm, glabrous, reflexed in fruit. Sepals equal, 1.5–3 mm, elliptical to oblong, apex rounded, rostrate 3–5 mm. Corolla hipocrateriform, tube 2–5 cm long, limb ca. 3 cm, red, glabrous midpetaline area. Capsules 5–7mm, subglobose, glabrous. Seeds 4mm, tomentose.

Examined material: Iguape, 08.IV.1984, fl., *E.L.M. Catharino 44* (ESA).

Additional material: Campinas, 17.IV.1936, fl., *J. Santoro 470* (ESA); Cotia, 10.II.1984, fl., *C. Busko & M. Bittar 31* (PMSP); 13.II.1984, fl., *Carmem e Meiriane 31* (SPF); Cunha, 15.IV.1939, fl., *A.P. Viegas & J. Kiehl* (IAC 3942); Itapira, 13.V.1927, fl., *F.C. Hoehne* (RB 80156); Pedregulho, 05.V.1995, fl., *J.R. Guillaumon & E.E. Macedo 83* (SPSF); São João

da Boa Vista, 27.IV.1976, fl., *P.E. Gibbs et al. 1951* (UEC); São Paulo, 14.VI.1946, fl., *A.B. Joly* (SPF 17017); 05.VII.2016, fl., *S. Honda et al. 1366* (HUFABC).

Ipomoea indivisa occurs in Argentina, Bolivia, Brazil and Uruguay. In Brazil, it can be found in the Federal District, Mato Grosso do Sul, and South and Southeast regions, except for Espírito Santo (Fig. 10). *I. indivisa* morphologically resembles *I. hederifolia* L., previously discussed.

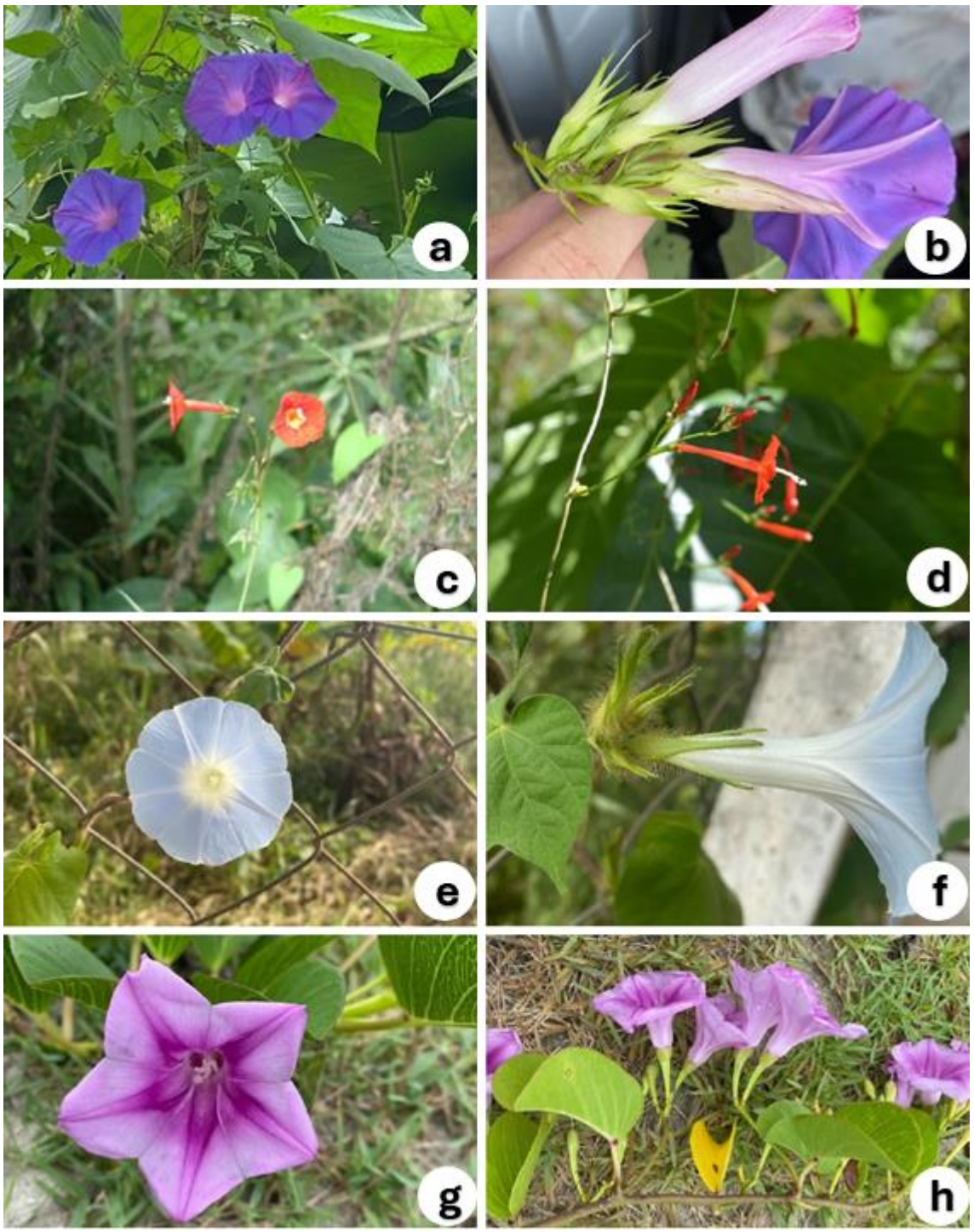

Fig. 10: a-b. *I. indica*, a. habit; b. inflorescence focusing on the calyx. c-d. *I .indivisa*, c. flowers; d. inflorescence focusing on the calyx. e-f. *I. nil*, e. flower; f. flower focusing on the calyx. g-h. *I. pes-caprae*, g. flower; h. habit (Photos Simão-Bianchini & Paixão).

Ipomoea nil (L.) Roth., Catal. Bot. 1: 36. 1797.

Figs 10e-f.

Twining herb, fistulous or semi-fistulous; stems cylindrical or angular, hirsute, yellowish trichomes, latex absent. Leaves generally 3-5-lobed, rarely entire, 4–14 × 4–16 cm, ovate to suborbicular, base chordate, apex acute to acuminate, abaxial surface sparsely tomentose, more concentrated and denser on veins, adaxial side denser, rigid trichomes adpressed; petiole 2–8 cm, hirsute. Inflorescence of axillary cymes, rarely reduced to 1-2 flowers; peduncles 3–17 cm, pilose; bracteoles filiform; secondary peduncles 4–8 cm; pedicels 5–8 mm. Sepals 16–30 mm, lanceolate, apex long caudate, herbaceous, hirsute, margin ciliate. Corolla infundibuliform, 3–4.5 cm long, limb 3-4 cm diam., sky blue, white, rare purple, lighter or white tube, glabrous midpetaline areas. Capsules 8–10 × 6–7 cm, compressed globose to globose, glabrous, style persistent. Seeds ellipsoid, short-velutinous.

Examined material: Ilhabela, 24.III.1951, fl., *G. Hashimoto 20695* (SPF); Iporanga, 14.X.1984, fl., *V.C. Souza et al. 5* (HUSC); Ubatuba, 09.IV.1940, fl., *A.P. Viégas et al.* (IAC 5487).

Additional material: Araraquara, 14.V.1968, fl., *H.F. Leitão-Filho & C. Aranha 70* (RB); Cabreúva, 18.IV.1995, fl., *R. Simão-Bianchini et al. 674* (SPSF); Franco da Rocha, 23.IV.2018, fl., *S.S. Silva 14* e *16* (SP); Itapecerica da Serra, 24.III.2008, fl., *R.T. Shirasuna & M.V. Cachenco 1112* (SP); Itirapina, 26.II.2012, fl., *R. Simão-Bianchini 1862* (SP); Jundiaí, 14.III.1915, fl., *A.C. Brade* (SP 7245); Juquitiba, 14.IV.1995, fl., *R. Simão-Bianchini 642* (SPF); Pedregulho, 21.II.2013, fl., *M. Pastore et al. 256* (SPSF); São Paulo, 02.III.1942, fl., *W. Hoehne* (SPF 11041); 13.IV.1994, fl., *N.S. Ávila* (SP 337078); 06.XI.2016, fl., *A. Maruyama & L. Cicco 602* (SPSF); Vinhedo, 18.I.2002, fl., *J.R. Guillaumon* (SPSF 29414).

Ipomoea nil is widely distributed, native to Latin America, from Mexico to northern Argentina. It was introduced in different parts of the world for its ornamental use. In Brazil, it occurs in all biomes and every state except for Amapá and Roraima. In São Paulo, it can be found in anthropic areas, open fields, Cerrado, Semideciduous Seasonal Forest and Ombrophilous Forest edges (Fig. 10).

It is morphologically similar to *I. hederacea* Jacq., differing in its smaller flowers, and sepals with reflexed apex.

Ipomoea pes-caprae (L.) R. Br., *in* Tuckey, Narr. Exped. Zaire: 477. 1818.

Figs 10g-h.

Stoloniferous herb, halophyte; stems fistulous, glabrous; abundant white latex. Leaves coriaceous, ovate to oblong, 4–10 × 3–12 cm, base rounded to subcordate or truncate, apex emarginate, glabrous, prominent venation with glands near base; petioles 3–12 cm, glabrous. Inflorescence of axillary cymes; peduncles 2–15 cm; bracteoles ovate, apex acuminate, caducous; pedicels 2–2.9 cm, glabrous. Sepals equal or slightly unequal, leathery, pale green, outer 4–12 × 6–7 mm, ovate to elliptic, apex rounded, mucronate, inner 7–12 × 8–9 mm orbicular to suborbicular, glabrous. Corolla 5 cm long, limb ca. 5 cm diam., campanulate-infundibuliform, pink, midpetaline area glabrous. Capsule ca. 2 cm dia., subglobose, style base persistent, glabrous. Seeds tomentose.

Examined material: Bertioga, 19.I.1999, fl. e fr., *S.E. Martins et al. 384* (HUSC, SP); 06.I.2023, fl., *C.P. Perito et al. 28* (SP); Cananéia, 1980, fl., *A. Custódio Filho & R.M.V. Custódio 507* (SP); 10.XII.2002, fl., *W. Foster 993* (SPSF); 15.III.1978, fl., *D.A. de Grande et al. 36* (SP, SPF, SPSF); 03.IV.2005, fl., *C.R.J. Rodrigues* (ESA 50865); 1976, fl., *M. Sakane 445* (SP); 15.IV.2005, fl. e fr., *R. Simão-Bianchini 1577* (SP); Guarujá, 23.III.1938, fl. e fr., *F.C. Hoehne* (SP 39264); Iguape, 25.VII.1907, fr., *A. Usteri* (SP 10897); Ilha Comprida, 28.III.1970, fl., *G. Hashimoto 4945* (SPF); 03.III.2023, fl., *C.P. Perito 39, 41, 43* e *44* (SP); Ilhabela, 1906, fl., *H. Luederwaldt* (SP 18304); Mongaguá, 1977, fl., *M. Kirizawa 66* (NY, SP, US); 27.IV.1985, fl., *A. Amaral Jr. 77* (BOTU, SP); Peruíbe, 10.II.2009, fl., *C. de Moura & T.C.C. Camargo 255* (SPSF); 17.X.2004, fl., *A. Mirage & M. Nakasato 03* (HUSC); 18.I.1998, fl., *N.S. Chukr 654* (PMSP); 28.III.2017, fl., *L.P. Moreira & T.R. Souza 39* (HUSC); Ubatuba, 10.XII.2018, fl., *U.G. Fernandes et al. 762* (HUSC); 10.IV.1988, fl., *A. Furlan 499* (SPF); 02.II.1996, fl., *H.F. Leitão et al. 34602* (ESA, SP, SPF, UEC).

Ipomoea pes-caprae is widely distributed, native to coastal regions of Africa, North and South Americas, Oceania, Middle East and South and southwest Asia. In Brazil, it occurs in sand dunes along the coastline (Fig. 10).

It could be confusing with *I. asarifolia* (Desr.) Roem. & Schult., which does not occur in São Paulo, commonly found along rivers (rare near the sea). Its leaves are cordiform, with an obtuse or acute apex.

Ipomoea pes-caprae and I. imperati are environmental important, helping dunes fixation (Cordazzo & Seeliger 1988).

Ipomoea philomega (Vell.) House, Ann. New York Acad. Sci. 18(6): 246. 1908.

Figs 11a-b.

Liana reaching 10 m high; stems thick, woody at the base, fistulous, glabrous. Leaves 8–14 × 8–13 cm, ovate to broadly ovate, chordate base, apex acute, acuminate or rounded, short mucronate, adaxial surface glabrous, abaxial pubescent to sparsely sericeous, purple; petioles 7–18 cm long. Inflorescence of multiflorous axillary cyme; peduncles 5–22 cm long, glabrous; bracteoles oblong to obovate, acute, deciduous; secondary peduncles 1–4 cm; pedicels, 1–3 cm, glabrous. Sepals subequal, outer larger 13–18 × 10–15 mm, ovate to elliptic, apex rounded, glabrous, vinaceous, inner ca. 1 mm smaller. Corolla campanulate-infundibuliform, 5–6 cm long, limb ca. 2 cm diam., pink, tube slightly constricted bellow limb, midpetaline areas glabrous. Capsules ovoid, glabrous. Seeds woolly.

Examined material: Bertioga, 24.I.2021, fl., *Aquática Consultoria Ambiental* (HUSC 15214).25.III.1999, fl., *S.E. Martins et al. 416* (SP); 18.V.2000, fr., *P.S.P. Sampaio & S.E. Martins 485* (SP); Cananéia, 07.IV.1982, fl. e fr., *M.C.B. Attié et al. 17* (SPF); 10.III.1982, fl., *F. Barros 690* (SPF); 07.IV.1988, fl., *F. Barros 1506* (SP); 07.II.1995, fl., *H.F. Leitão Filho et al. 32740* (SP); 30.III.2007, fl., *A. Oriani et al. 705* (ESA); 19.I.1991, fl., *M. Sugiyama 884* (SP); Cubatão, III-1901, fl., *G. Edwall CGG5830* (SP); 15.III.1923, fl., *A. Gehrt 8228* (SP); Itanhaém, 12.III.2006, fl., *R.J.F. Garcia et al. 2755* (PMSP); 09.III.2013, fl., *M. Pastore & A.A. Lemos 273* (SP); Juquiá, 04.IV.1961, fl., *J. Mattos & O. Handro 8878* (SP); Pariquera-Açu, 31.I.1968, fl., *H.F. Leitão 331* (RB); Peruíbe, 03.III.2007, fl., *J.N. Moraes & B. Lima 67* (HUSC); Santos, 16.IV.2007, fl., *R.J.F. Garcia et al. 3022* (PMSP); Sete Barras, 15.II.1995, fl., *P. H. Miyagi 526* (RB); Ubatuba, 26.II.1964, fl., *N.D. Cruz 85* (MBM, R, SP); 09.IV.1988, fl., *A. Furlan et al. 418* (SPF); 30.I.1996, fl., *H.F. Leitão Filho et al. 34393* (SPF); 06.II.1988, fl., *J.E.L.S. Ribeiro 237* (SPF).

Ipomoea philomega is native to Latin America, present from southern Mexico to Bolivia and Brazil. In Brazil it occurs in the Amazon and Atlantic Forest biomes. In São Paulo, it

can be found related to water systems, in Várzea, riparian and Ombrophilous Forest, mainly preserved regions of São Paulo coastline (Fig. 11).

It is morphologically similar to *I. chondrosepala* Hallier f., differing in its inflorescence with multiple flowers, opaque and shorter corolla, often slightly constricted below the limb.

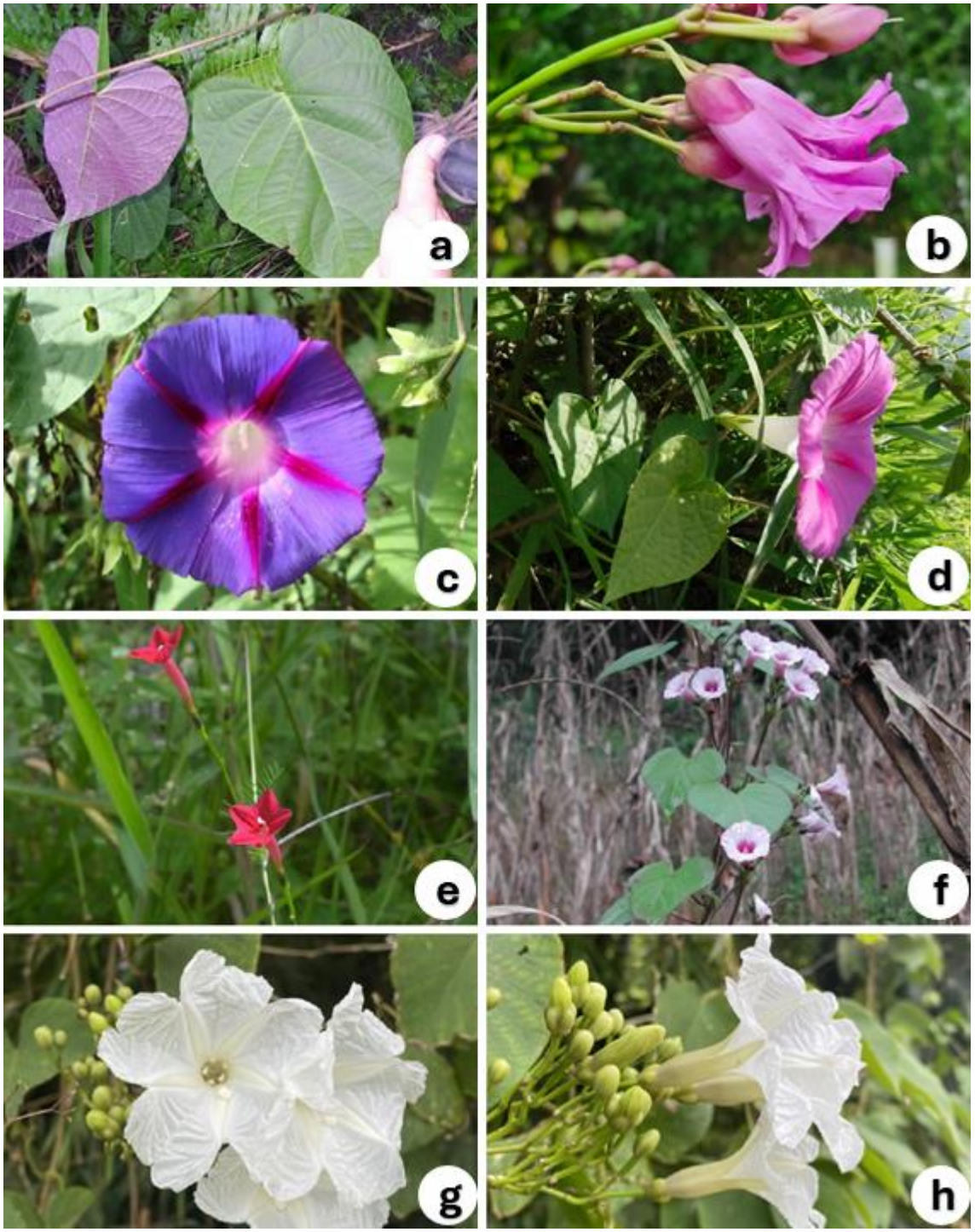

Fig. 11: a-b. I. philomega, a. leaves focusing on the purple underside; b. inflorescence. c-d. I. purpurea, c. flower; d. flower focusing on the calyx. e. I. quamoclit, flower. f. I. ramosissima, habit and flowers. g-h. I. saopaulista, g. flower; h. Inflorescence (Photos Simão-Bianchini & Paixão).

Ipomoea purpurea (L.) Roth., Bot. Abh. Beobacht. 27. 1787.

Figs 11c-d.

Twining herb, white scarce latex; stems fistulous, pilose. Leaves 4–12 × 4–10 cm, entire, sometimes halfway trilobed, ovate, base chordate with rounded auricles, apex obtuse to acuminate, both sides densely hispid-pilose; petioles 4–16 cm, pilose. Inflorescence of 2–5 flowered axillary cymes; peduncles 2–8 cm, pubescent; bracteoles ca. 6 cm, filiform, usually deciduous; pedicel 1–2 cm, pubescent to pilose. Sepals subequal, 12–18 × 3 mm, lanceolate to elliptical, apex acute to obtuse, hirsute. Corolla 4–5 cm long, campanulate-infundibuliform, limb ca. 4 cm diam., purplish, pink, bluish or white, midpetaline areas glabrous. Capsules sub globose, ca. 10 mm, glabrous, Seeds villous, 5 mm long.

Examined material: Ilhabela, 05.IV.1965, fl., J. C. Gomes 3657 (SP); Registro, 02.VI.1963, fl. e fr., *C. Moura* (SP 123430).

Additional material: Águas da Prata, 22.III.1994, fl., *A. B. Martins et al. 31455* (SP); Amparo, 05.V.1942, fl., *Kuhlmann & Kuhn* (SP 46809); Botucatu, 13.X.2009, fl. e fr., *L. B. Santos 381* (SP); Campinas, 17.VII.1939, fl., *J. Aloisi* (SP 43972); Cotia, IV-1937, fl., *J. Vidal* (R 45718); Cunha, 19.II.2012, fl., *R. Simão-Bianchini & S. Bianchini 1858* (SP); 19.II.2018, fl., *A. Maruyama & L. Cicco 1038* (SPSF); Divinópolis, 20.VIII.2011, fl., *S. A. Nicolau et al. 4287* (SP); Espirito Santo do Pinhal, IV-1897, fl., *J. Campos Novaes CGG3750* (SP); Itararé, 11.III.2015, fl., *F.A.R.D.P. Arzolla et al. 1760* (SPSF); Jaboticabal, 10.I.1980, fl., *R. C. S. Maimoni 71 e 72* (SP); 11.III.1981, fl., *R. C. S. Maimoni 72* (SP); Paulo de Faria, 12.IV.1994, fl., *V. Stranghetti 297* (SPSF); São Paulo, 07.XI.1905, fl., *Dr. A. Usteri* (SP 10880); 20.III.1907, fl., *H. Luederwalt* (SP 10884); 09.V.1939, fl., *A. Gehrt* (SPSF 27190); 29.III.1955, fl., *H. F. L. Filho & C. Aranha 69* (SP); 03.III.1993, fl., *R.J.F. Garcia 347* (PMSP); 30.VI.2008, fl., *K. P. Francisco 22* (PMSP); Socorro, 07.III.2000, fl., *M. Groppo Jr. 374* (SP).

Ipomoea purpurea has a wide distribution, native to Latin America and introduced to several countries on all continents due to its ornamental use. In Brazil, it is present in the Amazon, Caatinga, Cerrado, Atlantic Forest and Pampa biomes. In São Paulo, it can be found in anthropic areas, clean and shrubby fields, Semideciduous Seasonal Forest, riparian and Ombrophilous Forest edges (Fig. 11).

It is morphologically similar to *Ipomoea indica* (Burm.) Merr., previously discussed.

Ipomoea quamoclit L., Sp. Pl. 1: 159-160. 1753.

Figs 11e.

Twining herb; entirely glabrous; hyaline latex. Leaves short petiolate, sometimes with pseudo-stipules, 1.3–8 × 1–6 cm, ovate to elliptical, deeply pinnately shaped, linear segments, apex acute, glabrous; petioles 1–4 cm. Inflorescence of 1-5 flowered axillary cyme, sometimes solitary; peduncles 1–7 cm; bracteoles elliptic, 1mm long; pedicels 10–20 mm. Sepals equal, ca. 1 mm long, elliptical to oblong, apex obtuse, shortly mucronate, margins scarious. Corolla hipocrateriform, tube 2–3 cm long, limb 2 cm diam., deeply lobed, star-shaped, acute lobes, red, midpetaline areas glabrous; stamens exserted. Capsule ovoid, rostrate, glabrous. Seeds pubescent to hirsute.

Examined material: Pariquera-Açu, 19.III.1999, fl., *R. B. Torres et al. 501* (IAC); São Sebastião, 08.XII.2018, fl., *R. K. Kojima & W. S. Lapa 28* (HUSC).

Additional material: Leme, 26.XII.2016, fl. e fr., *G. M. Antar 1207* (SPF); Pedregulho, 10.XII.1998, fl. e fr., *L. Custódio & T. Custódio 544* (SPSF); Piraju, 15.V.1996, fl., *A. Rapini 147* (SP); São João da Boa Vista, 21.III.1994, fl., *A. B. Martins 31514* (SP); São Paulo, 14.V.1984, fl. e fr., *M. Bittar* (PMSP 133); Socorro, 07.III.2000, fl., *M. Groppo Jr. 373* (SP).

Ipomoea quamoclit origins is debatable but might come from humid forests in the region of Mexico to Panama, or in the Amazon region. It was introduced to several countries on all continents because of its ornamental use due to its red star-shaped flowers. In Brazil, they occur in all states, except Amapá and Roraima. In São Paulo, it can be found mainly in urban areas, Cerrado and Semideciduous Seasonal Forest (Fig. 11).

Ipomoea ramosissima (Poir.) Choisy, Prodr. 9: 377. 1845.

Figs 7b; 11f.

Twining herb, glabrous or sparsely pubescent, branches striated. Leaves ovate, entire, irregularly dentate, shallowly 3-lobed or deply 3-lobed, 3–5(–8) × 2–5(–7) cm, with rounded to obtuse auricles, base deeply chordate to truncated, occasionally with obtuse auricles, glabrous or sparsely pilose, apex shortly acuminate, mucronate: petioles 2–6 cm, glabrous or pubescent. Inflorescence of umbelliform axillary cymes with 2-12 flowers, rare solitary; peduncle 2–12 cm; bracteoles triangular, caducous; pedicels 5–14 cm. Sepals subequal, outer equal or slightly smaller, 3.5–6 mm, obovate, glabrous to glabrescent, apex rounded,

mucronate, inner sepals ovate, glabrous to glabrescent. Corolla campanulate-infundibuliform, 1.5–3 cm long, pink or almost white with a purple inner tube, limb ca. 1.5 cm diam, sometimes dentate. Capsules 2.7–3.3 × 4–4.3 mm, depressed-sub globose, enclosed by sepals, style base persistent. Seeds sub globose to ellipsoid, glabrous or pilose on angles.

Examined material: Eldorado, 13.V.1996, fl. e fr., *J.A. Pastore & F.A.R.D.P. Arzolla 720* (SP, SPSF, UEC); 22.III.2005, fl. e fr., *J.C. Braidotti et al. 1* (ESA, SP); Iguape, 19.VI.1981, fl. e fr., *M.B. Vasconcellos et al. 12575* (UEC); Pariquera-Açu, 28.IX.1995, fr. *N.M. Ivanauskas 402* (ESA); Registro, 02.VI.1963, fl. e fr., *C. Moura* (ESA 69116).

Additional material: Campinas, 15.III.1970, fl. e fr., *C. Aranha & H.F. Leitão-Filho 21501* (IAC); 11.V.1995, fr. *L.Y.S. Aona & A.D. Faria 38* (IAC); Castilho, 12.X.1998, fl. e fr., *L.R.H. Bicudo et al. 40* (SP); Itu, 22.IV.1995, fl. e fr., *R. Simão-Bianchini & S. Bianchini 694* (SP); São Bernardo do Campo, 07.VI.1994, fl. e fr., *J.V. Godoi et al. 417* (SP); 01.VIII.1994, fr., *J.V. Godoi 516* (SP); São Paulo, X.1899, fl. e fr., *G. Edwall CGG4497* (SP); 13.IV.1973, fl. e fr., *G. Hashimoto* (SP 339629); Tapiraí, 12.V.1994, fl. e fr., *R. Mello-Silva et al. 932* (SP, SPF).

Ipomoea ramosissima is native to tropical America, commonly in forest edges and disturbed places below the Equator. In São Paulo, it can be found in anthropic areas, clean and shrubby fields, Cerrado and Ombrophilous Forest edges (Fig. 11).

It is very close to *I. cynanchifolia* and can only be distinguished when fruit is available (Fig. 7), as discussed previously.

Ipomoea saopaulista O'Donell, Lilloa 26: 392. 1953.

Figs 11g-h.

Twining herb, woody at the base; stem cylindrical and striated, tomentose to glabrescent; latex white and abundant. Leaves entire, 5–13 × 5–12 cm ovate, base chordate, apex obtuse, acute to acuminate; abaxial face tomentose, glabrous or glabrescent, white trichomes, adaxial face glabrescent, adpressed trichomes concentrated in the veins; petioles 3–6 cm. Inflorescence subcorymbose of many flowers; peduncles 3-5(–18) cm, pubescent; bracteoles caducous; secondary peduncles 3–5 cm; tertiary peduncles ca. 1 cm; pedicels 7–20 mm, glabrous to pubescent. Sepals unequal, outer 7–8 × 3–4 mm, ovate to elliptic, slightly concave, apex rounded, glabrous or sparsely villous, inner sepals, 8–10 × 4–5 mm, elliptic,

concave to flat, glabrous, apex obtuse or rounded. Corolla infundibuliform, 3.5–4.5cm long, limb 2.5cm diam. white, greenish or denser white tube, glabrous midpetaline area. Capsules subglobose, glabrous. Seeds ellipsoid, pilose.

Examined material: Ubatuba, 12.III., fl.,1989, *A. Furlan* 771 (HRCB).

Additional material: Monte Alegre, 16.III.1995, fl., *L.C. Bernacci et al. 1333* (SPF); Porto Ferreira, 08.IV.2010, fl., *J.A. Lombardi 7744* (SP); Presidente Altino, 05.I.1949, fl., *A. S. Grotta* (SPF 13373); 30.III.1977, fl., *J. Semir* (RB 262871); São Bernardo do Campo, 26.III.2008, fl., *R. Simão-Bianchini & T.R. Capistrano 1665* (PMSP); São João da Boa Vista, 21.III.1994, fl., *A. B. Martins et al. 31394* (SP, SPF); São Paulo, 24.VI.1945, fl., *W. Hoehne* (SPF 11463); 11.IV.1992, fl., *R. Simão-Bianchini 311* (SPF); 16.II.1996, fl., *M. Groppo Jr. 111* (SPF); 08.IV.1997, fl., *M. Groppo Jr. 265* (SPF); 26.II.2008, fl., *R.J.F. Garcia et al. 3381* (PMSP); 18.I.2011, fl., *B. Pucci et al. 122* (PMSP); 27.I.2011, fl., *B. Pucci 210* (PMSP); 17.V.2019, fr., *S. Honda et al. 1828* (PMSP); 22.II.2021, fl., *E.H.P. Barreto & R.J.F. Garcia 1932* (PMSP); Taboão da Serra, 09.V.1992, fl., *R. Simão-Bianchini 195* (SPF).

Ipomoea saopaulista occurs from north of Argentina, south and southeast Brazil, Federal District, Goias, Mato Grosso and Pará states. In São Paulo, it can be found in anthropic areas, Cerrado, Semideciduous Seasonal Forest and Ombrophilous Forest edges (Fig. 11).

It is morphologically similar to *Ipomoea reticulata* O'Donell. differing in its puberulent indument, slightly shorter sepals (5–7 × 3–5 mm) and corolla (2.3–3.5 cm long). In *I. saopaulista* the indument is pubescent to tomentose, and has larger sepals and corolla.

Ipomoea setifera Poir., Encycl. 6: 17. 1804.

Figs 9c-d; 12a-b.

Twining or trailing herb, fistulous, striated branches that root at the nodes, hirsute yellow trichomes. Leaves ovate to reniform, 5–14 × 3.5–12 cm, base chordate or sagittate, auricles obtuse or rounded, apex obtuse and mucronate, glabrous, abaxially paler; petioles 2–10 cm, glabrous often tuberculate. Inflorescence of 1-3 flowered axillary cyme; peduncle 4–6 cm, sometimes tuberculate; bracteoles ovate, 1.5–2 × 0.5–1.5 cm, mucronate 2 cm, persistent; pedicel 10–20 mm, glabrous. Sepals unequal, outer 15–21 × 10–14 cm, elliptic, apex acute, short aristate, 5-winged, tuberculate, inner ovate, 14 × 5 mm, shorter, glabrous, apex obtuse to acute, unwinged. Corolla 6–8 cm, limb ca. 4 cm diam., campanulate-infundibuliform,

pink, purple or lilac, midpetaline area glabrous. Capsules ovoid, glabrous. Seeds ovoid, finely pubescent.

Examined material: Bertioga, 24.IV.1983, fl., *M.I.T.M. Guimarães et al. 76* (BOTU, SP); Cananéia, 01.VII.1987, fl., *V.C. Souza 23* (HUSC); Peruíbe, 25.IX.1980, fl., *M.I.F. Castro 8* (SP).

Additional material: Mogi Mirim, 23.V.1927, fl., *F.C. Hoehne* (SP *20516*); Mogi Guaçu, 17.I.1991, fl., *D.F. Pereira* (SP 248628); Teodoro Sampaio, 19.VI.1998, fl., *M.P. Manara et al. 27* (SP); São Bernardo do Campo, 24.IV.2008, fl., *R. Simão-Bianchini 1676* (SP).

Ipomoea setifera is native from tropical America, from Costa Rica to North Argentina, and were introduced in Africa. More present than *I. fimbriosepala*. In Brazil it is present in all biomes except on Pampa. In São Paulo, it can be found in the Atlantic Forest edges and shrubby fields, mainly in protected areas of São Paulo coast (Fig. 12). It is morphologically similar to *I. fimbriosepala*, previously discussed (Fig. 9).

Fig. 12: a-b. *I. setifera*, a. habit; b. inflorescence focusing on the calyx. c-e. *I. tiliacea*, c. flower; d. calyx; e. fruits. f-h. *I. triloba*, f. habit; g. flower; h. calyx (Photos Simão-Bianchini & Paixão).

Ipomoea tiliacea (Willd.) Choisy, Prodr. 9: 375. 1845.

Figs 12c-e.

Twining herb, lignified base, sometimes stoloniferous; stems glabrous to pubescent; latex white. Leaves 4–17 × 3–13 cm, ovate, entire, base chordate with rounded auricles, apex

obtuse to acute, glabrous to glabrescent on both sides; petioles 2–14 cm, glabrous to glabrescent. Inflorescence in axillary cymes with 1-4 flowers; peduncles 2–8 cm, glabrous; bracteoles ovate, caducous; secondary peduncles 0.3–1.2 cm; pedicels 6–14 cm. Sepals subequal, glabrous, 5–10 × 3–4 mm, oblanceolate, concave, apex obtuse, mucronate, inner 8–11 × 4–7 mm, obovate to elliptic, apex obtuse, mucronate, margin scarious; Corolla campanulate-infundibuliform, 3.5–6 cm long, limb ca. 5 cm diam., pink with darker tube interior, glabrous midpetaline area. Capsule depressed globose, 8 × 9 mm, glabrous or hirsute at the apex. Seeds black, glabrous.

Examined material: Bertioga, 04.I.2013, fl., *M. Pastore & E.M. Brito 224* (SP); 21.V.2002, fl., *P. Sampaio et al. 669* (SP); 25.III.1999, fl., *S.E. Martins et al. 420* (SP); 06.I.2023, fl., C.P. Perito 26 (SP); Cananéia, 17.IV.2005, fl., *R. Simão-Bianchini et al. 1581* (SP); Caraguatatuba, 16.III.2006, fl., *A. Oliveira & C. Purcell 2094* (RB); 22.IV.1980, fl., *M. Sakane* (SP); 19.XI.1994, fl., *R. Simão-Bianchini & S. Bianchini 639* (SP); Guarujá, IV-1992, fl. e fr., *K.G. Kissmann* (SP 269318, SPF 86181); Iguape, 16.VI.1990, fl., *S. Bianchini 2* (SP); 04.III.2023, fl., *C.P. Perito et al. 45* (SP); Ilha Comprida, 28.XII.1980, fl., *A. Custódio Filho & R. M.V. Custódio 512* (SP); 03.III.2023, fl., *C.P. Perito 40* (SP); Ilhabela, 1990, fl., *V.C. Souza & C.M. Sakuragui 1626* e *1630* (SP); 22.V.1949, fl., *A. S. Grotta* (SPF 13374); 27.XII.1971, fl. e fr., *J. Mattos & N. Mattos* (SP 15700); Itanhaém, 11.IV.1996, fl., *V.C. Souza et al. 11066* (SP); 3.X.1987, fl., *S.M. Carmello et al. 12* (SP); Peruíbe, 24.VII.1980, fr., *M. Kuhlmann* (SP 120448); 03.V.1993, fl., *R. Simão-Bianchini & S. Bianchini 350* (SP); 09.III.2013, fl., *M. Pastore & A.A. Lemos 274* (SP); Santos, 28.II.2000, fl., *S.E. Martins & P.S.P. Sampaio 678* (HUSC); São Sebastião, 28.XI.1989, fl., V. *Stranghetti & M.T. Grombone-Guaratini 22882* (UEC); 05.I.2023, fl., *C.P. Perito 23, 24 e 25* (SP); 06.I.2023, fl., *C.P. Perito 28* (SP); São Vicente, 23.III.2001, fl., *J.A. Pastore & C. Moura 989* (SP); Sete Barras, 21.IV.2002, fl., *R.G. Udulutch et al. 610* (SPSF); Ubatuba, 02.II.1996, fl., *H.F. Leitão Filho et al. 34394* (SP); 30.IV.1961, fl., *C. Moura & J. Mattos* (SP 64522); 01.V.2023, fl., *C.P. Perito 59, 60* e *63* (SP); 14.II.1997, fl., *R. Simão-Bianchini & S. Bianchini 1042* (SP).

Ipomoea tiliacea occurs in Latin America, present from Mexico to Rio Grande do Sul. Frequent on Caribbean islands, less common on the Pacific coast. In Brazil, it occurs in the South and Southeast regions, in the North Region it occurs in every state except Amapá and Tocantins, and in the Northeast Region it is less frequent and does not occur in Sergipe, Rio Grande do Norte, Maranhão and Piauí states. In São Paulo the record for the municipality of

Mogi Guaçu is probably individuals for study at experimental stations, or there may have been an error in citing the location, since *I. tiliacea* is known to occur on the coastal region just below the Serra do Mar mountains (Fig. 12).

It is morphologically similar to *I. littoralis* Blume, but they can be separated by its almost succulent, round or obtuse leaves. This species does not occur in the Americas and has an aquatic habit (Austin 1991; Wood *et al.* 2020). In *I. tiliacea* the leaves are membranous and ovate.

Ipomoea triloba L., Sp. Pl. 1: 161. 1753.

Fig. 12f-h.

Twining herb; stems pilose to glabrescent, fistulous; milky latex. Leaves simple, 1–10 × 1–6 cm, entire to shallowly 3-lobed or deeply 3-lobed, ovate, base chordate, apex acuminate, apiculate, both sides with variable indumentum, glabrous to sparsely hirsute; petioles 2–7 cm. Inflorescence of axillary cymes; peduncle 3–6 cm, glabrous to pubescent; bracteoles ca. 2 mm long, filiform; secondary peduncle 0.3–0.6 mm; pedicels 2–7 mm, sparse pilose. Sepals subequal, 5–6 (–8) × 3 mm, outer ca. 1 mm larger, oblong, apex caudate, ciliate. Corolla 1.5–3 cm, campanulate-infundibuliform, limb ca. 1.5 cm diam., pink with a darker or white tube, midpetaline areas glabrous. Capsule subglobose 5–6 mm diam., glabrous. Seeds brown, glabrous.

Examined material: Cananéia, 04.IV.1982, fl., *S. Romaniuc Neto et al. 24* (SPF); Peruíbe, 12.X.1987. fl. e fr., *G. Hashimoto 4924* (SPF); Sete Barras, 13.II.1995, fl., *H.F. Leitão-Filho 33162* (SP).

Additional material: Águas de São Pedro, 11.IV.1993, fl., *S. Bianchini 13* (SPF, UEC); **Assis**, 19.XII.2005, fl. e fr., *D. R. Rossato 115* (SPSF); Avanhandava, 17.IV.1918, fl., *J. F. Gomes* (SP 1720); Botucatu, 23.IV.2009, fl., *L. B. Santos 180* (RB, SP); 02.III.2022, fl., *C. P. Perito 12 e 13* (SP); Cabreúva, 16.IV.1989, fl., *R. Simão-Bianchini 123* (SP, SPF); Campinas, 03.V.1954, fl., *G. Hashimoto* (SP 339624); Monte Mor, 08.VII.1968, fl., *H. J. L. Filho 66* (RB); Pedregulho, 21.II.2013, fl., *M. Pastore et al. 255* (SPSF); Piracicaba, 19.V.1994, fl., *K. D. Barreto 2499*, (RB); Porangaba, 01.III.2022, fl., *C. P. Perito 10* (SP); São Bernardo do Campo, 04.IV.1998, fl., *R. Simão-Bianchini 1221* (SPF).

Ipomoea triloba is widely distributed, native to Latin America, occurring from Mexico to Rio Grande do Sul. In Brazil, it occurs in every state, except for Amapá, Maranhão and

Sergipe. In São Paulo, it can be found in anthropic areas, clean or shrubby fields, Cerrado, Semideciduous Seasonal Forest, riparian and Ombrophilous Forest (Fig, 12).

It is morphologically similar to *I. batatas*, previously discussed.

Jacquemontia Choisy, Mém. Soc. Phys. Genève 6(2): 476. 1834.

Jacquemontia comprises around 120 species and has a neotropical distribution, with few species in Africa, Asia and Oceania (Staples 2012; Moreira *et al*. 2018). In Brazil, there are 63 species, 41 of which are endemic. The biome with the highest concentration of species of this genus is the Cerrado, followed by the Caatinga, Atlantic Forest, Amazon, Pampa and Pantanal (Pastore & Simão-Bianchini 2017; Moreira *et al*. 2018; Simão-Bianchini *et al*. 2020).

Key to the species

1. Outer sepals longer than inner ones, apex acute to acuminate ……..…. ***J. ferruginea***
1. Outer sepals shorter or of the same size as the inner ones, apex rounded to obtuse..... 2
2. Leaves glabrous to glabrescent..... 3
3. Corymbiform dichasium; inner sepals larger than the outer ones ..... ***J. frankeana***
3. Umbelliform dichasium; sepals of almost equal size..... 4
4. Sepals ovate to obovate, glabrous to glabrescent, midpetaline areas pilose at apex..... ***J. blanchetii***
4. Sepals ovate to lanceolate, ciliate, midpetaline areas glabrous ..... ***Jacquemontia* sp1**
2. Leaves pubescent to tomentose or velutinous..... 5
5. Tomentose branches; outer sepals smaller than the inner ones, oblong, glabrous; midpetaline areas with few trichomes at the apex …….....… ***J. holosericea***
5. Velutinous branches; sepals equal in size, ovate to obovate, pubescent to velutinous; midpetaline areas glabrous ..... ***J. velutina***

Jacquemontia blanchetii Moric., Pl. Nouv. Amér. 27: 41. 1838.

Figs 15e.

Twining herb; stems glabrescent, trichomes 3-radiated, stellate, adpressed. Leaves entire to sinuate, 3–12 × 1–7 cm, ovate, base chordate, subchordate or truncate, apex acute to acuminate, sparsely pubescent on both sides; petioles 1-4 cm, glabrescent. Inflorescence in umbelliform dichasium, axillary, 3-4 flowers; peduncles 3–5 cm, pubescent to glabrous; bracteoles subequal, 2–3 × 1.2 mm, ovate, pubescent; secondary peduncles 1–5 cm; pedicels 5–10 mm, pubescent to glabrous. Sepals subequal, ovate to obovate, apex rounded to obtuse or acute, glabrous, outer 3–5 × 2.5–3.2 mm, inner 4.2–6.3 × 3–4 mm. Corolla

infundibuliform, 1.5–3 cm long, lilac, rare white, midpetaline areas with simple trichomes at the apex. Capsules 5–6 mm long, partially covered by surrounding sepals. Seeds ca. 3 mm, rugous.

Examined material: Eldorado, 09.XII.2012, fl*., E.P. Fortes 01* (SP); Iporanga, 25.III.2013, fl., *L.B. Benitez 33* (SP).

Additional material: Botucatu, 07.XII.1995, fl., *R.C. Fonseca 29* (ESA, SP); 07.III.2013, fl., *M. Pastore & S. A. Adachi 271* (SP); Buri, 08.XII.1987, fl., *R.B. Torres & N. Figueiredo 427* (SPSF); Ipeúna, 26.I.1984, fl., *A. Furlan 166* (SPF); Itapetininga, 18.XII.2012, fl., *M. Pastore et al. 208* (PMSP, SP, SPSF); Itapira, 12.I.1994, fl., *K.D. Barreto 1791* (SP); Sorocaba, 17.IV.1995, fl., *R. Simão-Bianchini et al. 652* (SPF).

Jacquemontia blanchetii is native to South America and occurs in Argentina, Brazil, Bolivia, Paraguay and Peru. In Brazil, it occurs in the south and southeast regions. In the central west region, it only does not occur in the Federal District, it can also be found in the states of Bahia, Roraima and Sergipe. In São Paulo, it occurs in anthropic areas, clean and shrubby fields, the Cerrado, riparian forests, semideciduous seasonal forests, and ombrophilous forests on forest edges.

Jacquemontia blanchetii has two varieties, *J. blanchetii* Moric. var. *blanchetii* and *J. blanchetii* var. *major* Choisy. They can be differentiated by the shape of the sepals, being ovate to obovate with a rounded apex in the *blanchetii* variety and obovate to oblong sepals with an acute apex in the *major* variety (Pastore *et al*. 2024). All analysed materials from the state of São Paulo fall under *J. blanchetii* var. *blanchetii*.

Jacquemontia blanchetii is morphologically very similar to *J. martii*, which does not occur in the state of São Paulo. They are similar in terms of their umbelliform inflorescence and glabrous sepals, but they differ in their sepals with a rounded to obtuse apex in *J. blanchetii* and an acuminate and revolute apex in *J. martii* (Fig. 15).

Jacquemontia ferruginea Choisy, Mém. Soc. Phys. Genève (8)1: 61. 1838.

Figs 13a-b; 15f.

Twining herb; stem tomentose to pubescent, stellate, curly trichomes. Leaves ovate to lanceolate, 3–10 × 1–6 cm, entire to sinuate, base chordate, subchordate or truncate, apex obtuse to acute, mucronate 2 mm, hirsute tomentose to glabrescent on both sides, concolor;

petioles 1–6 cm, tomentose to glabrescent. Inflorescences in corymbiform dichasium, axillary, 3-28 flowers; peduncles 2–20 cm tomentose; bracteoles unequal, lower lanceolate, 7–38 × 2.3–17 mm, larger, upper lanceolate or linear, 6–11 × 0.5–2.8 mm, smaller; secondary peduncles 3-8 mm, tomentose; pedicels 5–15 mm, tomentose. Sepals unequal, outer 7–12 × 2.6–5.3 mm, rhombic to ovate, base cuneate apex acute to acuminate, tomentose to villous, inner 5.3–7.2 × 2–3.3, ovate to lanceolate, apex acute to acuminate, tomentose concentrated on central region. Corolla infundibuliform, 1–2.5 cm long, lilac, midpetaline areas with simple trichomes only at the apex. Capsule ca. 6 mm long, totally covered by surrounding sepals. Seeds ca. 2.5 mm long, rugous.

Examined material: Iguape, 12.XII.1992, fl., *E.A. Anunciação et al. 154* (SP); 14.XII.1990, fl. e fr., *M.P. Costa et al. 44* (SP); 06.I.2000, fl., *R.J.F. Garcia et al. 1867* (PMSP); 24.IV.1991, fl., *M.C.H. Mamede et al. 419* (SP); 17.VIII.1991, fl., *L. Rossi et al. 919* (SP); 15.XII.1991, fl. e fr., *L. Rossi et al. 1007* (SP); Itanhaém, 07.XI.1920, fl., *A. Gehrt* (SP 4560); 24.I.1997, fl., *G.O. Joaquim Jr. 110* (RB); 9.XI.2016, fl., *A.M. Magalhães et al. 68* (SP). 11.IV.1996, fl., *V.C. Souza et al. 11026* (SPF); Peruíbe, 25.V.1996, fl., *L.P. de Queiroz et al. 4520* (SP); Santos, X-1920, fl., *H. Luederwaldt & Fonseca* (SP 10910).

Jacquemontia ferruginea is endemic to Brazil and occurs in the states of Bahia, Minas Gerais, Rio de Janeiro, São Paulo, Paraná and Santa Catarina. In São Paulo, it can be found in anthropic areas, clean and shrubby fields, riparian forests, semideciduous seasonal forests, ombrophilous forests on forest edges, and on some islands, such as Ilha da Queimada Grande and Ilha dos Alcatrazes (Fig. 13).

It is morphologically similar to *Jacquemontia guyanensis* (Aubl.) Meisn. and can be distinguished by looking at the sepals' base and inflorescence density. In *J. guyanensis*, the base of the sepal is truncate, and the inflorescence is denser (Fig. 15).

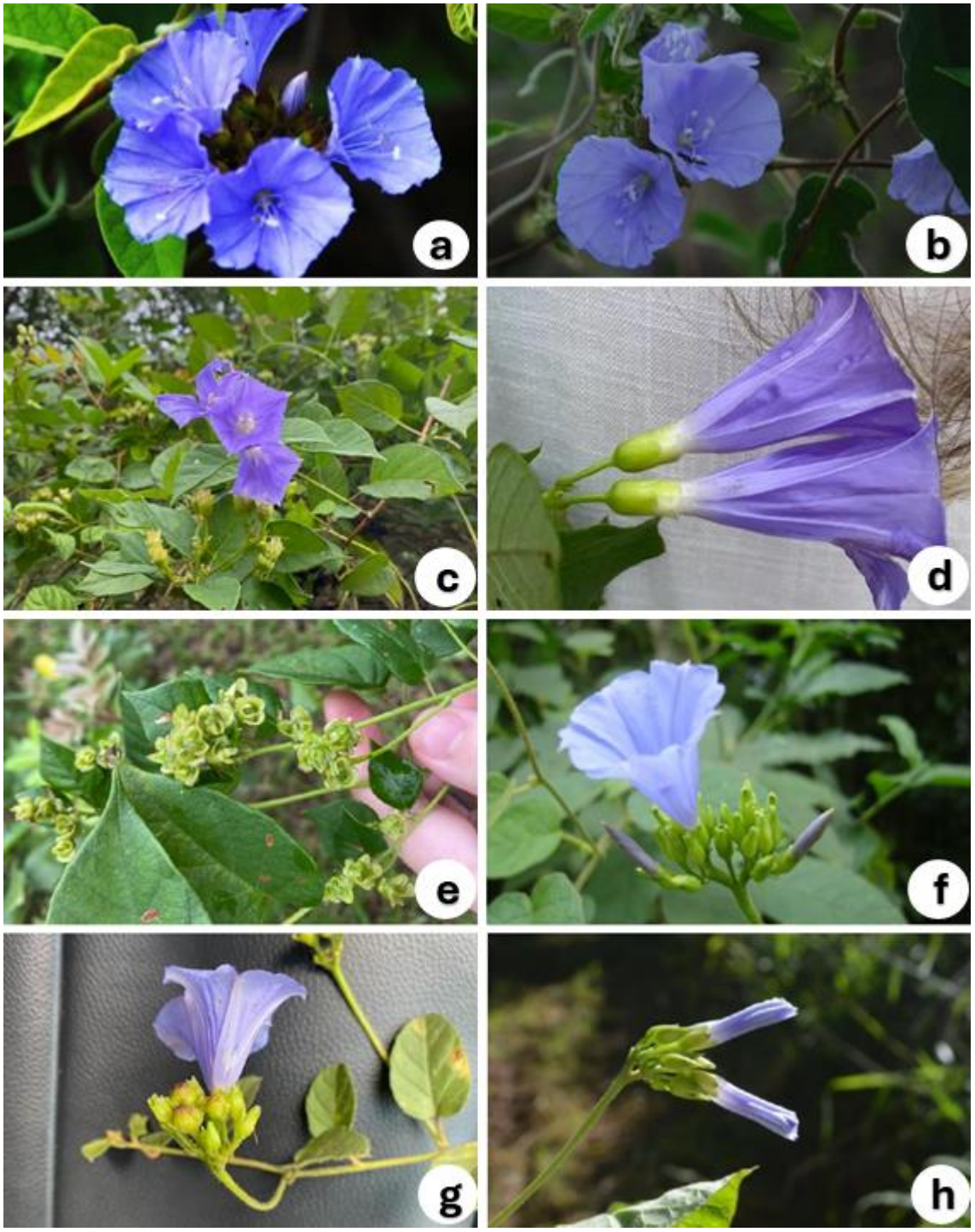

Fig. 13: a-b. *J. ferruginea*, a. inflorescence; b. flowers. c-e. *J. frankeana*, c. flowers; d. calyx; e. fruits. f. *Jacquemontia* sp1, inflorescence. g-h. *J. holosericea*, g. flowers and fruits; h. inflorescence (Photos Simão-Bianchini & Paixão).

Jacquemontia frankeana (Schltdl.) M. Pastore & Sim.-Bianch., Phytotaxa 221: 194. 2015.

Figs 13c-e; 14d; 15d.

Twining herb, stem pubescent to glabrescent, 5-radiate adpressed trichomes. Leaves 2–10.5 × 1–5 cm, ovate to lanceolate, base chordate or truncate, acuminate apex, mucronate, entire

to sinuate margins, both sides pubescent to glabrescent, sparse trichomes, with brown glands; petioles 1–5 cm, glabrescent. Inflorescence in axillary corymbiform dichasium, 3-23 flowers; peduncles 1–10 cm, sparsely pubescent to glabrous; bracteoles subequal, 2–4 × 0.5–1.3 mm, lanceolate, sparsely pubescent to glabrous; secondary peduncles, 3–5 mm, glabrescent; pedicels 4–10 mm, pubescent. Sepals unequal, outer 4.2–8.3 × 3–4 mm, oblong, apex truncated to rounded, glabrous, inner 6.8–10 × 3–5 mm, ovate, apex truncated to rounded, glabrous; Corolla infundibuliform, 2–3.5 cm long, lilac, midpetaline areas with simple trichomes at the apex. Capsule 6–7 mm long, partially covered by surrounding sepals. Seeds ca. 3 mm long, rugous.

Examined material: Cananéia, 29.X.1991, fl., *F. de Barros 2320* (SP); 26.III.2005, fl., *A.C.C. Delfini et al. 139* (SP); 05.V.1978, fl., *D.A. de Grande & E.A. Lopes 95* (SP); 05.IV.1988, fl., *J.E. Meireles et al. 311* (SP); 20.III.1984, fl., *F. de Melo et al. 512* (SP); 11.III.2013, fl., *M. Pastore & A.A. Lemos 276* (SP); Eldorado, 28.III.2005, fl., *J.C. Braidotti et al. 117* (SP); 13.X.2013, fl., *E.P. Fortes 2* (SP); Iguape, 30.V.1986, fl., *E.L.M. Catharino 766* (SP); 04.III.2023, fl. e fr., *C.P. Perito 48* (SP); Ilhabela, 27.XII.1971, fl., *J. Mattos & N. mattos 15729* (SP); 12.II.2013, fl. e fr., *M. Pastore & R.M. Brito 232* (SP); Iporanga, 27.XII.2002, fl. e fr., *R. Simão-Bianchini 1530* (SP); Juquiá, 30.XI.1994, fr., *K.D. Barreto et al. 3305* (SP); 09.IX.1994, fl., *C.A. Monteiro et al. 23* (SP); Pariquera-Açu, 20.XII.1995, fl., *N.M. Ivanauskas 664* (SP); Pedro de Toledo, III-2013, fl., *M. Pastore & A.A. Lemos 275* (SP); Ubatuba, 30.XII.2012, fl., *M. Pastore & R.M. Brito 217* (SP); 02.I.2013, fl., *M. Pastore & R.M. Brito 218* (SP); 03.I.2013, fl., *M. Pastore & R.M. Brito 219* (SP); 04.I.2013, fl., *M. Pastore & R.M. Brito 221 e 223* (SP); 14.II.1997, fl., *R. Simão-Bianchini & S. Bianchini 1039* (SP).

It is endemic to Brazil, occurs in the states of Espírito Santo, Rio de Janeiro, São Paulo, Paraná and Santa Catarina. In São Paulo, it can be found in riparian forests, rainforests on forest edges, and in Restingas (Fig. 13).

There is a group of species in the genus that are very similar but differ both by the shape of the sepals and the type of trichome. Pastore & Simão-Bianchini (2015) present a table and keys differentiating them.

Jacquemontia frankeana can be confused with a group of closely related species, with Jacquemontia sp1, J. holosericea and J. velutina. It differs from J. sp1 and J. velutina by sepals equal or subequal in size and 3-radiated trichomes (Fig. 14; 15), while J. frankeana

and J. holosericea have external sepals smaller than the internal ones and 4-5 radiated trichomes.

The delimitation with J. holosericea is due to the tomentose branches and leaves and the abaxial face with erect trichomes (Fig. 14c), while J. frankeana has glabrescent branches and leaves and the abaxial face with adpressed trichomes (Fig. 14d).

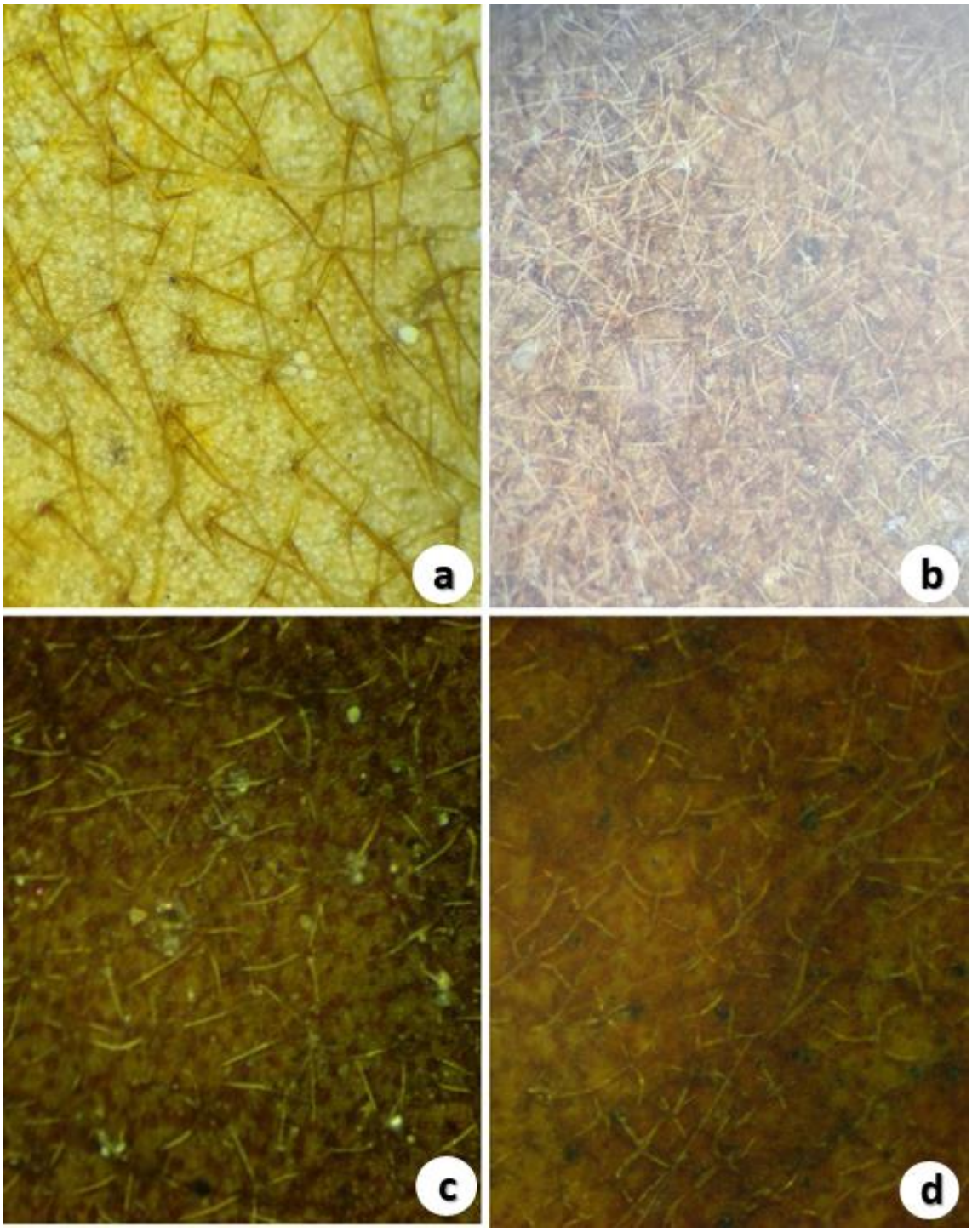

Fig. 14: a. 3-radiated stellate trichomes with long central ray in *Jacquemontia* sp1 (*Simão-Bianchini 1575*); b. 3-radiated stellate trichomes with subequal rays in *J. velutina* (*Simão-Bianchini 14*); c. 4-radiated, hirsute

stellate trichomes in *J. holosericea* (*Pastore & Brito 216*); d. 4-radiated, adpressed stellate trichomes in *J. frankeana* (*Simão-Bianchini 1530*).

Jacquemontia holosericea (Weinm.) O'Donell, Lilloa 26: 357. 1953.

Fig. 13g-h; 14c; 15b.

Twining herb; stem tomentose to glabrescent, trichomes stellate 4-5 radiate, erect. Leaves ovate to lanceolate, 1.5–9.5 × 1–5 cm, entire to sinuate, base chordate to truncate, apex obtuse or acute, mucronate 2mm, abaxial surface pubescent to glabrous, adaxial surface velutinous to pubescent, sparse black glands; petioles 1–4 cm, glabrescent. Inflorescences in dichasium corymbiform, axillary, 2-30 flowers; peduncles 1-6 cm, tomentose; bracteoles subequal, 2 × 1, ovate to lanceolate, pubescent to glabrous; secondary peduncles 3–5 mm; pedicels 4–10 mm, tomentose. Sepals unequal, outer 4.8–7.3 × 3–4 mm, oblong, apex truncated to rounded, glabrous to ciliate, inner 6.5–9 × 4–5 mm, ovate, apex truncated to rounded, glabrous to ciliate. Corolla infundibuliform, 2–4 cm long, lilac, midpetaline areas with trichomes at the apex or rare entire pubescent. Capsules ca. 7 mm, entirely or partially covered by surrounding sepals. Seeds ca. 4 mm.

Examined material: Bertioga, 16.III.1999, fl., *S.E. Martins et al. 401* (SP); 18.III.1999, fl., *S.E. Martins et al. 402* (HUSC, SP); 25.IX.2002, fl., *P.S.P. Sampaio & Z. Wacny 728* (HUSC, SP); 30.III.1997, fl. e fr., *R. Simão-Bianchini & S. Bianchini 1043* (SP); Cananéia, 14.IV.1994, fl., *F. de Barros 2320* (SPF); 25.IV.1980, fl., *D.A. de Grande & E.A. Lopes 95* (SPF); 29.III.2005, fl., *J.E. Meireles 311* (SP); 20.III.1984, fl., *F. de Melo et al. 512* (SPF); 05.IV.1988, fl., *M.G.L. Wanderley et al. 1013* (SPF); Caraguatatuba, 28.IV.1892, fl., *G. Edwall CGG1794* (SP); 15.I.2013, fl., *R. Simão-Bianchini & S. Bianchini 1873* (PMSP, SP); Eldorado, 28.III.2005, fl., *J.C. Braidotti 117*, (SP); 11.X.2012, fl., *M. Pastore et al. 198* (SP); Guarujá, 27.XII.2012, fl., *M. Pastore & R. M. Brito 216* (SP); 13.I.1907, fl., *A. Usteri* (SP 12929); Iguape, 22.XI.1968, fl., *H.F. Leitão-Filho 656* (SP); Ilhabela, 24.X.2015, fl., *R. Marquete 4485* (RB); Juquiá, 09.IX.1994, fl., *C.A. Monteiro et al. 23* (SPF); Pariquera-Açu, 11.X.2012, fl., *M. Pastore et al. 197* (SP); 20.XII.1995, fl., *N. M. Ivanauskas 664* (SP); Peruíbe, 12.X.1987, fl., *G. Hashimoto 20509* (SP); 10.X.1988, fl., *R. Simão-Bianchini 50* (SP, SPF); 01.X.1988, fl., *V.C. Souza 149* (SP); Santos, fl., *A. Barbiellini* (RB 30000); Ubatuba, 30.IV.2023, fl., *C.P. Perito 57* e *58* (SP); 14.II.1997, fl. e fr., *R. Simão-Bianchini & S. Bianchini 1039* (PMSP, SP)..

Jacquemontia holosericea is endemic to Brazil and occurs in the states of Espírito Santo, Rio de Janeiro, São Paulo and Minas Gerais. In São Paulo state, it can be found along the edges of ombrophilous forests and in restingas (Fig. 13).

This species is very similar morphologically to *J. frankeana*, and the differences between the two are discussed under the last species (Fig. 14; 15).

Fig. 15: a. Calyx with subequal sepals in *Jacquemontia* sp1 (*Simão-Bianchini 1575*); b. Calyx with external sepals smaller in *J. holosericea* (*Simão-Bianchini 1873*); c. Calyx with subequal sepals in *J. velutina* (*Simão-*

Bianchini 14); d. Calyx with external sepals smaller in *J. frankeana* (*Simão-Bianchini 1039*); e. calyx with external sepals smaller in *J. blanchetii* (*Fortes 01*); f. calyx with external sepals larger in *J. ferruginea* (*Rossi 1007*).

Jacquemontia velutina Choisy, Prodr. Syst. Nat. 9: 398. 1845.

Figs 14b; 15c; 16a-b.

Twining herb, stems velutinous, stellate, 3-radiate, erect to curly. Leaves ovate to lanceolate, 1–9 × 0.5–8 cm, entire to sinuate, base chordate, rounded or truncate, apex truncate, mucronate, both faces erect velutinous, abaxially denser; petioles 0.3–3.7 cm, pubescent to velutinous. Inflorescence in axillary dichasium corymbiform, with 4-38 flowers; peduncles 1.7–8.8 cm, velutinous; bracteoles subequal, 1–4 × 0.2–0.6 mm, lanceolate, velutinous; secondary peduncles 2–6.8 mm; pedicels 4–15 mm, velutinous. Sepals equal, 4–6 × 2.5–3.5 mm, ovate to obovate, apex rounded, pubescent, margins ciliate. Corolla infundibiliform 1.5–2.5 cm long, lilac, midpetaline areas glabrous. Capsules ca. 6 mm long, partially covered by surrounding sepals. Seeds ca. 3 mm, black.

Examined material: Peruíbe, 24.VII.1988, fl., V.C. *Souza et al.* 1661 (HUSC).

Additional material: Araraquara, 30.XI.1967, fl., *H.M. de Souza* (RB 264902); Buritizal, 05.V.1995, fl., *W. Marcondes-Ferreira et al. 1185* (PMSP); Casa Branca, VIII-1988, fl., *R. Simão-Bianchini 25* (SPF); 24.IV.2013, *M. Pastore 280* (SP); Guarulhos, 22.IV.2014, fl., *R.T. Shirasuna 3428* (PMSP); Jundiaí, 05.IV.1995, fl., *S.L. Jung-Mendaçolli et al. 1400* (SPF); Piracaia 18.IV.2012, fl., *R.T. Shirasuna 3023* (SP).

Jacquemontia velutina is native to South America and present in Brazil, Bolivia and Paraguay. In Brazil, it occurs in the central west region, except in Mato Grosso, in the southeast region, except in Espírito Santo, and in the states of Bahia, Pará and Tocantins. In São Paulo, it can be found in clean fields or shrubs, the Cerrado, semideciduous seasonal forests and ombrophilous forests along the edges (Fig. 16).

The species most morphologically similar to *J. velutina* that occurs in the study area is *J. blanchetii*. The latter has glabrescent branches and leaves, an umbelliform inflorescence, and glabrous sepals, while the former has velutinous branches and leaves, a dichasium inflorescence, and pubescent sepals (Fig. 14; 15).

Fig. 16: a-b. *J. velutina*, a. inflorescence; b. fruits (Photos Simão-Bianchini).

Jacquemontia sp1

Fig. 13f; 14a; 15a.

Twining herb, stems hirsute, erect, stellate, 3-radiate. Leaves 2.5–9.5 × 1.5–5.5 cm, ovate to lanceolate, base chordate to truncate, apex acute, mucronate 2 mm, margin entire to sinuate, both sides dense to sparsely hirsute, concolor; petioles 1–6 cm, glabrescent. Inflorescence

in corymbiform dichasium, axillary, 6-22 flowers; peduncles 5–18 cm, hirsute; bracteoles subequal, 1.8–5 × 0.3–0.5 mm, lanceolate, hirsute; secondary peduncles 3–10 mm; pedicels 3–9 mm, hirsute. Calyx does not constrict the corolla; sepals equal to subequal, outer 6–8 × 3–4 mm, inner 5.8–7.5 × 3–3.5 mm, obovate to oblong, apex rounded to obtuse, glabrous, margins ciliate. Corolla infundibuliform, 2–3 cm long, lilac, rare white, midpetaline areas with trichomes only on apex. Capsules ca. 5–6 mm long, covered entirely or partially by the surrounding sepals. Seeds ca. 3mm, black.

Examined material: Ubatuba, 02.X.1975, fl., *D. S. D. Araújo 852 e 866* (RB); Ubatuba, 06.II.1988, fl., *J. E. L. S. Ribeiro et al. 225 e 243* (SPF); Ubatuba, 09.XI.1993, fl., *A. C. Kim et al. 30003* (PMSP); Ubatuba, 29.VIII.1994, fl., *M. A. de Assis et al. 393* (SPF); Ubatuba, 04.IV.1995, fl., *M. Kirizawa & J. A. Correa 2184* (SP); Ubatuba, 30.I.1996, fl., *H.F. Leitão Filho et al. 34392* (SPF); Ubatuba, 02.II.1996, fl., *H.F. Leitão Filho et al. 34395* (SP); Ubatuba, 07.I.2013, fl., *M. Pastore & F. C. Brito 225* (SP).

Jacquemontia sp1 occurs on the Praia da Fazenda in the municipality of Ubatuba and South of Rio de Janeiro state (Fig. 13). It is morphologically similar to *Jacquemontia gabrielii* (Choisy), differing in its subequal sepals and slightly constricted and almost campanulate corolla (Fig. 14; 15).

Operculina Silva Manso, Enum. Subst. Braz. 16, 49. 1836.

Operculina macrocarpa (L.) Urb., Symb. Antill. 3: 343. 1902.

Fig. 17a-b.

Herbaceous climber, woody at the base, stem glabrous, reddish, 4-winged. Leaves palmate with (3-)5-7 lobes, 7–8.5 × 7–15 cm, lanceolate to elliptic, apex acuminate, mucronate, glabrous; petioles 2–4.5 cm, winged, glabrous to glabrescent. Inflorescence in 1-3 flowered axillary cyme; peduncles 4.5–6 cm, winged, glabrous; bracteoles 1.2 × 0.1 mm, lanceolate, caducous; pedicels 1.5–3 cm, winged, glabrous. Calyx ovate; sepals equal, 2–2.5 × 1.5–2 cm, wide ovate, glabrescent, apex obtuse to rounded or emarginate, added to the fruit. Corolla campanulate-infundibiliform, ca. 7 cm long, white, internally pubescent midpetaline area, externally with golden glandular trichomes. Capsule depressed globose, 3-4 lobed, glabrous, 2-locular. Seeds 1 to 4, ovoid, black, glabrous to pubescent at the hilum.

Examined material: Registro, 02.VI.1963, fl., *C. Moura* (SP 123440); São Sebastião, 25.VII.1895, fl., *A. Loefgren* CGG3092 (SP).

Additional material: Campinas, 08.IV.1941, fl., *O. Kriegel* (SP 48912); 04.V.1944, fl., *J. Theisen* (SP 267724); São Paulo, 03.V.1954, fl., *W. Hoehne* (SPF 15347).

Operculina macrocarpa was described based on an illustration of plants from the Caribbean, but it is likely native to Northeast Brazil where it grows vigorously very well represented, with numerous collections coming from this region, it is also common in Cerrado areas of Minas Gerais and Central West Region with samples coming from the Northeast. In São Paulo, all records are from cultivated plants in urbanized areas (Fig. 17).

It is popularly known as batata-de-purga, amaro-leite or jalapão. Its tubers are purgative, being widely used as a laxative. Also used in "German brandy", which has been used medicinally for over 50 years (Michelin & Salgado 2004; Paganotte *et al.* 2016)

Excluded and doubtful species:

Bonamia umbellata Choisy – The holotype of *Prevostea umbellata* Choisy var. *lindenbergii* Meisn. was collected in Santos, despite having been considered as a synonym for *B. umbellata*. The examined photo of the material deposited in the BR herbarium indicates that the variety is synonymous with *Jacquemontia frankeana* (to confirm the species it is necessary to analyze the trichomes).

Fig. 17: a-b. *O. macrocarpa*. a- Palmately lobed leaf (*A.M. Janunzzi 591*); b- flowers and fruit (*L.V. Vasconcelos 591*).

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