

Melastomataceae from the Parque Estadual do Utinga, Pará, Brazil

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Abstract

The taxonomic treatment of the species of Melastomataceae occurring in the Parque Estadual de Utinga, Pará, is presented. Twenty-seven species distributed in 13 genera were recorded, with five new records for the study area: *Leandra micropetala*, *M. affinis*, *M. argyrophylla*, *M. punctata*, and *Pterolepis glomerata*; the latter is also a new record for the state of Pará. *Miconia* was the largest genus with 9 species, followed by *Clidemia* (four species), *Aciotis* (three species), and *Tococa* (two species). The remaining genera were all represented by a single species (*Adelobotrys*, *Bellucia*, *Henriettea*, *Leandra*, *Maieta*, *Mouriri*, *Nepsera*, *Pterolepis*, and *Tibouchina*). Identification keys, morphological descriptions, information on phenology, habitat, geographical distribution, taxonomic comments, and illustrations of the species are provided. The Melastomataceae figure among the largest plant families in the area of the state capital, Belém, the data presented herein may be useful for habitat restoration.

Resumo

Apresentamos aqui o tratamento taxonômico das espécies de Melastomataceae do Parque Estadual do Utinga, Pará. Foram registradas 27 espécies distribuídas em 13 gêneros, com cinco novos registros para o parque: *Leandra micropetala*, *Miconia affinis*, *M. argyrophylla*, *M. punctata* e *Pterolepis glomerata*; a última é também um novo registro para o estado do Pará. O gênero com maior número de espécies na área de estudo é *Miconia*, com 9 espécies, seguido por *Clidemia* (quatro espécies), *Aciotis* (três espécies) e *Tococa* (duas espécies). Os demais gêneros são representados por apenas uma espécie cada um (*Adelobotrys*, *Bellucia*, *Henriettea*, *Leandra*, *Maieta*, *Mouriri*, *Nepsera*, *Pterolepis* e *Tibouchina*). Chaves de identificação, descrições morfológicas, informação sobre fenologia, habitat, distribuição geográfica e taxonomia, bem como ilustrações das espécies também são apresentados. A família Melastomataceae é uma das maiores famílias de plantas em termos de riqueza de espécies na área de Belém, portanto, os dados aqui apresentados são importantes para a restauração e o reflorestamento de áreas degradadas.

Keywords:

Amazon flora. Floristic survey. *Miconia*. Myrtales. Taxonomy.

Palavras-chave:

Flora Amazônica. Levantamento florístico. *Miconia*. Myrtales. Taxonomia.

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Introduction

Amazonia is the second richest biome for Brazilian Melastomataceae, with the presence of 52 genera and 522 species (respectively 75% and 36% of the taxa found in the country (Flora do Brasil 2020). Only a few specific floristic studies for this biome exist (Ducke, 1925; Ribeiro et al., 1999; Rocha et al., 2017), therefore it is still difficult to identify the species in the region.



Melastomataceae, excluding subfamily Oliboideae (treated elsewhere as a separate family, Memecylaceae), has been pointed out as a monophyletic group morphologically supported by the acrodromous leaf venation (Clausing; Renner, 2001; Bacci et al., 2016) representing perhaps the largest clade of Angiosperms characterized by this venation type.

A floristic survey in a municipal park in Belém has shown that Melastomataceae are among the main botanical families in the local forests (Neves et al., 2020). Likewise, Jesus et al. (2016) pointed out that the family was among the most important families in a naturally regenerating forest, with many Melastomataceae species classified as pioneers in disturbed areas. It is important to point out that an efficient and rapid process of recovery of disturbed areas needs to consider the local species to increase its success rate (Chaves et al., 2013), especially when considering that the main methodology applied to forest recovery in the Brazilian Amazon relies on direct planting of seedlings (Rodrigues et al., 2020).

Studies carried out in the surroundings of Belém highlighted the importance of the forest fragments for conservation, and the high floristic diversity of the tropical forests found in this area (Rodrigues et al., 2021). The Parque Estadual do Utinga (PEUt) is a conservation area found within metropolitan Belém that includes different vegetation types, such as *terra-firme*, *igapó* and secondary forests (Silva Junior et al., 2020). The preservation and study of forest fragments is extremely important for the recovery of the native vegetation, for instance the PEUt was created to protect Belém's water sources (Brasil et al., 2021). The conservation of natural habitats also contributes to the well-being and environmental education of the local population (Pereira et al., 2018). According to Silva Junior et al. (2020) the PEUt has a moderate degree of environmental disturbance and a high potential of recovery due to local biotic dispersal activities.

Considering this situation, the objective of this study is to identify, list, describe and distinguish the species of Melastomataceae found in the PEUt, providing identification keys, descriptions and illustrations. The present work aims to contribute to the knowledge of the local and regional floras, and to support management, conservation and restoration measures for the PEUt and surrounding areas.

Methods

Study area

The present study was carried out at the Parque Estadual do Utinga, a conservation unit created by the government of Pará, including the municipalities of Belém and Ananindeua, with the objective of preserving the natural environment for the local community, to develop scientific, cultural, education, tourism and recreational activities and also protecting natural springs (Imazon, 2013). Within the PEUt, there are two lakes (Bolonha and Água Preta) formed by the Murucutu and Água Preta streams (Imbiriba Júnior; Costa, 2003) and supply water directly and indirectly to the 2 million residents of Belém (Cosanpa, 1982, 2018).

The physical characteristics, landscape and land use in the PEUt are explained in its management plan (Imazon, 2013), including climate, soil, geomorphology, geology and hydrography data.

Collection and analysis of data

We carried out a survey of Herbarium specimens collected at the PEUt found at the herbaria of the Instituto Agrônomo do Norte, Embrapa Amazônia Oriental (IAN) and Museu Paraense Emílio Goeldi, Herbário João Murça Pires (MG). Collecting trips to the PEUt searching for fertile specimens were made between October 2016 and April 2017. Samples were pressed using conventional methods (Bridson; Forman, 2014), the main set was deposited at MG and duplicates were sent to other Amazonian herbaria and to the Jardim Botânico do Rio de Janeiro (RB). Images of living plants, as well as phenological and population observations also took place in the field.

All available specimens were identified using specific bibliography (e.g. Goldenberg et al., 2012, 2022, 2024; Michelangeli, 2005), herbarium collection websites (INCT, 2023; REFLORA, 2023) and described using stereomicroscope and a digital calliper. Terminology used to describe vegetative and reproductive features followed Gonçalves and Lorenzi (2011), trichome morphology was based on Gonçalves and Lorenzi (2011) and Wurdack (1986), and for *Miconia* inflorescences we followed Freire et al. (2022). We follow Goldenberg et al. (2020) for genera classification in Melastomataceae.

Results

Twenty-seven species of Melastomataceae were recorded for the PEUt, longising 13 genera: *Miconia* Ruiz & Pav. (9 species), *Clidemia* D. Don (four species), *Aciotis* D. Don (three species), *Tococa* Aubl. (two species), *Adelobotrys* DC., *Bellucia* Neck. ex Raf., *Henriettea* DC., *Leandra* Raddi, *Maieta* Aubl., *Mouriri* Aubl., *Nepsera* Naudin, *Pterolepis* (DC.) Miq., and *Tibouchina* Aubl., with a single species each. *Miconia* is the richest genus, with the largest number of the recorded species. Most of the species were found in ruderal or disturbed environments, exposed to sunlight, with the exception of shrubby *Maieta guianensis* Aubl. and the liana *Adelobotrys klugii* Wurdack which preferred shady spots. New records for the study area are *Leandra micropetala* (Naudin) Cogn., *Miconia affinis* DC., *Miconia argyrophylla* DC., *Miconia punctata* (Desr.) D. Don ex DC., and *Pterolepis glomerata* (Rottb.) Miq., this one is also a new record for Pará state.

Identification key for Melastomataceae occurring in the Parque Estadual do Utinga

1. Venation brochidromous, stamen connectives with dorsal glands *Mouriri grandiflora*
Venation acrodromous, stamen connectives devoided of dorsal glands 2
2. Lianas, "T" shaped trichomes *Adelobotrys klugii*
Herbs, shrubs or trees, not climbing, trichomes simple, dendritic, stellate, glandular, adpressed, amorphic or lepidote 3
3. Ant-domatia present 4
Ant-domatia absent 6

4. Leaves clearly anisophyllous with domatia immersed in the leaf-blade *Maieta guianensis*
Leaves isophyllous to slightly anisophyllous with petiolar domatia ..5
5. Branches without glandular trichomes, domatia simple; ovary without apical trichomes *Tococa aristata*
Branches with small glandular trichomes, domatia bi-lobulate; ovary with simple apical trichomes *Tococa guianensis*
6. Ovary superior, fruits capsular7
Ovary inferior or semi-inferior, fruit baccaceous12
7. Hypanthium with appendages branched vascularized *Pterolepis glomerata*
Hypanthium without appendages branched vascularized8
8. Branches with scale-like lepidote indumentum; involucre bracts, petals purple *Tibouchina aspera*
Branches with simple or glandular trichomes, without involucre bracts, petals white9
9. Leaves papiraceous; inflorescences 8–15 cm long; bilobulate appendages *Nepsera aquatica*
Leaves membranaceous; inflorescence 2.5–7 cm long; appendages not bilobulate10
10. Branches sparsely covered by simple, tortuose trichomes; ovary 2-locular *Aciotis annua*..
Branches moderate covered by simple, not tortuose trichomes; ovary 3-locular11
11. Flowers 4-merous, connective c. 0.5 mm prolonged beneath the thecae in antesealous stamens, lacking appendages *Aciotis purpurascens*
Flowers 5-merous, connective not prolonged beneath thecae in antesealous stamens, with ventral appendages *Aciotis circaeifolia*
12. Inflorescences cauliflorous or pseudoaxillary13
Terminal inflorescences17
13. Cauliflorous inflorescences; petals papyraceous, stamens yellow or purple14
Pseudoaxillary inflorescences; petals membranaceous, stamens white15
14. Leaves clad with simple, long and tortuose hairs on both sides, margin toothed; hypanthium urceolate *Bellucia egensis*
Leaves clad with simple, scabrous trichomes adaxially and branched abaxially, margin entire; hypanthium campanulate *Henriettea sucosa*
15. Dichasial inflorescences *Clidemia hirta*
Thyrsoid inflorescences16
16. Leaf margin serrate-ciliate, flowers with 10 stamens, petals apically retuse *Clidemia capitellata*
Leaf margin dentate; flowers with 12 stamens, petals apically rounded to slightly subcordate *Clidemia bulbosa*
17. Branches cylindrical18
Branches tetragonal21
18. Petals triangular with one long external trichome, apex apiculated *Leandra micropetala*
Petals oblong, ovate or elliptic, apex subcordate, obtuse or emarginate19
19. Leaves ovate, margin dentate, ovary 4-locular *Clidemia novemneria*
Leaves lanceolate to narrowly elliptic, margin entire, ovary 3-locular20
20. Leaves papyraceous, hypanthium campanulate *Miconia minutiflora*
Leaves chartaceous, hypanthium urceolate to tubular *Miconia mirabilis*
21. Leaf margin ciliate; petals pink *Miconia ciliata*
Leaf margin entire; petals white20
22. Shrubs 1.5–2 m tall; branches winged, leaves sessile *Miconia alata*
Trees, treelets or shrubs 3–12 m tall; branches not winged, leaves petiolated23
23. Leaves abaxially densely covered with lepidote trichomes *Miconia punctata*
Leaves moderately to densely covered with amorphous, simple, stellate, furfuraceous or dendritic trichomes abaxially24
24. Branches and leaves abaxially with amorphous indumentum; inflorescence with distal scorpioid branches *Miconia argyrophylla*
Branches and leaves abaxially with stellate, simple, furfuraceous or dendritic hairs; inflorescence without distal scorpioid branches25
25. Inflorescence branches reddish, fruits blue *Miconia affinis*
Inflorescence branches not reddish, fruits red, yellow or black26
26. Leaves with suprabasal veins *Miconia prasina*
Leaves with basal veins *Miconia egensis*

Aciotis

Herbs or shrubs, branches tetragonal, indumentum moderate, with simple and/or glandular trichomes. Leaves petiolated; blades ovate, lanceolate or elliptic; apex cuneate or attenuate, base rounded or subcordate, margin serrate, ciliate or glabrous; membranaceous, veins acrodromous, basal. Inflorescences in dichasia or thyrses, terminal or lateral. Flowers 5-4-merous; hypanthium urceolate or slightly campanulate, calyx lobes triangular or obtuse; petals elliptic or oblong, apex obtuse, white or slightly pinkish; stamens 8, anthers connective prolonged beneath thecae or not prolonged, with ventral appendages or not; ovary 2–3-locular. Fruits capsules or berries.

Aciotis annua (Mart. ex DC.) Triana, Trans. Linn. Soc. London 28: 52. 1872.

Herb 0.2–0.6 m. tall, branches tetragonal, indumentum with simple, tortuose trichomes. Leaves petioles 0.3–1.9 cm long, blades 0.9–5.5 × 0.5–3 cm, ovate to elliptic, apex cuneate, base rounded, margin serrate-ciliate, covered with simple, tortuose trichomes on both surfaces; veins acrodromous, 3+2, basal. Dichasia 4.5–7 cm long, terminal; bracteoles ovate. Flowers 4-merous, sessile; hypanthium 1.5–2 mm long, urceolate to slightly campanulate, calyx lobes triangular; petals 2 mm long, elliptic, apex obtuse, membranaceous, white; stamens 8, filaments: antesealous 1.8–2 mm long, antepetalous 1.2–1.4 mm long; anthers: in antesealous stamens c. 1 mm long, antepetalous c. 0.8 mm; connective slightly prolonged beneath thecae or not prolonged, with ventral appendages; ovary inferior, with apical glandular trichomes, 2-locular, 1–1.2 mm long; style 2.8–3 mm long. Capsules 2 mm long, green, immature.

Material examined: BRAZIL, Pará: Belém, borda de floresta, 17/III/2012, fl., *M.V.B. Soares* 15 (MG); borda de floresta, 17/III/2012, *M.V.B. Soares* 23 (MG); borda de floresta, 14/IV/2012, *M.V.B. Soares* 27 (MG); 12/III/1901, *M. Guedes* 2004 (MG).

Additional material examined: **BRAZIL, Pará:** Abaetetuba, estrada principal, 14/IV/2012, *M.V.B. Soares* 36 (MG).

Comments: *Aciotis annua* is widespread in tropical South America, occurring in Northern (Acre, Amazonas, Pará, Roraima) and Northeastern (Bahia, Ceará, Maranhão, Piauí) Brazil (Goldenberg et al., 2020), often found growing in the forest edge. It differs from other *Aciotis* species in the area due to its two-locular ovary.

Phenology: It was collected in flower and fruit in March and April.

Aciotis circaeifolia (Bonpl.) Triana, Trans. Linn. Soc. London 28: 52. 1871.

Herb 0.5–0.7 m tall, branches tetragonal, indumentum with moderate simple and glandular trichomes. Leaves petioles 1–2.9 cm long, blades 3–10.4 × 1.3–3 cm, lanceolate, apex attenuate, base rounded, margin serrate, indumentum with sparse simple trichomes on both surfaces (these more abundant on the veins abaxially); veins acrodromous, 3+2, basal. Thyrses 3 cm long, terminal and lateral; bracteoles oblong. Flowers 5-merous, sessile; hypanthium 3–3.5 mm long, urceolate, calyx lobes obtuse; petals 5.5–5.8 mm long, oblong, apex obtuse, membranaceous, white; stamens 8, filaments: antesepalous 2.9–3 mm long; antepetalous 2.4–2.5 mm long, anthers: antesepalous 1.8–2 mm long, antepetalous 0.9–1 mm long; connective not prolonged beneath thecae, with ventral appendages; ovary inferior, 3-locular, 2–2.5 mm long, style 5–6 mm long. Capsules 4.3–4.5 mm long, green, mature fruit not seen.

Material examined: BRAZIL, Pará: Belém, 12/III/1901, *M. Guedes* 2003 (MG).

Comments: Occurring in Northern South America, reaching Northern Brazil in the states of Amazonas, Amapá, Pará, Rondônia and Roraima (Goldenberg et al., 2020), *Aciotis circaeifolia* is distinct from other *Aciotis* species in the area because of its glandular as well as simple trichomes.

Phenology: It was collected in flower in March.

Aciotis purpurascens (Aubl.) Triana, Trans. Linn. Soc. London 28: 52. 1871.

Shrubs c. 1 m tall, branches tetragonal, indumentum with moderate simple trichomes. Leaves petioles 0.8–3.5 cm long, blades 6–15.2 × 1.9–5 cm, lanceolate to ovate, apex attenuate, base subcordate to rounded, margin serrate and glabrous, indumentum with simple sparse trichomes adaxially and simple trichomes abaxially; veins acrodromous, 3+2, basal. Thyrses 2.5–7 long, terminal; bracteoles ovate. Flowers 4-merous; sessile, hypanthium (Figure 1a) 2.5–4 mm long, urceolate, calyx lobes obtuse with small teeth and glandular trichomes between the lobes, petals (Figure 1b) 5–7 mm long, membranaceous, elliptic, apex obtuse with simple trichomes, white to slightly pinkish; stamens 8, filaments: antesepalous 4–5 mm long, antepetalous 2.8–3 mm long; anthers: antesepalous 3–3.2 mm long, antepetalous 1.2–1.5 mm long; connective c. 0.5 mm prolonged beneath thecae in antesepalous stamens and not prolonged in antepetalous ones, both lacking appendages; ovary inferior, 3-locular, 2.1–2.2 mm long, style 4.5–5 mm long. Berries baccaceous immature, green.

Material examined: BRAZIL, Pará: Belém, 14/IV/2012, *M.V.B. Soares* 28 (MG); estrada Moça Bonita, 15/II/2017, *M.G.O. Freitas et al.* 52 (IAN, MG)

Comments: Widespread in the Caribbean and Northern South America, *A. purpurascens* occurs in Northern (Acre, Amazonas, Amapá, Pará, Rondônia and Roraima) and Northeastern Brazil (Ceará, Maranhão) also reaching Mato Grosso (Goldenberg et al., 2020). This species differs from other *Aciotis* species in the area because of its baccaceous fruits, antesepalous stamens with prolonged connective beneath the thecae and overall larger leaves and petioles.

Phenology: It was collected in flower in February and April.

Adelobotry

Adelobotrys klugii Wurdac, Phytologia 24: 196. 1972.

Liana branching above 2.5 m tall, branches cylindrical, indumentum with simple and or “T” shaped trichomes. Leaves petiolated, petioles 1–4 cm long, blades 9.5–17.5 × 4.5–7.5 cm, elliptic to or ovate, apex cuspidate, base subcordate, margin entire, ciliated, texture papyraceous, indumentum with simple adpressed and small glandular dark orange trichomes adaxially, scarce simple trichomes abaxially; veins acrodromous, 3+2, suprabasal. Cymes subumbellate, terminal or axillary, bracteoles ovate. Flowers 5-merous; hypanthium obconic to tubular, calyx lobes obtuse; petals obovate, lilac to pinkish; stamens unequal; anthers: with bifurcate appendages; ovary 5-locular. Capsules not seen.

Material examined: BRAZIL, Pará: Belém, Trilha do Macaco, 15/II/2017, *M.G.O. Freitas et al.* 56 (MG).

Comments: Distributed in Northwestern South America, *Adelobotrys klugii* occurs in Brazil only in the state of Pará (Goldenberg et al., 2020). It is distinct from all other species in the study area by its lianescent habit and sub-umbellate cymes with lilac to pinkish flowers.

Phenology: It was collected in flower in February.

Bellucia

Bellucia egenis (Mart. ex DC.) Penneys, Michelang., Judd & Almeda, Syst. Bot. 35(4): 796. 2010.

Shrubs 0.5–3 m tall, branches cylindrical, indumentum with dense simple trichomes. Leaves petiolated, petioles 0.7–3.5 cm, blades 8–22 × 4.5–10.5 cm, apex attenuate, base rounded to cuneate, margin dentate, not ciliate, texture papyraceous, indumentum with simple long and tortuose trichomes on both surfaces; veins acrodromous, 3+2, suprabasal. Cauliflorous cymes c. 1 cm long; axillary; peduncle 3.5–5 mm long; bracts acute. Flowers sessile, 5-merous, hypanthium 1–1.4 cm long, urceolate, calyx lobes truncate, petals (Figure 1c) c. 2 cm long, obovate, apex cuspidate, papyraceous, white; stamens 10, yellow, filaments: antesepalous 5.5–6 mm long, antepetalous 5.5–6 mm long, anthers: antesepalous 5–5.5 mm long, antepetalous 5–5.5 mm long; connectives not prolonged beneath thecae, not appendiculate; ovary inferior, 10-locular, 4–5 mm long, style 1.5–1.6 cm long, gradually thickened distally (Figure 1d). Berries 0.5–1.5 cm long, immature green, turning black when ripe.

Material examined: BRAZIL, Pará: Belém, 14/IV/2012, M.G.O. Freitas et al. 35 (MG); estrada de acesso principal, 26/I/2017, M.G.O. Freitas et al. 41 (IAN, MG); Castanheira, estrada Moça Bonita, 13/X/2016, M.G.O. Freitas et al. 11 (IAN, MG).

Comments: Widespread from North and Central America to Northern South America, *Bellucia egensis* occurs in Northern Brazil (Amazonas, Amapá, Maranhão, Pará and Roraima (Goldenberg et al., 2020)). It is distinguished by its cauliflorous inflorescences, fleshy petals and urceolate hypanthium.

Phenology: It was collected in flower in January and April and fruiting in October, January and April, and its fleshy fruits are sought after by wildlife.

Clidemia

Shrubs, branches cylindrical, densely covered by simple, stellate stipitate trichomes, glandular or not. Leaves petiolated, blades ovate, cordate or lanceolate; apex acuminate or slightly acuminate, acute or attenuate, base rounded or subcordate, margin crenulate, dentate, serrate, ciliate or not, texture papyraceous, veins acrodromous, basal. Inflorescences thyrsoïd or dichasial, terminal or pseudoaxillary. Flowers 5-6-merous; hypanthium campanulate or urceolate, inner calyx lobes oblong, rounded, obtuse or emarginate, outer calyx lobes subulate or as an external tooth; petals ovate, obovate, oblong or elliptic, apex rounded, subcordate or retuse, white; stamens 10 or 12, white, connective not prolonged beneath thecae, inappendingulate or with dorsal appendages; ovary 4 to 6-locular. Fruits baccaceous.

Clidemia bullosa DC, Prodr. [A. P. de Candolle] 3: 158. 1828.

Shrubs 1–1.5 m tall, branches cylindrical (Figure 1e), densely clad with glandular and stellate stipitate trichomes. Leaves (Figure 1f) petiolated, petiole 0.4–1.2 cm long, blade 3.5–8.5 × 2–4.2 cm, ovate, apex acuminate, base rounded, margin dentate, texture papyraceous, indumentum dense, with simple bulla-based trichomes adaxially, stellate and glandular trichomes abaxially; acrodromous 3+2, basal. Thyrsoïds 3.5–5 cm long, pseudoaxillary; bracteoles oblong; Flowers 6-merous, sessile, hypanthium (Figure 1g) 6–8 mm long, urceolate, calyx lobes (Figure 1h) inner oblong with glandular stipitate trichomes, outer calyx lobes as an external teeth; petals (Figure 1i) 3–4 mm long, membranaceous, oblong to elliptic, apex rounded to slightly subcordate, white; stamens (Figure 1j) 12, white, filaments: antesealous 2.5–3 mm long, antepetalous 2.5–3 mm long; anthers: antesealous 3.2–3.4 mm long, antepetalous 3.2–3.4 mm long; connective not prolonged beneath thecae, inappendingulate; ovary (Figure 1k) inferior, 6-locular, 2 mm long, style 3–3.2 mm long. Berries 4.5–5 mm long, immature green.

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago água preta, 10/III/2012, M.V.B. Soares 13 (MG); estrada de acesso principal, 26/I/2017, M.G.O. Freitas et al. 38 (IAN, MG).

Comments: Distributed throughout Central and Northern South America reaching Bolivia and Paraguay (GBIF, 2021), *C. bullosa* occurs in the Brazilian states of Acre, Amazonas, Amapá, Ceará, Goiás, Mato Grosso, Mato Grosso do Sul, Pará, Paraíba, Pernambuco, Piauí, Rondônia, Roraima and Tocantins. It is distin-

guished from other species by its thyrsoïd inflorescences, leaves with dentate margin, flowers with 12 stamens, petals apically rounded to slightly subcordate.

Phenology: It has been collected in flower and fruit in January and March.

Clidemia capitellata (Bonpl.) D. Don, Mem. Wern. Nat. Hist. Soc. 4(2): 307. 1823.

Shrubs 0.5–1 m tall, branches cylindrical, densely clad with simple and stellate-stipitate trichomes. Leaves petiolated, petiole 0.3–1.1 cm long, blade 3.5–12 × 1.7–5.5 cm, lanceolate to ovate, apex attenuate to acuminate, base rounded, margin serrate-ciliate, texture papyraceous, indumentum with simple adpressed and simple trichomes, long, not erect adaxially, simple, stellate and stellate-stipitate trichomes abaxially; veins acrodromous, 3+2, basal. Thyrsoïds 3–6 cm long, pseudoaxillary; bracts lanceolate and bracteoles ovate. Flowers (Figure 1l) 5-merous, sessile; hypanthium 4.5–5 mm long, urceolate; inner calyx lobes rounded, outer calyx lobes subulate, petals 3–4 mm long, membranaceous, oblong, apex retuse, white; stamens 10, white, filaments: antesealous c. 1.3 mm long, antepetalous c. 1.1 mm long; anthers: antesealous 2 mm long, antepetalous 1.8–2 mm long; connective not prolonged beneath thecae with dorsal appendages; ovary inferior, 5-locular, 3–3.2 mm long, style 4–5.5 mm long. Berries 4.8–5 mm long, immature green, dark-blue when ripe.

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago água preta, 10/III/2012, M.V.B. Soares 5 (MG); estrada de acesso principal, 13/X/2016, M.G.O. Freitas et al. 9 (IAN, MG).

Comments: Widespread in Central and Northern South America, it has been recorded in all Brazilian regions, excepting the states of Rio Grande do Norte, Rio Grande do Sul, Paraná and Santa Catarina (Goldenberg et al., 2020). *Clidemia capitellata* is distinguished from other species by its leaves with margin serrated; pseudoaxillary thyrsoïd inflorescences and petals apically retuse.

Phenology: It was collected in flower in March and in fruit in March and October.

Clidemia hirta (L.) D. Don, Mem. Wern. Nat. Hist. Soc. 4: 309. 1823.

Shrubs 0.5–1 m tall, branches cylindrical (Figure 2a), densely clad with simple erect trichomes. Leaves (Figure 1m) petiolated, petiole 1–4.5 cm long, blade 5–12.5 × 3–7.5 cm, ovate to cordate, apex acute to slightly acuminate, base rounded to subcordate, margin crenulate, texture papyraceous, indumentum moderate to sparse with simple erect trichomes on both surfaces (Figure 1n); veins 3+2, basal. Dichasia 2–5 cm long, pseudoaxillary; bracteoles oblong. Flowers (Figure 2b) 5-merous, pedicel 3–5 mm long; hypanthium 4–5 mm long, campanulate, inner calyx lobes obtuse, outer calyx lobes subulate; petals 7–9 mm long, membranaceous, obovate, apex rounded to slightly retuse, white; stamens 10, white, filaments: antesealous 2.5–3 mm long, antepetalous 2.5–3 mm long; anthers: antesealous 4–5 mm long, antepetalous 4–5 mm long; connective not prolonged beneath thecae with dorsal appendages; ovary inferior, 5-locular, 4–4.5 mm long, style 7–8 mm long. Berries 0.5–1 cm long, dark blue.

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago água preta, 10/III/2012, M.V.B. Soares 10 (MG); próximo à entrada, 1°25'28" S, 48°36'27" W, 13/X/2016, M.G.O. Freitas et al. 1 (IAN, MG).

Comments: Widespread in Central America and the Caribbean, occurs in Northern South America and in all states of Brazil, excepting Rio Grande do Norte (Goldenberg et al., 2020). Differing from all other species in its pseudoaxillary dichasia.

Phenology: It was collected in flower and fruit in March and October.

Clidemia novemnervia (DC.) Triana, Trans. Linn. Soc. 28: (1871) 136. 28. 1871.

Shrubs c. 1 m tall, branches cylindrical, densely clad with glandular and stellate stipitate trichomes. Leaves petiolated, petiole 0.3–2.9 cm long, blade 2–12.6 × 1–6.5 cm, ovate, apex attenuate, base rounded to subcordate, margin dentate with glandular trichomes, texture papyraceous, indumentum dense with simple and yellow glandular trichomes with thick base on adaxial surface, dense stellate, stellate stipitate and glandular abaxially; veins acrodromous 3+2, basal. Thyrsoids 6–10 cm long, terminal; bracteoles oblong. Flowers 5-merous, sessile to pedicel c. 4 mm, hypanthium 4–5 mm long, urceolate, inner calyx lobes emarginate with glandular trichomes in the apex, outer calyx lobes subulate; petals 2.5–3 mm long, membranaceous, oblong to ovate, apex subcordate, white; stamens 12, white, filaments: antesepalous 0.9–1.1 mm long, antepetalous 0.9–1.1 mm long; anthers: antesepalous 2.1–2.3 mm long, antepetalous 2.1–2.3 mm long; connective not prolonged beneath thecae, inappendiculate; ovary inferior, 4-locular, 1–1.3 mm long, style 2.3–2.5 mm long. Berries not seen.

Material examined: BRAZIL, Pará: Belém, 17/III/2012, V.B. Soares. 17 (MG).

Comments: Occurring in Central America and in Northern South America reaching Bolivia (GBIF, 2021), *Clidemia novemnervia* is found in the Northern Brazilian states of Amazonas, Amapá, Pará, Rondônia and Roraima, and also in Mato Grosso. It differs from other species in the area due to its terminal inflorescences, leaves ovate and dentate margin, and 4-locular ovary.

Phenology: It has been collected in flower in March.

Henriettea

Henriettea succosa (Aubl.) DC, Prodr. [A. P. de Candolle] 3: 178. 1828.

Shrubs c. 2.5 m tall, branches cylindrical (Figure 2c), densely clad with dendritic trichomes. Leaves (Figure 1o) 8–18 × 4–9 cm, petioles 0.7–1.5 cm long, blades obovate to elliptic, apex acuminate, base cuneate, margin revolute, entire-ciliate, texture chartaceous, indumentum with simple trichomes adaxially (Figure 1p) and dendritic trichomes with branched base and short arms abaxially (Figure 1q); veins acrodromous 3+2, suprabasal. Cauliflorous fascicles, lateral; bracts oblong to ovate. Flowers (Figure 2d) 5-merous, pedicel c. 10 mm long, hypanthium 1.3–1.5 cm long, campanulate, calyx lobes cuneate forming external teeth, petals c. 10 mm long, oblong, apex rounded, papyraceous, white; stamens 10, purple, filaments: antesepalous 4–5 mm long, antepetalous 4–5 mm long;

anthers: antesepalous 8–10 mm long, antepetalous 8–10 mm long; connective not prolonged beneath thecae, with dorsal appendage on the thecae; ovary inferior, 5-locular, 5 mm long, style 9.5–10 mm long. Berries not seen.

Material examined: BRAZIL, Pará: Belém, 17/III/2012, M.V.B. Soares 18 (MG); estrada de acesso principal, 13/X/2016, M.G.O. Freitas et al. 3 (IAN, MG).

Comments: Widely distributed from Central America and in Northern South America, *Henriettea succosa* has been recorded in Northern (Amapá, Pará, Roraima) and Northeastern (Alagoas, Bahia, Maranhão, Paraíba, Pernambuco, Rio Grande do Norte, Sergipe) Brazil, reaching as far south as Espírito Santo (Goldenberg et al., 2020). It is distinguished from other species by its caulinar inflorescences, hypanthium campanulate and thin, and papyraceous petals.

Phenology: It has been collected in flower in October and in fruit in March and October.

Leandra

Leandra micropetala (Naudin) Cogn., Fl. Bras. (Martius) 14(4): 205, 1886.

Shrubs c. 1.2 m tall, branches cylindrical, densely clad with simple erect trichomes. Leaves petiolated, petiole 0.5–1.5 cm long, blade 8.5–25.5 × 2.7–9.4 cm, elliptic to narrowly-elliptic, apex acuminate (Figure 1r), base cuneate, margin entire-ciliate; texture papyraceous, indumentum with simple trichomes on both surfaces; veins acrodromous 3+2, basal. Thyrsoids 11–16 cm long, terminal; bracts subulate. Flowers (Figure 2k) 5-merous, sessile, hypanthium 2.7–3 mm long, urceolate, calyx lobes narrowly-triangular or denticulate; petals 0.4–0.5 mm long, papyraceous, triangular with one long external trichome, apex apiculated, white; stamens 10, white, filaments: antesepalous 2–2.5 mm long, antepetalous 0.4–0.5 mm long; anthers: antesepalous 2–2.5 mm long, antepetalous 0.4–0.5 mm long; connectives not prolonged beneath thecae, inappendiculate; ovary inferior, 3-locular, 1.9–2 mm long, style 4.5–5 mm long. Berries 3–5 mm long, black when ripe.

Material examined: BRAZIL, Pará: Belém, Trilha do Macaco, 26/I/2017, M.G.O. Freitas et al. 39 (IAN, MG); 15/II/2017, M.G.O. Freitas et al. 51 (IAN, MG); M.V.B. Soares 7 (MG); estrada de acesso principal, 13/X/2017, M.G.O. Freitas et al. 10 (MG).

Comments: Occurs in Northern South America in the Guianas, Peru and Suriname (GBIF, 2021). Occurs in Brazil in Amazonas, Bahia, Maranhão, Mato Grosso, Pará, Pernambuco and Rondônia states. It is distinguished from other species by its triangular petals with one long external trichome and apiculated apex.

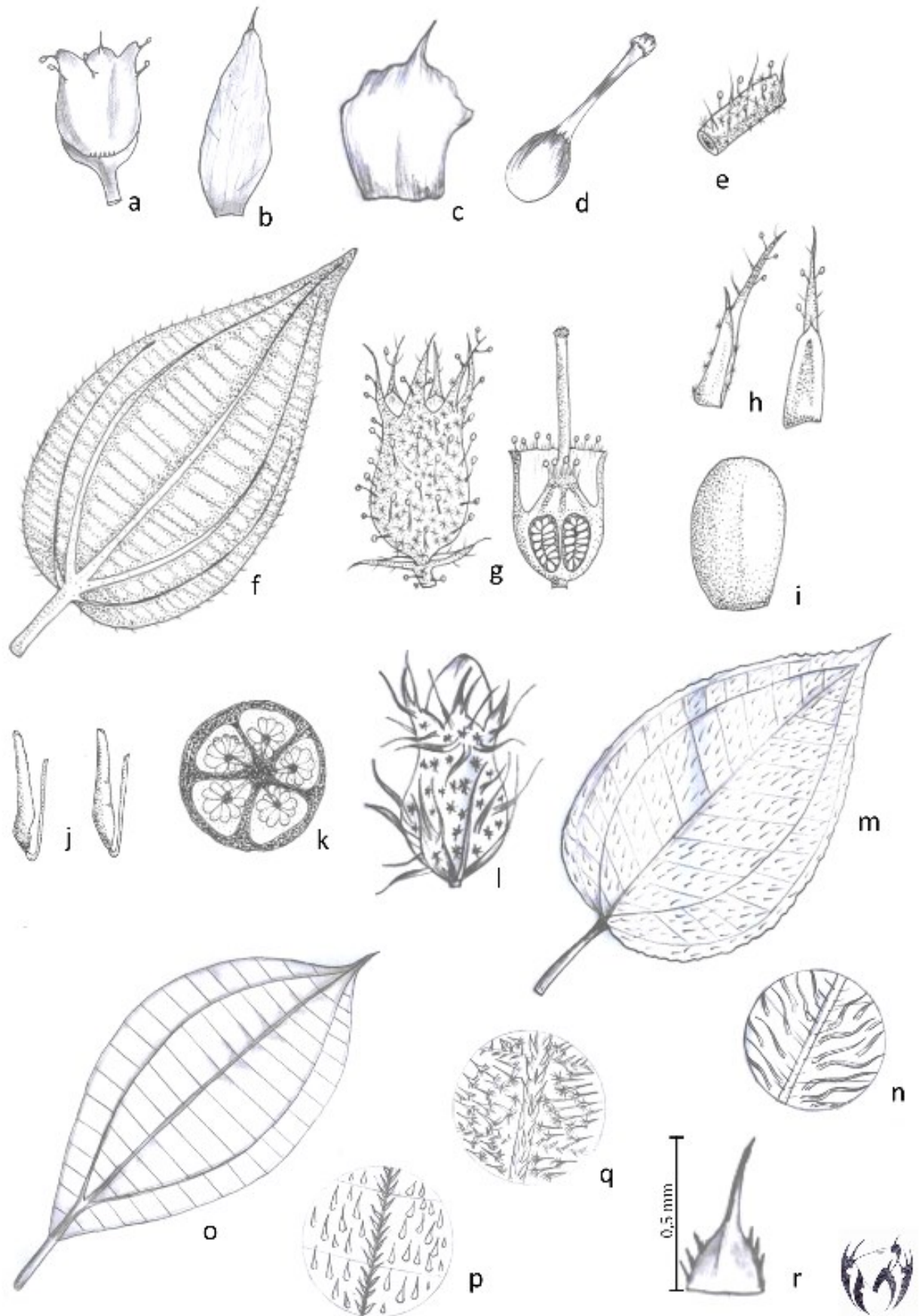
Phenology: It has been collected in flower and fruit in January, February and October.

Maieta

Maieta guianensis Aubl, Pl. Guian. 1: 443, t. 176. 1775.

Shrubs 0.5–1.5 m tall, branches cylindrical (Figures 2e, 3a), densely clad with simple and stellate trichomes. Leaves clearly anisophyllous, petiolated, petiole 3–5 mm long, blade 3.5–16.5 × 1.1–6.3 cm, elliptic, apex acuminate, base attenuate, with ant-domatia

Figure 1. a-b. *Aciotis purpurencens* – a. hypanthium; b. petal. c-d. *Bellucia egensis* – c. petal; d. pistil. e-k. *Clidemia bullosa* – e. cylindrical branch; f. leaf; g. hypanthium; h. calyx lobes; i. petal; j. stamens; k. ovary. l. *Clidemia capitellata* – bud. m-n. *Clidemia birta* – m. leaf; n. adaxial surface. o-q. *Henriettea succosa* – o. leaf; p. adaxial surface; q. abaxial surface. r. *Leandra micropetala* – leaf apex. Illustrations by Marcos Geovane de Oliveira Freitas.



immersed in the leaf blade, margin serrulate-ciliate, texture papyraceous, indumentum with simple and stellate trichomes on both surfaces; venation acrodromous 3+2, suprabasal. Dichasia 0.5–0.6 cm long, axillary; bracteoles ovate. Flowers 5-merous, sessile to pedicel 0.2 mm, hypanthium c. 7 mm long, campanulate, inner calyx lobes obtuse, outer calyx lobes subulate; petals 5.9–6.2 mm long, papyraceous, obovate, apex subcordate, white; stamens 10, white, filaments: antesepalous 2.7–3.2 mm long, antepetalous 2.7–3.2 mm long; anthers: antesepalous 4.5–5.2 mm long, antepetalous; 4.5–5.2 mm long; connective slightly prolonged beneath the thecae with small ventral appendages; ovary inferior, 5-locular. 3.5–4 mm long, style 6–6.7 mm long. Berries 9–11 mm long, red when ripe.

Material examined: BRAZIL, Pará: Belém, borda de floresta, 14/IV/2012, M.V.B. Soares 31 (MG); Trilha do Macaco, 15/II/2017, M.G.O. Freitas et al. 54 (MG); 26/I/2017, M.G.O. Freitas et al. 43 (IAN, MG).

Comments: Occurring in Bolivia, Colombia, Ecuador, the Guianas, Peru and Suriname. In Brazil occurs in Acre, Amazonas, Amapá, Pará Rondônia and Roraima states (Goldenberg et al., 2020), *M. guianensis* can be distinguished from all other species in the area by the ant-domatia immersed in the basal portion of its leaf blade.

Phenology: It has been collected in fruit in January, February and April.

Miconia

Shrubs or treelets, branches cylindrical or tetragonal, densely or sparsely clad with simple, stellate, dendritic, lepidote, adpressed, amorphous or farinaceous trichomes, glandular or not. Leaves sessile or petiolated, blades lanceolate, obovate, elliptic or narrowly-elliptic; apex acute, cuneate, attenuate or acuminate, base rounded, cuneate, decurrent, acute, attenuate or decurrent, margin entire, crenulate, or revolute, ciliate or not, texture chartaceous or papyraceous, veins acrodromous, basal or suprabasal. Inflorescences thyrsoids, terminal. Flowers 5-6-merous; hypanthium campanulate, urceolate or tubular, inner calyx lobes rounded, obtuse, or ovate, outer calyx lobes subulate, triangular or as an external tooth; petals obovate, oblong or elliptic, apex rounded, obtuse, emarginate or retuse, white or pink; stamens 10 to 12, white or pink, connective not prolonged beneath thecae, inappendiculate or with dorsal or bilobulate ventral appendages; ovary 3-locular. Fruits baccaceous.

Miconia affinis DC, Prodr. [A. P. de Candolle] 3: 187. 1828.

Treelet 3–6 m tall, branches tetragonal (Figure 2f), densely clad with adpressed, amorphous trichomes. Leaves petiolated, petiole 1–2 cm long, blade 11–22.5 × 3.5–9.5 cm, elliptic to narrowly-elliptic, apex attenuate, base cuneate to acute, margin revolute, texture papyraceous, indumentum glabrescent adaxially and with sparse stellate trichomes abaxially; veins acrodromous 3+2, basal. Thyrsoids with reddish branches. Flowers not seen. Berries globose, lilac when ripe (Figure 2g).

Material examined: BRAZIL, Pará: Belém, estrada Moça Bonita, 26/I/2017, M.G.O. Freitas et al. 37 (IAN, MG).

Comments: Widely distributed in Central America and in Northern South America in Bolivia, Colombia, Costa Rica, Ecua-

dor, Guiana Francesa, México, Nicarágua, Panamá and Peru (GBIF, 2021), *Miconia affinis* occurs in most Brazilian states apart from Southern Brazil, Tocantins and Roraima (Goldenberg et al., 2020). It is distinguished from other species by reddish inflorescence branches and lilac fruits.

Phenology: It has been collected in fruit in January.

Miconia alata (Aubl.) DC, Prodr. [A. P. de Candolle] 3: 184. 1828.

Shrubs 1.5–2 m tall, branches tetragonal (Figure 3b), winged, indumentum sparsely clad with stellate trichomes. Leaves (Figure 3c) sessile, blade 1.5–19 × 5.4–10.5 cm, elliptic, apex acute to cuneate, base decurrent, margin entire, texture chartaceous, indumentum with simple and stellate trichomes adaxially and with only stellate trichomes abaxially (Figure 3d); veins acrodromous 3+2, suprabasal. Thyrsoids 10.5–12.5 cm long, terminal; bracteoles deltoid. Flowers 5-merous, sessile, hypanthium (Figure 3e) 3.6–4 mm long, urceolate, inner calyx lobes obtuse, outer calyx lobes as an external tooth, petals 2.7–3 mm long, membranaceous, oblong, apex retuse, white; stamens (Figure 3f) 10, filaments: antesepalous 3.5–3.8 mm long, antepetalous 2.5–2.8 mm long; anthers: antesepalous 2.9–3 mm long, antepetalous 2.3–2.5 mm long; connective not prolonged beneath thecae with ventral bi-lobulate appendix on anthers; ovary inferior, 2 mm long, style 6.5–7 mm long (Figure 3g-h). Berries 4–5 mm long, yellow to red when ripe.

Material examined: BRAZIL, Pará: Belém, 25/I/2001, M.G.O. Freitas & J. Meirelles 10 (IAN, MG)

Comments: *Miconia alata* is distributed in Central America (Costa Rica) and in Northern South America (Bolivia, Colombia, Ecuador, Guianas, Suriname and Venezuela) (GBIF, 2021). In Brazil it occurs in Acre, Amazonas, Amapá, Ceará, Maranhão, Mato Grosso, Pará, Piauí, Rondônia and Roraima states (Goldenberg et al., 2020). It is distinguished from other species in the study area by its winged branches and leaves sessile.

Phenology: It has been collected in flower and fruit in October, November and January.

Miconia argyrophylla DC, Prodr. [A. P. de Candolle] 3: 181. 1828.

Shrubs 3–5 m tall, branches tetragonal, densely clad with amorphous, farinaceous trichomes. Leaves petiolated, petiole 0.5–2.5 cm long, blade 8.7–22 × 3.3–8.5 cm, elliptic to obovate, apex acuminate, base cuneate, margin entire; texture papyraceous, indumentum glabrescent on adaxial surface, trichomes amorphous and stellate abaxially; veins acrodromous 3+2, basal. Thyrsoids with scorpioid branches 4.5–10 cm long, terminal; pedicel 3–4 mm.; Flowers not seen. Berries 3–3.5 mm long, immature green.

Material examined: BRAZIL, Pará: Belém, estrada Moça Bonita, 26/I/2017, M.G.O. Freitas et al. 50 (IAN, MG).

Comments: Widely distributed in Central America and in Northern South America in Bolivia, Colombia, Ecuador, Guianas, Peru, Suriname, Trinidad and Tobago, and Venezuela (GBIF, 2021), *M. argyrophylla* occurs in the Northern Brazilian states of Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, and also in Mato Grosso. It is distinguished from other species by the scorpioid branched inflorescences.

Phenology: It was collected in fruit in January.

Miconia ciliata (Rich.) DC, Prodr. [A. P. de Candolle] 3: 179. 1828.

Shrubs c. 1.2 m tall, branches tetragonal, indumentum glabrous to sparsely clad with simple trichomes. Leaves (Figure 3i) petiolated, petiole 0.5–4.5 cm long, blade 6.5–16.5 × 3–5.4 cm, narrowly-elliptic, apex attenuate to acute, base cuneate to acute, margin entire-ciliate, texture chartaceous, indumentum glabrous adaxially and sparsely clad with simple adpressed trichomes abaxially; veins acrodromous 3+2, basal. Thyrsoids with scorpioid branches, 4.2–11 cm long, terminal; bracteoles oblong. Flowers (Figure 2h) 5-merous, sessile, hypanthium 1.8–2.1 mm long, campanulate, calyx lobes obtuse; petals 1.5–2 mm long, membranaceous, oblong, apex rounded, pink; stamens 10, pink, filaments: antesepalous 1.8–2 mm long, antepetalous 1.5 mm long; anthers: antesepalous 1.4–1.5 mm long, antepetalous 1.35–1.4 mm long; connective not prolonged beneath thecae, inappendiculate; ovary inferior, 1–1.5 mm long, style 1.5–2 mm long. Berries 3–4 mm long, immature green, black when ripe (Figure 3j).

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago água preta, 10/III/2012, *M.V.B. Soares* 1 (MG); 17/III/2012, *M.V.B. Soares* 25 (MG); estrada de acesso principal, 13/X./2017, *M.G.O. Freitas et al.* 2 (MG); estrada Moça Bonita, 26/I/2017, *M.G.O. Freitas et al.* 8 (IAN, MG); Trilha do Macaco, 26/I/2017, *M.G.O. Freitas et al.* 45 (IAN, MG).

Comments: Widely distributed from Mexico south to the Guianas and Venezuela (GBIF, 2021), *M. ciliata* occurs in all Northern and Northeastern Brazilian states, reaching Mato Grosso, Goiás, Minas Gerais and Espírito Santo. It is distinguished from other species by its ciliate leaf margin.

Phenology: It has been collected in flower and fruit in January, March and October.

Miconia egensis Cogn., Fl. Bras. (Martius) 14(4): 374, 1887.

Shrubs c. 3 m tall, branches tetragonal, densely clad with simple farinaceous trichomes. Leaves petiolated, petiole 1–2 cm long, blades 14–27 × 6.5–11 cm, elliptic, apex acuminate, base cuneate, margin entire, texture papyraceous, indumentum glabrescent adaxially, sparsely clad with stellate trichomes abaxially; veins acrodromous 3, basal. Thyrsoids 11–15 cm long, terminal. Flowers 5-merous; pedicel 0.7–1.1 mm long, hypanthium c. 0.9 mm comp., campanulate; inner calyx lobes ovate, outer calyx lobes subulate; petals c. 2.2–0.8 mm long, white, oblong, apex rounded, base attenuate; stamens 10, white, filaments: antesepalous c. 3.1 mm long, antepetalous c. 2.5 mm long; anthers: antesepalous c. 2.6 mm long, antepetalous c. 2.1 mm long; connective not prolonged beneath thecae, inappendiculate; ovary half-inferior, c. 0.8 mm long, style c. 4.3 mm long. Berries 2–2.5 cm long, globose, immature yellowish, dark blue when ripe.

Material examined: BRAZIL, Pará: Belém, estrada de acesso principal, 26/I/2017, *M.G.O. Freitas et al.* 40 (IAN, MG).

Comments: Distributed in Northern South America in Bolivia, Colombia, Ecuador, the Guianas, Peru, Suriname and Venezuela (GBIF, 2021), *M. egensis* occurs in the Brazilian states of Acre, Ama-

zonas, Mato Grosso, Pará and Rondônia. It is distinguished from other species by its tetragonal branches and clad with simple farinaceous trichomes.

Phenology: It was collected in flower and fruit in January.

Miconia minutiflora (Bonpl.) DC, Prodr. [A. P. de Candolle] 3: 189. 1828.

Tree 5–10 m tall, branches cylindrical, indumentum glabrous to sparsely clad with stellate trichomes. Leaves petiolated, petiole 0.3–0.5 cm long, blade 4.5–9.5 × 1.5–3 cm, lanceolate to narrowly-elliptic, apex acuminate, base rounded, margin entire, texture papyraceous, indumentum with sparse simple trichomes adaxially, sparsely clad with stellate trichomes to glabrescent abaxially; veins acrodromous 3+2, basal. Thyrsoids 7–9.5 cm long, terminal (Figure 2i); bracteoles subulate. Flowers (Figure 2j) 5-merous, pedicel 1–2 mm long, hypanthium 1–1.2 mm long, campanulate, inner calyx lobes rounded, outer calyx lobes triangular, petals 1.1–1.3 mm long, membranaceous, elliptic, apex obtuse, white; stamens 10, white, filaments: antesepalous 1–1.1 mm long, antepetalous 1–1.1 mm long; anthers: antesepalous 1.2–1.3 mm long, antepetalous 1.2–1.3 mm long; connective not prolonged, dorsal appendage; ovary inferior, 0.5–0.7 mm long, style 2–2.2 mm long gradually thickened from base to apex. Berries 2.5–3 mm long, black when ripe.

Material examined: BRAZIL, Pará: Belém, 14/IV/2012,, *M.V.B. Soares* 32 (MG); estrada de acesso principal, 26/I/2017, *M.G.O. Freitas et al.* 42 (IAN, MG).

Comments: Distributed from Southern North and Central America and the Caribbean, *M. minutiflora* occurs in the Brazilian states of Acre, Amazonas, Alagoas, Bahia, Ceará, Distrito Federal, Maranhão, Minas Gerais, Goiás, Mato Grosso, Pará, Paraíba, Pernambuco, Rondônia, Roraima, São Paulo, Sergipe and Tocantins. It is distinguished from other species by its papyraceous, sparsely indumented leaf-blades and campanulate hypanthium.

Phenology: It was collected in flower and fruit in January and April.

Miconia mirabilis (Aubl.) L.O. Williams, Fieldiana, Bot. 29: 574. 1963.

Shrubs 1.5–5 m tall, branches cylindrical, densely clad with stellate and dendritic trichomes. Leaves (Figure 3k) petiolated, petiole 1–6 cm long, blade 3–20 × 1.5–6.5 cm, narrowly-elliptic to lanceolate, apex attenuate, base cuneate, margin entire, texture chartaceous, indumentum glabrescent adaxially and densely clad with stellate trichomes abaxially (Figure 3l); veins acrodromous, 3+2, basal. Thyrsoids 8.2–10 cm long, terminal. Flowers (Figure 3m) 6-merous, pedicel 5.5–6 mm, hypanthium 5–6 mm long, urceolate to tubular, inner calyx lobes rounded, outer calyx lobes as an external tooth; petals 0.9–1 cm long, papyraceous, oblong, apex emarginate, white; stamens (Figure 3n) 12, white, filaments: antesepalous 7–7.5 mm long, antepetalous 5.5–6 mm long; anthers: antesepalous 7–8 mm long, antepetalous 5–6 mm long; connective not prolonged, with bi-lobulate ventral appendages; ovary inferior, c. 3 mm long, style c. 12 mm long (Figure 3o-p). Berries not seen.

Material examined: BRAZIL, PARÁ: Belém, 14/IV/2012, *M.V.B. Soares* 30 (MG); estrada de acesso principal, 13/X/2016, *M.G.O. Freitas et al.* 6 (IAN, MG); Trilha do Macaco, 26/I/2016, *M.G.O. Freitas et al.* 46 (MG).

Comments: Distributed from Southern North and Central America to the Caribbean, *M. mirabilis* occurs in the Brazilian states of Amapá, Alagoas, Bahia, Ceará, Espírito Santo, Pará, Pernambuco, Rio de Janeiro and Roraima states. It is distinguished from other species by its chartaceous leaf-blades and hypanthium urceolate to tubular.

Phenology: It was collected in flower and fruit in January, April and October.

Miconia prasina (Sw.) DC, Prodr. [A. P. de Candolle] 3: 188. 1828.

Shrubs 2–5 m tall, branches tetragonal, densely clad with stellate trichomes. Leaves petiolated, petiole 0.6–2 cm long, blade 5.5–23.5 × 2.5–8.5 cm, narrowly-elliptic to elliptic, apex attenuate to acute, base attenuate a decurrent, margin crenulate e slightly revolute, texture chartaceous, indumentum glabrescent or with sparse, stellate trichomes on both surfaces; veins acrodromous 3+2, suprabasal. Thyrsoids 5–12 cm long, terminal; bracteoles deltoid. Flowers 5-merous, sessile, hypanthium 2.8–4 mm long, campanulate, calyx lobes obtuse; petals 2.1–3 mm long, membranaceous, obovate, apex rounded, white; stamens 10, white, filaments: antesealous 2.8–4 mm long, antepetalous 2.5–3.5 mm long; anthers: antesealous 2.3–2.7 mm long, antepetalous 2–2.3 mm long; connective not prolonged beneath thecae, with bi-lobulate ventral appendages; ovary inferior, 1.3–2 mm long, style 3.5–5 mm long. Berries 3.5–4 mm long, immature green.

Material examined: BRAZIL, Pará: Belém, 14/III/2012, *M.V.B. Soares* 30 (MG); estrada de acesso principal, 13/X/2016, *M.G.O. Freitas et al.* 5 (IAN, MG); 13/X/2016, *M.G.O. Freitas et al.* 7 (IAN, MG); Trilha do Macaco, 26/I/2016, *M.G.O. Freitas et al.* 44 (IAN, MG); em frente ao Lago Bolonha, 26/I/2016, *M.G.O. Freitas et al.* 38 (MG); estrada Moça Bonita, 26/I/2017, *M.G.O. Freitas & J. Meirelles* 48 (IAN, MG).

Comments: Distributed from Southern North and Central America (GBIF, 2021), *M. prasina* occurs in the Brazilian states of Acre, Amazonas, Alagoas, Bahia, Distrito Federal, Maranhão, Minas Gerais, Goiás, Mato Grosso, Pará, Paraíba, Pernambuco, Rondônia, Roraima, São Paulo, Sergipe and Tocantins. It is distinguished from other species by its suprabasal acrodromous veins and bi-lobulate ventral appendages.

Phenology: It was collected in flower and fruit in January, March and October.

Miconia punctata (Desr.) D. Don, Mem. Wern. Nat. Hist. Soc. 4: 316. 1823.

Shrubs 2.5–6 m tall, branches tetragonal, densely clad with lepidote trichomes. Leaves petiolated, petiole 0.7–2 cm long, blade 10.5–22.5 × 3–6.3 cm, narrowly-elliptic, apex acuminate, base cuneate, margin entire, texture chartaceous, indumentum with sparsely lepidote trichomes adaxially, densely clad with lepidote trichomes abaxially; veins acrodromous 3+2, suprabasal; Thyrsoids c. 4 cm long, terminal; pedicel c. 0.5 cm long. Flowers not seen. Berries 4.3–5 mm long, immature, green.

Material examined: BRAZIL, Pará: Belém, 26/I/2017, Trilha do Macaco, *M.G.O. Freitas et al.* 49 (IAN, MG).

Comments: Distributed in Central America and Northern South America (GBIF, 2021), *M. punctata* occurs in the Brazilian states of Acre, Amazonas, Amapá, Mato Grosso, Pará, Rondônia and Roraima states. It is distinguished from other species by its indumentum with lepidote trichomes.

Phenology: It has been collected with fruits in January.

Mouriri

Mouriri grandiflora DC, Prodr. [A. P. de Candolle] 3: 8. 1828.

Treelet to tree reaching 30 m., cylindric branches, indumentum glabrous. Leaves petiolated, petiole ca. 0.5 cm long, blades 13–20 × 7–11 cm, oblong, apex obtuse, base rounded, margin entire, texture chartaceous, indumentum glabrous on both surfaces; veins brochidodromous. Cauliflorous cymes 1–1.5 cm long, pedicel 3–4 mm long, axillary. Flowers sessile 6-merous, hypanthium 7–9 mm long, campanulate, calyx lobes truncate; petals 4.5–5 mm long, obovate, papyraceous, white with reddish central vein; stamens 12, filaments: antesealous 6–7 mm, antepetalous 4–5 mm; anthers: antesealous 5–5.5 mm, antepetalous 5–5.5 mm; connective not prolonged beneath thecae, with dorsal glands; ovary inferior, c. 1.5 mm long, 4-locular, style 8–9.5 mm long. Berries not seen.

Material examined: BRAZIL, Pará: Belém, Igapó, 3/XI/1947, *J. M. Pires*. 640 (IAN).

Comments: Distributed in Northern South America in Bolivia, Colombia, Ecuador, Guianas, Peru, Suriname and Venezuela (GBIF, 2021), *M. grandiflora* occurs in the Brazilian states of Acre, Amazonas, Amapá, Maranhão, Pará and Rondônia. It is distinguished from other species by its brochidodromous, glabrous leaves and connectives with dorsal glands.

Phenology: It has been collected only once in the area, in 1947, flowering in November.

Nepsera

Nepsera aquatica (Aubl.) Naudin, Ann. Sci. Nat., Bot. sér. 3, 13: 28. 1850 [Jan 1850].

Herb 0.6–1 m tall, branches tetragonal, indumentum sparsely clad with simple and glandular trichomes. Leaves petiolated, petiole 0.3–0.5 cm long, blade 1.3–3.8 × 0.4–1.4 cm, lanceolate to ovate, apex acute, base subcordate to rounded, margin slightly serrate, texture papyraceous, indumentum sparsely clad with simple trichomes to glabrescent on both surfaces; veins acrodromous 3+2, basal. Thyrsoid (Figure 3q) 9–15 cm long, terminal and lateral; bracteoles lanceolate; Flowers 4-merous, sessile, hypanthium (Figure 3r) 3–3.5 mm long, urceolate, calyx lobes narrowly-triangular; petals (Figure 3s) 5.7–6 mm long, membranaceous, elliptic to oblong, apex acuminate, white; stamens (Figure 3t) 8, filaments: antesealous 2.6–2.8 mm long, antepetalous 2.3–2.5 mm long; anthers: antesealous 3–4 mm long, antepetalous 1–2 mm long; in antesealous stamens connective prolonged 0.5 mm beneath thecae; in antepetalous stamens connective prolonged 0.4 mm beneath thecae, both with ventral appendix bilobulated; ovary superior, 3-locular, 1.4–1.5 mm long, style 6–6.2 mm long (Figure 3u-v). Capsules 3–4 mm long.

Figure 2. a-b. *Clidemia hirta* – a. branch; b. flower and buds. c-d. *Henriettea suaveola* – c. branch; d. flower. e. *Maieta guianensis* – branch. f-g. *Miconia affinis* – f. branches; g. infructescence. h. *M. ciliata* – flower. i-j. *M. minutiflora* – i. inflorescence; j. flowers. k. *L. micropetala* – flower. l. *Tibouchina aspera* – flowers. Photos by Marcos Geovane de Oliveira Freitas.



Material examined: BRAZIL, Pará: Belém, borda de floresta, 17/III/2012, *M.V.B. Soares* 22 (MG); XII/1969, *M. Pinheiro* 16 (MG); estrada Moça Bonita, 15/II/2017, *M.G.O. Freitas et al.* 53 (IAN, MG).

Comments: Distributed in Central and Northern South America and the Caribbean, (GBIF, 2021), *N. aquatica* occurs in the Brazilian states of Acre, Amazonas, Amapá, Alagoas, Bahia, Maranhão, Pará, Paraíba, Pernambuco, Rio Grande do Norte, Roraima, Sergipe and Tocantins. It is distinguished from other species by its tetragonal branches, lax thyrsoids and papyraceous leaves.

Phenology: It was collected in flower and fruit in February, March and December.

Pterolepis

Pterolepis glomerata (Rottb.) Miq, Comm. Phytogr. 2: 78. 1840.

Shrubs 0.4–0.6 m tall, branches tetragonal, indumentum moderately clad with simple, adpressed trichomes. Leaves petiolated, petiole 0.1–0.25 cm long, blade 1–1.7 × 0.3–0.5 cm, ovate to elliptic, apex acute to cuneate, base rounded to obtuse, margin crenulate-ciliate, texture chartaceous, indumentum dense with simple, adpressed trichomes in both surfaces; veins acrodromous 3+2, basal. Inflorescence 1–1.5 cm long, in dense lateral or subterminal congested cymes. Flowers 4-merous, pedicel sessile to 1 mm long, hypanthium (Figure 4a) 6–8 mm long, urceolate with appendages branched vascularized, calyx lobes deltoid, petals 1.3–1.5 cm long, obovate, apex rounded, membranaceous, lilac; stamens 8, filaments: antesealous 4.5–5 mm long, antepetalous 3.8–4 mm long; anthers: antesealous 2.3–2.4 mm long, antepetalous 2.1–2.2 mm long; connective not prolonged, with a dorsal rounded prominence, anthers with ventral appendix; ovary half-inferior, 4-locular, 4–5 mm long, apex with simple trichomes, style 8–10 mm long; Capsules 3–4 mm long, pale brown.

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago Água Preta, 17/I/2012, *M.V.B. Soares* 14 (MG); 17/III/2012, *M.V.B. Soares* 19 (MG).

Comments: This species is distributed from southern North America and the Caribbean to South America, reaching Paraguay and Brazil (GBIF, 2021). In Brazil, *P. glomerata* occurs in Northeastern and Southeastern Brazil, Mato Grosso do Sul, Distrito Federal, Paraná and Santa Catarina, and Roraima, being recorded here for the first time for the state of Pará. This species is distinguished from other species in the study area by its hypanthium with vascularized branched appendages.

Phenology: It has been collected in flower and fruit in January and March.

Tibouchina

Tibouchina aspera Aubl, Hist. Pl. Guiane 1: 446, t. 177. 1775.

Shrubs 0.8–1.2 m tall, cylindric branches (Figure 4b), densely clad with scale-like lepidote trichomes. Leaves (Figure 4c) 1–6 × 0.3–2 cm, petiole 0.3–0.5 cm long, blades ovate, apex cuneate, base rounded to subcordate, margin entire-ciliate, texture chartaceous, indumentum with simple, adpressed, scale-like trichomes on both

surfaces (Figure 4d-e); veins acrodromous 3+2, basal. Thyrsoids (Figure 4f) 2.5–4 cm long, terminal or lateral; bracteoles obovate, involuclral (Figure 4g). Flowers (Figure 2l) 5-merous, pedicel 0.8–1 cm, hypanthium (Figure 4h) 1.3–1.5 cm long, campanulate to tubular, calyx lobes narrowly-triangular; petals (Figure 4i) 1.5–1.8 cm long, obovate, apex truncate, membranaceous, purple; stamens (Figure 4j) 10, filaments: antesealous 9–10 mm long, antepetalous 7–8 mm long; anthers: antesealous 4–4.2 mm long, antepetalous 3.8–4 mm long; connective prolonged 1.7 mm in antesealous stamens, connective prolonged 1 mm in antepetalous stamens, ventral appendages bi-lobulated; ovary inferior, 5-locular, 3.3–4 mm long, style c. 12 mm long (Figure 4k-l). Capsules 5–6 mm long, brown when ripe.

Material examined: BRAZIL, Pará: Belém, em frente à estação do lago Água Preta, 17/III/2012, *M.V.B. Soares* 21 (MG); 10/III/2012, *M.V.B. Soares* 12 (MG); estrada Moça Bonita, 26/I/2017, *M.G.O. Freitas et al.* 47 (IAN, MG)

Comments: *Tibouchina aspera* is distributed in Central America and South America, reaching Bolivia and Argentina, occurring in the Brazilian states of Acre, Amazonas, Amapá, Maranhão, Mato Grosso, Pará, Piauí, Rondônia and Roraima. This species is distinguished from other species in the study area by its indument with scale-like, lepidote trichomes.

Phenology: It has been collected in flower and fruit in January and March.

Tococa

Shrubs or treelets, branches cylindrical, sparsely clad with simple trichomes, glandular or not. Leaves petiolated with ant-domatia in the petiole, blades elliptic or ovate; apex acuminate or attenuate, base cuneate or attenuate, margin repand or serrate, ciliate or not, texture papyraceous, veins acrodromous, basal. Inflorescences thyrsoid, terminal or axillary. Flowers 5-merous; hypanthium campanulate, inner calyx lobes rounded or obtuse, outer calyx lobes subulate or acuminate; petals obovate, apex emarginate, white, pinkish or pink; stamens 10, white or yellowish, connective not prolonged beneath thecae, inappendiculate or with ventral appendages; ovary 3-locular. Fruits baccaceous.

Tococa aristata Benth, J. Bot. (Hoo'ker) 2: 305. 1840.

Shrubs 0.8–1.3 m, branches cylindrical, indumentum sparsely with simple erect trichomes. Leaves isophyllous, petiolated, petiole 0.7–2.2 cm long with simple ant-domatia, blade 9.5–21 × 3.5–8 cm, elliptic, apex attenuate to acuminate, base attenuate, margin repand, ciliate, texture papyraceous, indumentum with sparse simple, adpressed trichomes on both surfaces; veins acrodromous 3+2, basal. Thyrsoids 5–6.5 cm long, terminal; bracteoles ovate. Flowers 5-merous, pedicel 4–5 mm long, hypanthium 5–5.2 mm long, campanulate, inner calyx lobes obtuse, outer calyx lobes subulate; petals 5.5–6 mm long, membranaceous, obovate, apex emarginate, white; stamens white, filaments: antesealous 2.8–3 mm long, antepetalous 2.8–3 mm long; anthers: antesealous 4.3–5 mm long, antepetalous 4.3–5 mm long; small ventral appendages; ovary inferior, c. 2 mm long, style 7–8 mm long Berries not seen.

Figure 3. a. *Maieta guianensis* – branch. b-h. *Miconia alata* – b. tetragonal branch; c. leaf; d. abaxial surface; e. hypanthium; f. stamens; g. pistil; h. ovary. i-j. *Miconia ciliata* – i. leaf; j. infructescence. k-p. *Miconia mirabilis* – k. leaf; l. abaxial surface; m. flower; n. stamens; o. pistil; p. ovary, q-v. *Nepsera aquatica* – q. inflorescence; r. hypanthium; s. petal; t. stamens; u. pistil; v. ovary. Illustrations by Marcos Geovane de Oliveira Freitas.

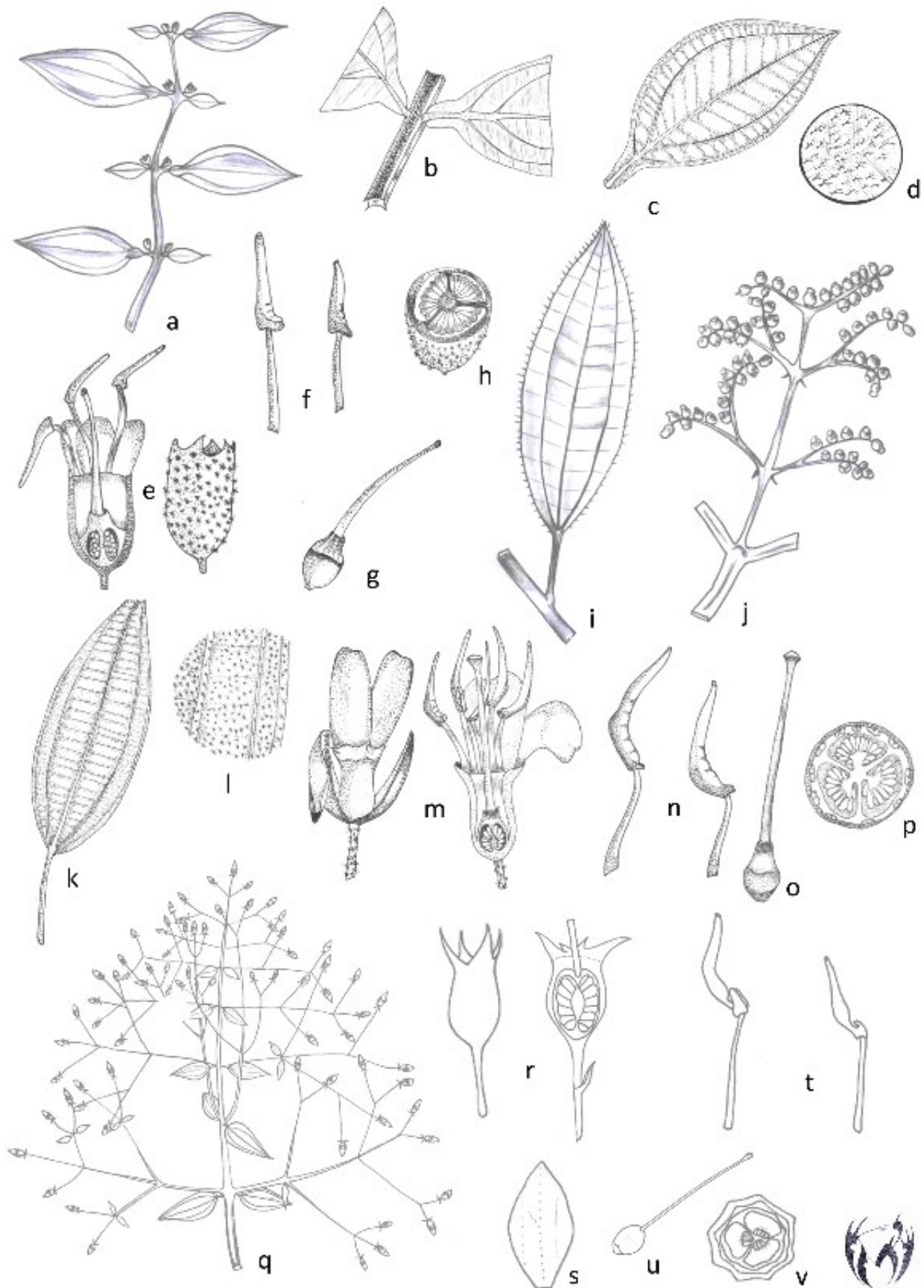
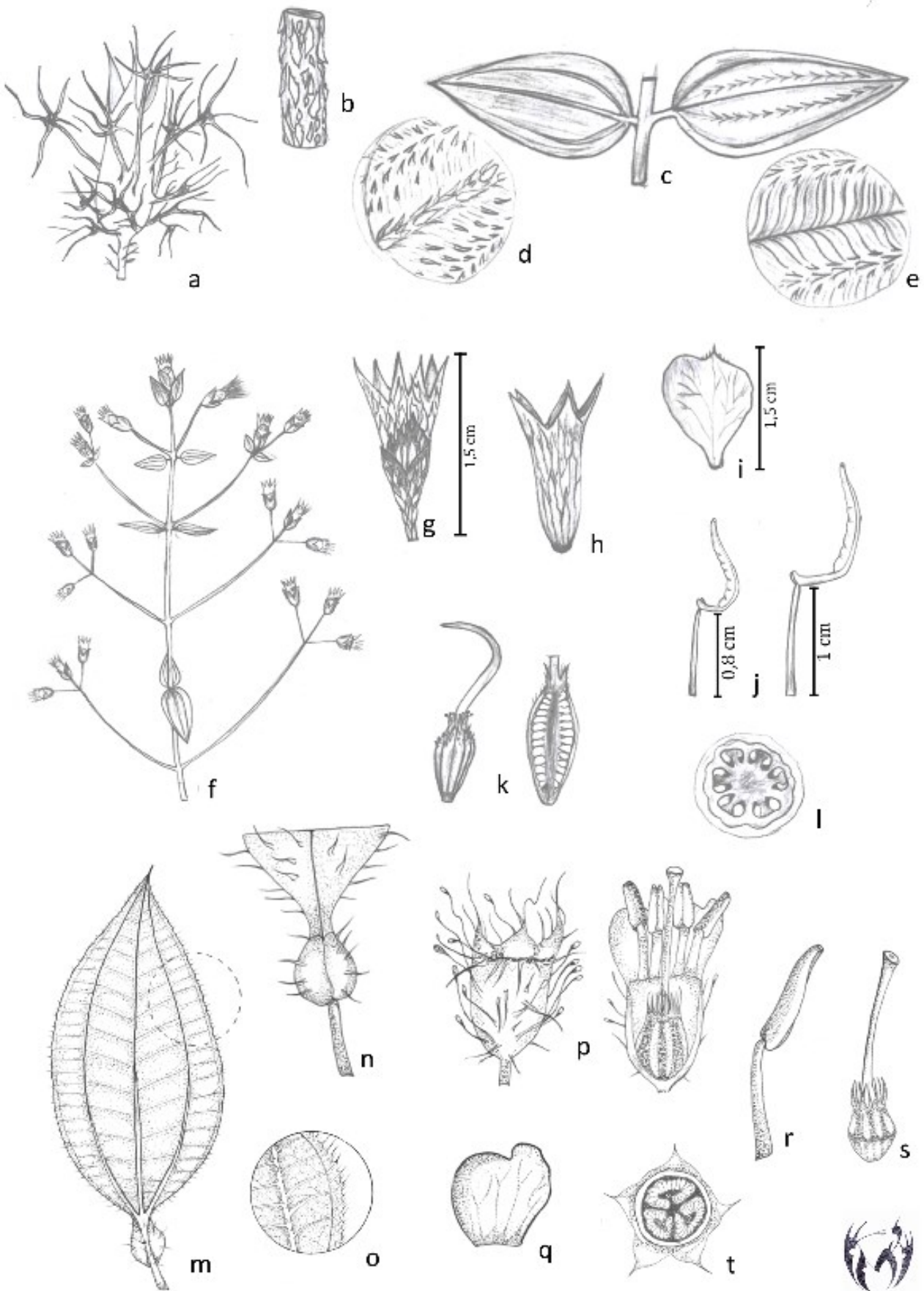


Figure 4. a. *Pterolepis glomerata* – hypanthium. b-l. *Tibouchina aspera* – b. branch detail; c. leaves; d. abaxial surface; e. adaxial surface; f. inflorescence; g. involucre bracts; h. hypanthium; i. petal; j. stamens; k. pistil; l. ovary. m-t. *Tococa guianensis* – m. leaf; n. petiole domatia; o. leaf margin; p. hypanthium; q. petal; r. stamen; s. pistil; t. ovary. Illustrations by Marcos Geovane de Oliveira Freitas.



Material examined: BRAZIL, Pará: Belém, 9/IX/1914, *A. Ducke* 15358 (MG).

Comments: Distributed in Central and Northern South America in Colombia, Honduras, Guianas, Suriname and Venezuela (GBIF, 2021), *Tococa aristata* has been registered in Brazil only in the state of Pará (Goldenberg et al., 2020). It is distinguished from other species by its simple ant-domatia and glabrous ovary and has been collected only once in the area, 1914.

Phenology: Flowering in September.

Tococa guianensis Aubl, Hist. Pl. Guiane 1: 438, t. 174. 1775.

Treelet c. 2.5 m tall, branches cylindrical, indumentum sparsely clad with simple and diminute glandular trichomes. Leaves (Figure 4m) isophyllous to slightly anisophyllous, petiolated, petiole 0.7–4 cm long with bi-lobulate ant-domatia (Figure 4n), blade 11–24 × 4.5–12 cm, elliptic to ovate, apex acuminate, base cuneate, margin serrate-ciliate (Figure 4o), texture papyraceous, indumentum with simple adpressed trichomes adaxially, glabrescent or with simple trichomes abaxially; veins acrodromous 3+2, basal. Thyrsoids 7–11 cm long, axillary and terminal; bracteoles ovate. Flowers 5-merous, pedicel 3–5 mm long, hypanthium (Figure 4p) 7–8 mm long, campanulate, inner calyx lobes rounded, outer calyx lobes acuminate; petals (Figure 4q) 7–8 mm long, papyraceous, obovate, apex emarginate, pink to pinkish; stamens (Figure 4r) yellowish, filaments: antesepalous 4–5 mm long, antepetalous 4–5 mm long; anthers: antessépalas 4–5 mm long, antepetalas 4–5 mm long; inappendiculate; ovary inferior, apex with simple trichomes, 3–4 mm long, style 10–13 mm long (Figure 4s-t). Berries 4.3–5 mm long, ripe vinaceous.

Material examined: BRAZIL, Pará: Belém, estrada de acesso principal, 13/X/2017, *M.G.O. Freitas et al.* 4 (IAN, MG).

Comments: Distributed in Central and Northern South America. *Tococa guianensis* occurs in the Brazilian states in Acre, Amazonas, Amapá, Bahia, Distrito Federal, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Pernambuco, Piauí, Rondônia, Roraima, São Paulo and Tocantins. It is distinguished from other species by its branches with small glandular trichomes, bi-lobulate ant-domatia and ovary with simple apical trichomes.

Phenology: It was collected in flower and fruit in October.

Discussion

Miconia is the most representative genus of the family (Goldenberg et al., 2012; Goldenberg et al., 2020), it was also the genus with most species in the PEUt (nine species). It has been shown that some *Miconia* species have high potential for degraded area recovery, being used as nucleators to attract different pollinators and seed dispersors, facilitating the formation of ecological corridors (Albuquerque et al., 2013). In the present study, *M. ciliata* has been shown to have a long fertile period extending between September and June (Peçanha Júnior, 2005), and was recorded flowering in January, March and October in the study area. This same species has been listed as an important food resource for frugivorous birds and generalist species in Eastern Amazonia (Gomes et al., 2008). Also found in the Parque Estadual do Utinga,

M. prasina has potential for recovering areas, with fruits being listed as a food resource for birds (Silva; Santos, 2020). At least 19 bird species were observed consuming fruits of this species in the Atlantic Rainforest, half of them being classified as potential seed dispersors (Silva; Santos 2020). One of the species with ant domatia found during our floristic survey, *Maieta guianensis*, is of great importance for nesting and reproduction of at least two ant species (*Pheidole minutula* Mayr, 1878 e *Crematogaster* sp.) (Vasconcelos, 1993). Besides *Miconia*, *Tibouchina* species have also been recorded as potentially useful for degraded area recovery (Neri et al., 2011).

Taking into account the attractiveness of Melastomataceae species to pollinators and seed dispersors and the high level of biotic dispersion found in the Parque do Utinga (Silva Junior et al., 2020) this plant family reaches high diversity in the study area, being commonly found in other areas near Pará's capital, Belém (Neves et al., 2020), being important to be able to distinguish between the genera and species of this cohesive, natural group, in order to inform and encourage their use in local forest restoration.

Conclusion

Herewith we present a complete taxonomic list highlighting differences between the taxa of Melastomataceae studied in the area, contributing towards the knowledge of an urban forest fragment in the Amazon, aiming to provide support for identification of species in a family that is known to display large diversity in secondary and recovering vegetation forest plots.

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Authorship Contributions

Conceptualization: JM, ACF. Data curation: DCZ, ACF, JM, BNV. Formal Analysis: ACSF, MGOF. Funding acquisition: ACF, JM. Investigation: ACSF, MGOF. Methodology: ACSF, MGOF. Project administration: DCZ, ACF, JM. Resources: DCZ, ACF, JM. Software: ACSF. Supervision: DCZ, ACF, JM. Validation: DCZ, ACF, JM. Visualization: DCZ, ACF, JM. Writing – original draft: MGOF, JM, ACSF, BNV. Writing – review & editing: DCZ, ACF, JM, BNV.

Conflict of interest

The authors declare that there are no conflicts of interest to report.

Data Availability

The complete set of data analyzed during the current study are presented in the body of the manuscript.

Ethical compliance

Not applicable.

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