

UNIVERSIDADE FEDERAL DE UBERLÂNDIA
INSTITUTO DE BIOLOGIA
PROGRAMA DE PÓS-GRADUAÇÃO EM BIOLOGIA VEGETAL

MELASTOMATACEAE DA SERRA DA PIEDADE, MINAS GERAIS, BRASIL

Gabriel Merola Paranhos

Profa. Dra. Rosana Romero

Dra. Ana Flávia Alves Versiane

UBERLÂNDIA – MG

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Dissertação apresentada à Universidade Federal de
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“(…) A Serra da Piedade levanta-se isoladamente na paisagem, exceto ao sudeste, por onde desce um longo declive que, a algumas léguas de distância, é cortado pelo rio das Velhas e depois se perde no campo.

(…) São grandes, impagáveis, as delícias de deitar-se à sombra de Mirtáceas e Melastomatáceas, ver as copas nobres das palmeiras balançando acima da cabeça, ver os papagaios, aos gritos, disputar as frutas de uma árvore vizinha ou ouvir o zunido do beija-flor beijando as flores esplêndidas das Bignoniáceas para beber o néctar do fundo da corola. (…)

Essas poucas horas solitárias que passei na Serra da Piedade, em meio à natureza intacta, ainda estão vivas na minha mente entre as mais belas que passei no Brasil.

(…) Uma lágrima cai ao pensar que nunca mais vou pôr os pés naquele lugar, nunca mais escutar a voz da seriema nos campos solitários, nunca mais deixar meu olhar perder-se ao leste, no topo da Serra da Piedade coberto de nuvens na madrugada.”

Eugenius Warming

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Melastomataceae from Serra da Piedade, Minas Gerais, Brazil*

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Abstract

Melastomataceae is one of the most diverse families in the Brazilian Cerrado, with significant richness and high rates of endemism in the *campos rupestres* of Bahia, Goiás, and Minas Gerais states, being remarkable in the flora of the Espinhaço Range. The Serra da Piedade, located in the Iron Quadrangle in the south portion of the Espinhaço Range, is characterized by the presence of ferruginous geosystems that enable the development of unique vegetation in Brazil, the *campos rupestres ferruginosos* (ferruginous rocky outcrops). The results reveal that *Miconia* is the most representative genus, with 20 species, followed by *Microlicia*, with ten, *Pleroma* with five species, *Cambessedesia* with four species, and *Chaetogastra* with two. *Fritschia*, *Marcetia* and *Rhynchanthera* have one species each. Among the species found in the Serra da Piedade, there are a total of 14 species that occurs exclusively in the state of Minas Gerais, of which six are endemic to the Iron Quadrangle. We present the taxonomic treatment of Melastomataceae in the Serra da Piedade, providing identification keys for the genera and species, morphological descriptions, taxonomic comments, flowering, fruiting, and geographic distribution data.

Keywords: *campo rupestre ferruginoso*, Espinhaço Range, Iron Quadrangle.

Resumo

Melastomataceae é uma das famílias mais diversas no Cerrado brasileiro, com expressiva riqueza e altas taxas de endemismo nos campos rupestres dos estados da Bahia, Goiás e Minas Gerais, com destaque na flora da Serra do Espinhaço. A Serra da Piedade, localizada no Quadrilátero Ferrífero, porção sul da Cadeia do Espinhaço, é caracterizada pela presença de geossistemas ferruginosos que possibilitam o desenvolvimento de uma vegetação única no Brasil, os *campos rupestres ferruginosos*. Os resultados revelam que *Miconia* é o gênero mais representativo, com 20 espécies, seguido por *Microlicia*, com dez, *Pleroma* com cinco espécies,

Cambessedesia com quatro espécies e *Chaetogastra* com duas. *Fritzschia*, *Marcetia* e *Rhynchanthera* apresentam uma espécie cada. Dentre as espécies encontradas na Serra da Piedade, há um total de 14 espécies que ocorrem exclusivamente no estado de Minas Gerais, das quais, seis são endêmicas do Quadrilátero Ferrífero. Nós apresentamos o tratamento taxonômico de Melastomataceae na Serra da Piedade, fornecendo chave de identificação para as espécies, descrições morfológicas, comentários taxonômicos, dados de floração, frutificação e distribuição geográfica.

Palavras-chave: Cadeia do Espinhaço, *campo rupestre ferruginoso*, Quadrilátero Ferrífero.

Introduction

The *campo rupestre* is an ecosystem present in the Cerrado, Atlantic Forest, and Caatinga ecotone (Fernandes *et al.* 2020). It is associated mainly to mountain tops of Espinhaço Range, usually from 900 meters of altitude and presents predominantly herbaceous-shrubby vegetation associated with quartzite and sandstone outcrops, in shallow, sandy or stony soils, poor in nutrient, with fluctuating temperatures and a long period of drought (Giulietti & Pirani 1988; Harley 1995; Rapini *et al.* 2008; Vasconcelos 2011; Alves *et al.* 2014; Colli-Silva *et al.* 2019). The characteristics of the relief, soil, and climate allow for the development of a peculiar flora in this vegetation formation (Giulietti & Pirani 1988; Giulietti *et al.* 1997), with a significant representation of endemic species from different groups, especially Melastomataceae (Harley & Simmons 1986; Giulietti *et al.* 1987; Baumgratz *et al.* 1995; Romero & Nakajima 1999; Vitta 2002; Pirani *et al.* 2003; BFG 2015; Colli-Silva *et al.* 2019).

Melastomataceae comprises about 5,858 species and 173 genera, with about 3,689 species in the Neotropics (Michelangeli *et al.* 2020; Ulloa Ulloa *et al.* 2022). It is considered the fifth largest family of Angiosperms in Brazil with 1,453 species and 69 genera (Ulloa Ulloa *et al.* 2022; Goldenberg *et al.* 2023a), with 489 species distributed in the state of Minas Gerais (Goldenberg *et al.* 2023a). The family is characterized by having a habit ranging from herbaceous to arboreal, simple, and decussate leaves, without stipules and commonly acrodromous venation. The flowers have hypanthium, and the androecium is often diplostemonous with poricidal anthers (see Judd *et al.* 2022).

The Espinhaço Range has two main provinces named “Chapada Diamantina” and “Southern Espinhaço” (Colli-Silva *et al.* 2019). In Minas Gerais, the Southern Espinhaço extends from the Iron Quadrangle region in the south to Grão-Mogol in the north (Echternacht *et al.* 2011; Colli-Silva *et al.* 2019). The Iron Quadrangle is a complex of mountains located between the municipalities of Belo Horizonte, Ouro Branco, Catas Altas, and Moeda (Colli-Silva *et al.*

2019), in a transition zone between the Atlantic Forest and Cerrado (Mittermeier *et al.* 2004). It is characterized by geologically complex terrains, with quartzite and granite outcrops interspersed with hematite outcrops, derived from banded iron formations (also called “*cangas*”) (Simmons 1963; Dorr 1964; Schobbenhaus & Coelho 1986; Jacobi *et al.* 2007; Castro 2008). It is considered one of the richest floristic regions in South America (Harley 1995; Giuliatti *et al.* 1997; Rapini *et al.* 2002), with more than 30% of its flora endemic (Giuliatti *et al.* 1987; Jacobi & Carmo 2008). The Serra da Piedade composes the northeast end of the mountainous alignment of Serra do Curral, one of the highest portions north of the Iron Quadrangle (Lage 2011; ADERI & IEFMG 2020). The relief, water availability, soil types, and distinct phytophysionomies in the Serra da Piedade favor the occurrence and maintenance of endemic, rare, endangered, and new species to science (ADERI & IEFMG 2020). Despite being part of federal, state and municipal heritage, and considered an important Conservation Unit of the Serra do Espinhaço Biosphere Reserve (IEPHA 2005; UNESCO 2005; Lage 2011; MMA 2018; ADERI & IEFMG 2020), the Serra da Piedade is strongly threatened by anthropic activities common in the region, such as mining of iron and gold deposits, arson, urban expansion, predatory tourist flow, agriculture and eucalyptus forestry (Pizani *et al.* 2017; ADERI & IEFMG 2019, 2020).

Understanding and detailing the species present in the mountain ranges that compose the Iron Quadrangle is fundamental for proposing and implementing effective preservation and conservation strategies of the *campo rupestre* flora, especially in areas under intense anthropogenic pressure (Ataíde *et al.* 2011; Spier *et al.* 2003; Carmo *et al.* 2018; Gomes *et al.* 2019). The presence of few comprehensive taxonomic studies in the region (i.e., Grandi *et al.* 1988; Brandão & Gavilanes 1990; Marques *et al.* 2012; Carmo *et al.* 2018) hinders the development of conservation policies based on concrete data. Taxonomic knowledge of the species, besides allowing the identification of the degree of environmental vulnerability, is

essential for decision-making regarding the management and recovery of degraded areas (Mace, 2004; Callmander *et al.* 2005; Burke, 2007; Jacobi & Carmo 2012; Carmo *et al.* 2018).

Thus, the present work aimed to carry out the taxonomic treatment of Melastomataceae in the Serra da Piedade, providing identification keys, morphological descriptions, distribution data, comments, and images of some species.

Material and Methods

The Serra da Piedade (Fig. 1) is located in the Iron Quadrangle, east-central of Minas Gerais state (19°49'21"S and 43°40'38"W), between the municipalities of Sabará and Caeté, about 50 km from Belo Horizonte, with approximately 19,47 km² of extension (Ruchkys *et al.* 2007; ADERI & IEFMG 2020) (Fig. 2). It is included in the subtropical type Cwb (Köppen, 1931), with average annual temperature ranges from 18° to 22°C (Bueno 1992; Marques *et al.* 2012). The Serra da Piedade has altitudes ranging from 742 to 1,783 m (Lage 2011; ADERI & IEFMG 2019) and it is characterized by the presence of ferruginous geosystems associated with itabirite, quartzite, gnaiss and hematite outcrops and heterogeneous vegetation coverage, with the formation of grassland enclaves amidst the forest matrix and spots of *canga* that partially cover the rocky outcrops exposed at the highest points (Brandão & Gavilanes 1990; Scliar 1992; ADERI & IEFMG 2020). In addition to the rocky outcrops at 1,200 m (Scliar 1992), the following physiognomies are found: *campos rupestres ferruginosos* (ferruginous rocky outcrops), *campo cerrado* (grassland), *cerrado sensu stricto* (savanna) and *floresta estacional semidecidual* (semideciduous forest) (Marques & Lemos-Filho 2008; ADERI & IEFMG 2019, 2020).

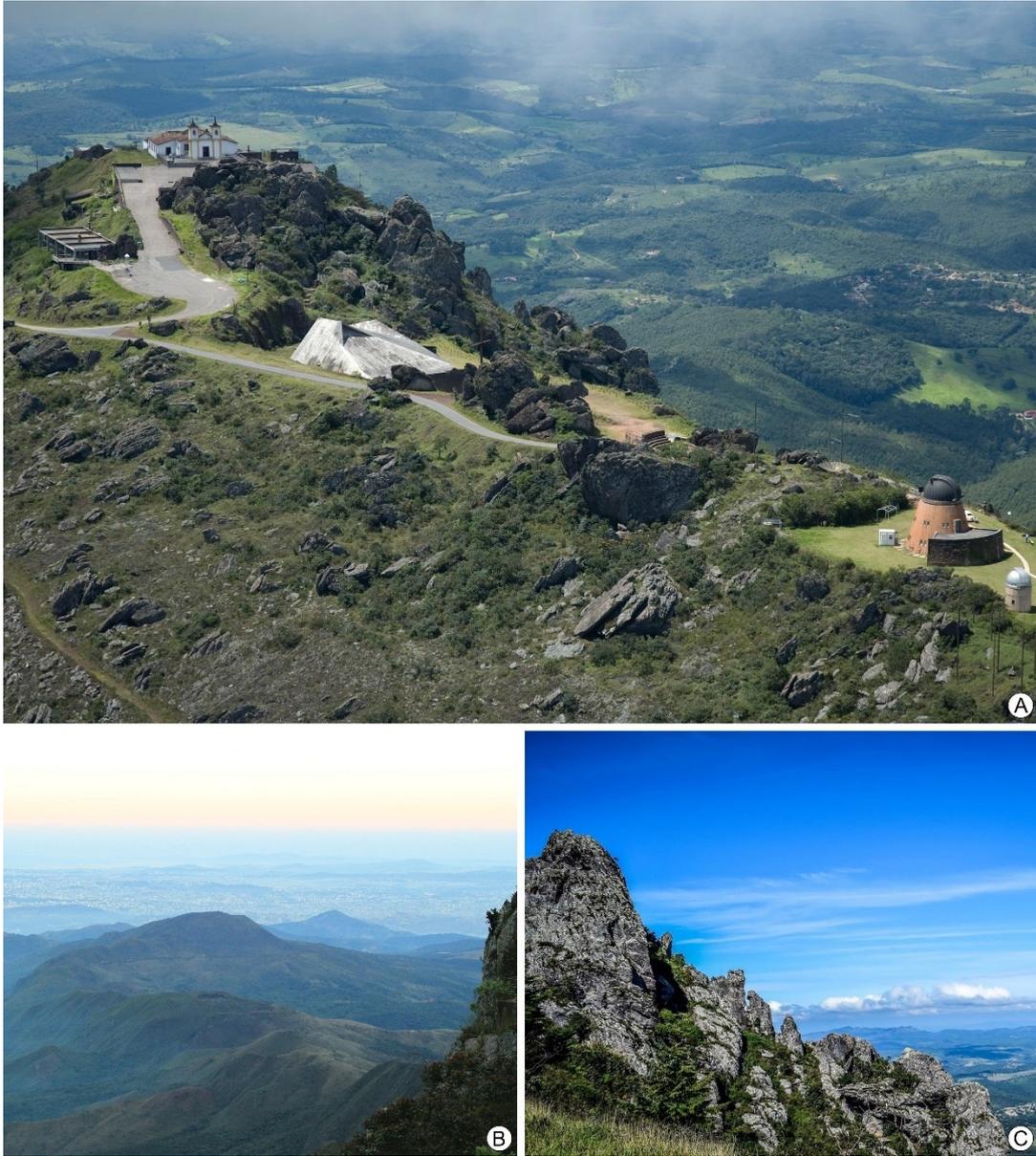


Figure 1. Serra da Piedade, Minas Gerais, Brazil. **A.** Santuário Basílica da Piedade at the top of the mountain range. **B.** *campos rupestres ferruginosos*. **C.** rocky outcrops exposed at the highest points. Photos: **A, B.** Arquidiocese Belo Horizonte; **C.** T. Marinho.

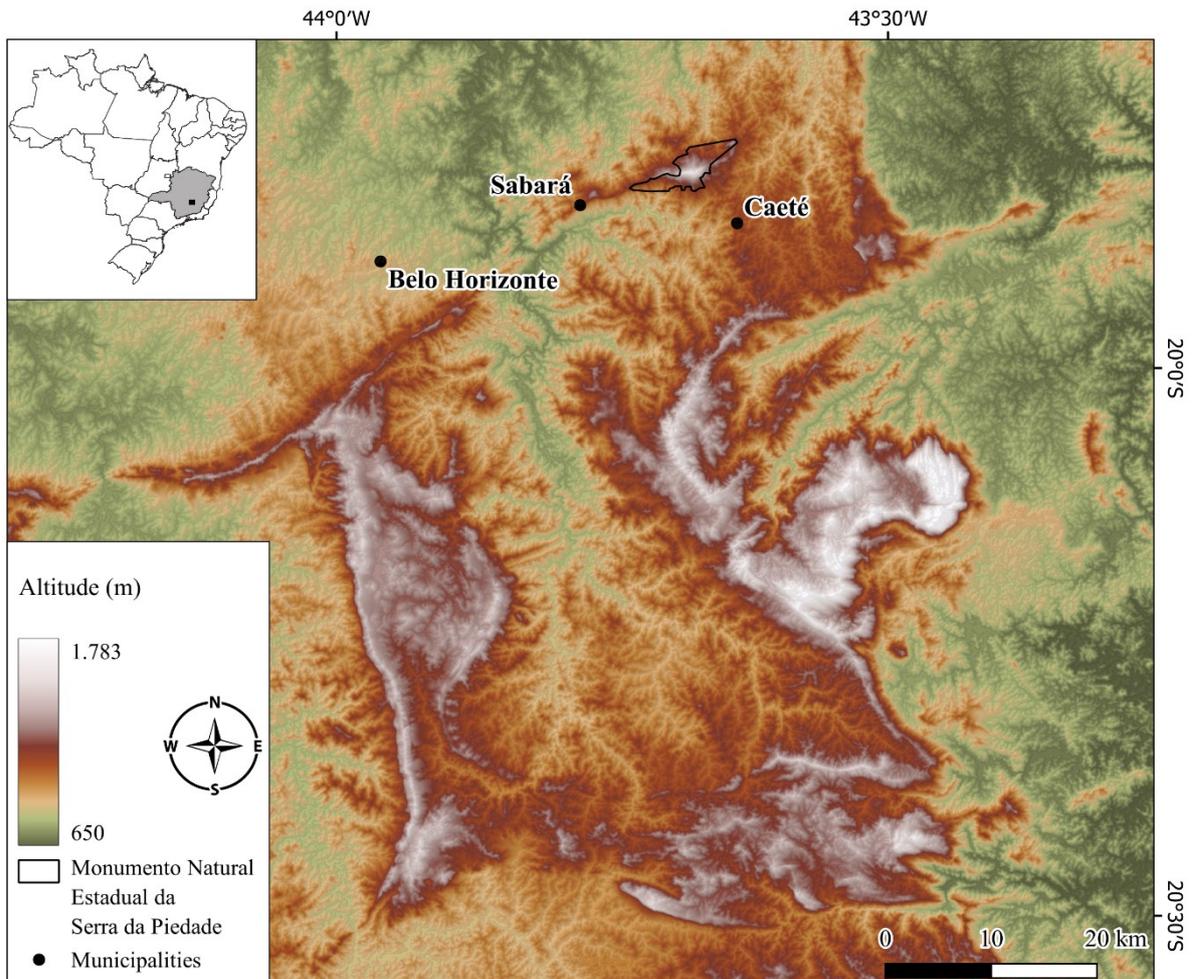


Figure 2. Altimetric map of the study region between Sabará and Caeté municipalities, in Minas Gerais state, Brazil. The delimited area is referred to as " Monumento Natural Estadual da Serra da Piedade".

Descriptions were based on herbarium specimens deposited at BHCB, FCAB, HPUC-MG, HUFU, MBM, OUPR, RB, RFA, SJRP, SORO, SPF and UB (acronyms according to Thiers, continually updated). We also examined online specimens available on JSTOR Global Plants (<http://plants.jstor.org/>), speciesLink (<http://www.splink.org.br/>), and Virtual Herbarium Reflora (<http://reflora.jbrj.gov.br/reflora/herbarioVirtual/>) platforms. Species identification were based on the literature (Cogniaux 1883–1888; Guimarães & Martins 1997; Souza 1998; Goldenberg 2004; Rodrigues 2009; Meyer *et al.* 2010; Goldenberg *et al.* 2012; Oliveira *et al.* 2016; Reginato 2016a; Hemsing 2018; Guimarães *et al.* 2019; Rocha *et al.* 2020). Images of

type specimens from JSTOR Global Plants, as well as specimens from *speciesLink* and *RefloraVirtual Herbarium* platforms, were also analyzed.

The general morphological terminology followed Radford *et al.* (1986), and the indumentum terminology was adapted from Radford *et al.* (1986) and Cogniaux (1883–1888) (Table 1). The inflorescence and calyx terminology of *Miconia* species followed Gnigler (2018) and Basso-Alves *et al.* (2017), respectively. Descriptions were built and standardized using the *MonographaR* package (Reginato 2016b) performed in R (R Core Team 2022). Flowering and fruiting data were obtained from specimen labels whenever possible. Petal, stamen, style, and fruit color is given based on dried material, specimen label information, and literature. Additional specimens from other localities were examined when flowering and fruiting material was needed to complete the description and are listed as "additional material examined". The description of *Miconia shepherdii* and *M. warmingiana* were supplemented with data from protologue and literature (i.e., Cogniaux 1887; Goldenberg & Reginato 2007; Goldenberg *et al.* 2023b). The map was performed in the software QGIS version 3.22.9 (QGIS Development Team 2022).

Table 1. Indumentum and its type of trichome found in species of the Melastomataceae from the Serra da Piedade, Minas Gerais, Brazil.

| Type of indumentum | Description |
|--------------------|--|
| Dendritic | Dendritic trichomes. |
| Furfuraceous | Straight, soft, and very short trichomes, farinaceous. The surface is frequently visible. The Furfuraceous indumentum can be composed by dendritic, glandular or stellate trichomes. |
| Glandular | Gland-tipped trichomes with a long peduncle which is visible with a typical stereomicroscope. |
| Glandular-punctate | Gland-tipped trichomes with a very short stalk which is not visible with a typical stereomicroscope. |
| Hirsute | Straight, soft, or slightly stiff, long and erect setose trichomes. |

| | |
|----------------------|--|
| Hirtellous | Similar to hirsute, but the trichomes are shorter and can be sharp and with thickened base. The Hirtellous indumentum can be composed by dendritic, glandular or setose trichomes. |
| Lanose | Intertwined and slender trichomes, woollike. The Lanose indumentum can be composed by dendritic or glandular trichomes. |
| Lepidote-stellate | Peltate scales. The surface is never visible. |
| Sericeous | Silky, long, and adpressed trichomes, can be thickened at the base. The Sericeous indumentum can be composed by dendritic or setose trichomes. |
| Setose | Setose trichomes. |
| Stellate | Stellate trichomes. |
| Strigose | Sharp, thick, stiff, and adpressed setose trichomes, usually with a bulbous base. |
| Velutinous-glandular | Straight, soft, and very short glandular trichomes, velvety-like. |
| Villous | Slightly or strongly rolled, soft, and intertwined trichomes, can be adpressed or erect. The Villous indumentum can be composed by dendritic, glandular or setose trichomes. |

Results and Discussion

Melastomataceae is represented in the Serra da Piedade by 44 species in eight genera. *Miconia* Ruiz & Pav. is the largest genus, with 20 species, followed by *Microlicia* D. Don with ten species, *Pleroma* D. Don with five species, *Cambessedesia* DC. with four species and *Chaetogastra* DC. with two species. *Fritzschia* Cham., *Marcetia* DC. and *Rhynchanthera* DC. are represented by one species each (Figs. 5, 6 and 7).

Some floristic inventories have already indicated the diversity of Melastomataceae species for the Serra da Piedade (i.e., Grandi *et al.* 1988; Brandão & Gavilanes 1990; Carmo *et al.* 2018). Of the eight species from the *campos rupestres* of the Serra da Piedade listed by Grandi *et al.* (1988), only *Miconia xanthostachya* (Cogn.) R. Goldenb. (as *Leandra xanthostachya* Cogn.) does not occur in the area, and the specimens correspond to *Miconia oligochaeta* (Cham.) R. Goldenb. Posteriorly, Brandão & Gavilanes (1990) cited the occurrence of 33

species of Melastomataceae, but 13 species are not found in the Serra da Piedade since some samples were misidentified. Carmo *et al.* (2018) listed the diversity of vascular plants in various ferruginous mountain ranges in southeastern Brazil and identified the Serra da Piedade as the most extensively sampled locality, with about 3,400 specimens collected. This study also revealed the occurrence of 940 species, including 44 belonging to Melastomataceae (see Carmo *et al.* 2018). However, we found that specimens corresponding to 11 species were misidentified. Complete species lists alone are not sufficient to ensure species conservation (Mace, 2004). Gaps in taxonomic knowledge significantly affect conservation capabilities, as the preservation of biological diversity is hindered without the recognition and description of natural ecosystem components (Mace, 2004; Ely *et al.* 2017). Therefore, the contribution of qualified taxonomists in reviewing previously published lists is essential for the conservation community. By conducting detailed curation of collections, observing species and their populations, confirming their occurrence, describing habitats, identifying environmental pressures, and determining areas where the highest number of at-risk species can be conserved, the taxonomic community not only improves the quality of information on biodiversity in the studied regions but also facilitates the proposal and development of new strategies and solutions for flora conservation (Mace, 2004; Callmander *et al.* 2005; Ely *et al.* 2017).

Of the 211 Melastomataceae species endemic to Minas Gerais (Goldenberg *et al.* 2023), 14 occur in the Serra da Piedade, and six are endemic to the Iron Quadrangle: *Cambessedesia pityrophylla* (Mart. ex DC.) A.B.Martins, *Miconia lasiostachya* (Cogn.) R.Goldenb., *M. warmingiana* Cogn., *Microlicia calycina* (Cham.) Versiane & R.Romero, *M. crenulata* (DC.) Mart. and *M. warmingiana* Cogn. *Miconia lasiostachya* (new name of *Leandra lasiostachya* Cogn., see Michelangeli *et al.* 2020) was rediscovered in the Serra da Piedade, previously known only by its type collection. The specimen collected (*M.F. Vasconcelos 12-209*) had not been earlier identified and, after analyzing the description in the protologue and comparing it

with the type material of *Leandra lasiostachya*, collected by Claussen (*n.* 390) in the 1840s, it became clear that the material referred to the species described by Cogniaux (1886).

Most of the collection of Melastomataceae from Serra da Piedade deposited in herbaria was made in the 20th century (176 specimens). In comparison, 42 specimens were collected in the current 21st century, 5 specimens in the 19th century, and 25 specimens do not have a collection date. The analysis and description of these materials, some over 100 years old, was challenging due to their state of conservation. The collection of Melastomataceae from Serra da Piedade, especially from *Miconia*, has few records for each species and, is often in poor condition, with vegetative and reproductive structures damaged or absent. In addition, habitat information is also lacking in most of these collections.

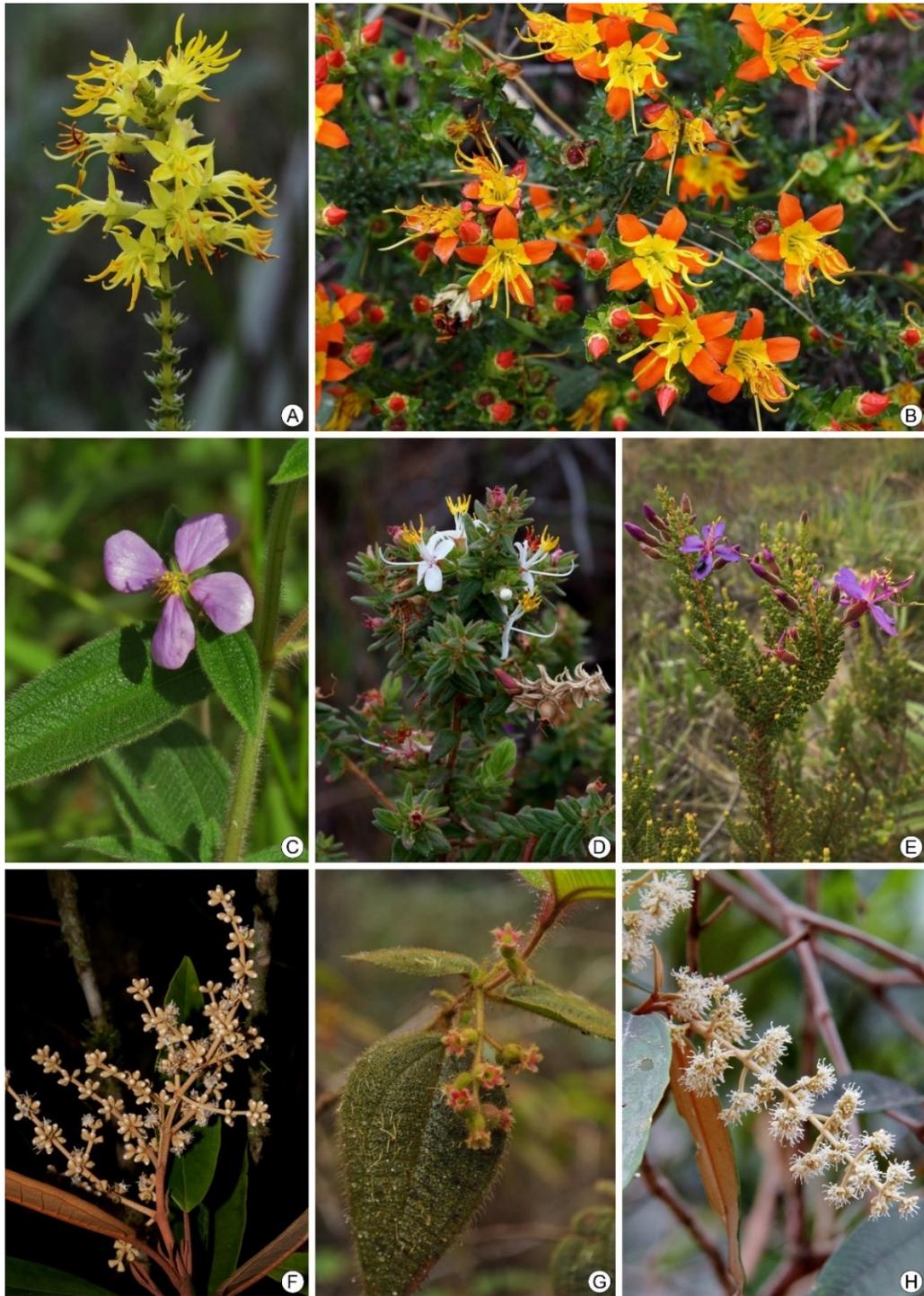


Figure 3. **A.** Inflorescence of *Cambessedesia espora* (A.St.-Hil. ex Bonpl.) DC.; **B.** Inflorescence of *C. hilariana* (Kunth) DC.; **C.** Flower of *Chaetogastra sebastianopolitana* (Raddi) P.J.F.Guim. & Michelang.; **D.** Flowers of *Marcetia taxifolia* (A.St.-Hil.) DC.; **E.** Flowers of *Fritzschia sertularia* (Schrunk & Mart. ex DC.) M.J.R.Rocha & P.J.F.Guim.; **F.** Inflorescence of *Miconia flammea* Casar.; **G.** Infructescence of *M. neourceolata* Michelang.; **H.** Inflorescence of *M. pepericarpa* DC. Photos: **A, B, D, H.** M. Mercadante; **C.** M.I. Calhau; **E.** G.M. Paranhos; **F.** F. Michelangeli; **G.** P. Burkowski.

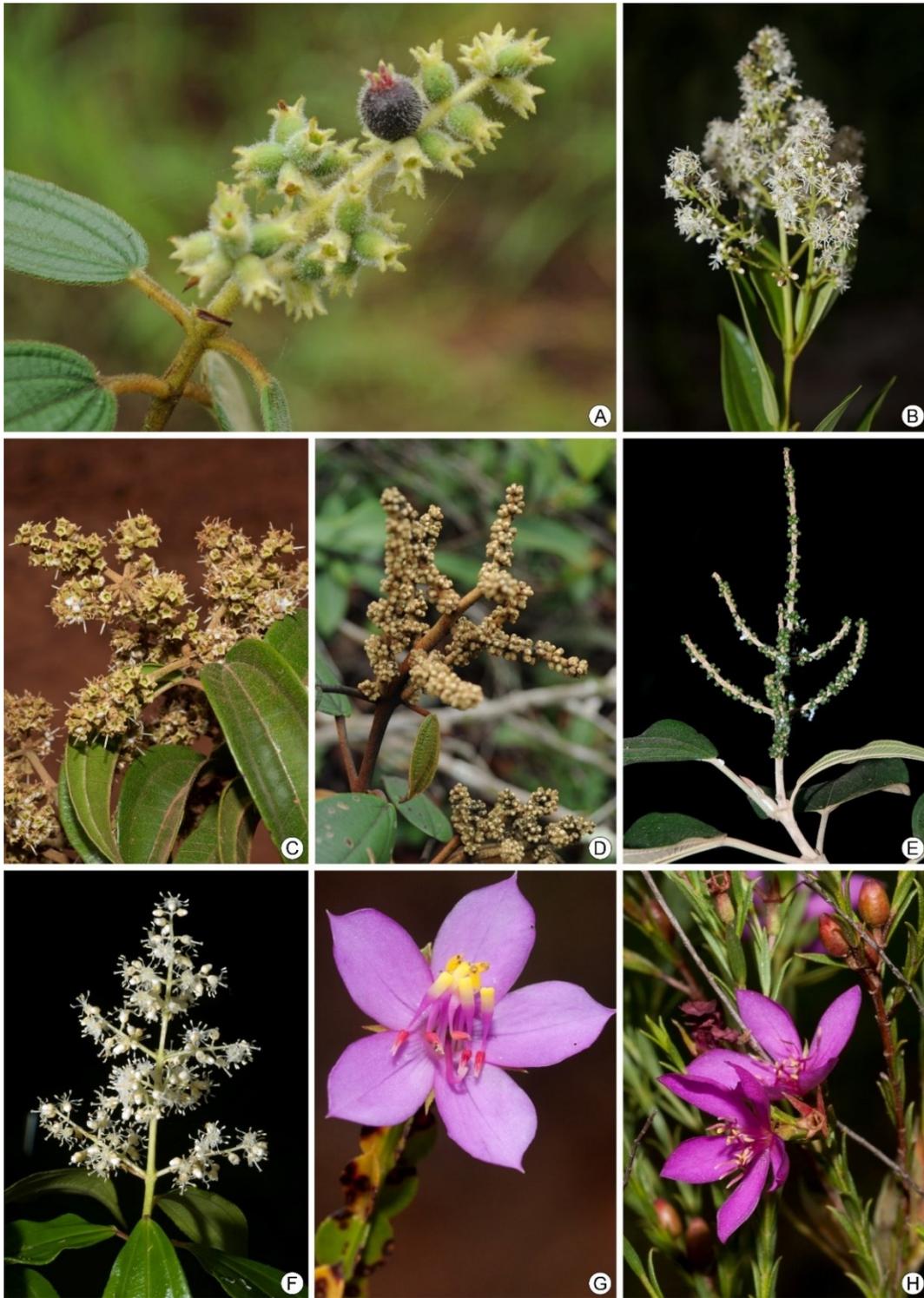


Figure 4. A. Infructescence of *Miconia auricoma* (Spring. ex Mart.) R.Goldenb.; B. Inflorescence of *M. ligustroides* (DC.) Naudin; C. Inflorescence of *M. rimalis* Naudin; D. Inflorescence of *M. sclerophylla* Triana; E. Infructescence of *M. shepherdii* R.Goldenb. & Reginato; F. Inflorescence of *M. theaezans* (Bonpl.) Cogn.; G. Flower of *Microlicia crenulata* (DC.) Mart.; H. Flowers of *M. isophylla* DC. Photos: A, D. P. Burkowski; B, C, E, F, H. F. Michelangeli; G. M. Mercadante.

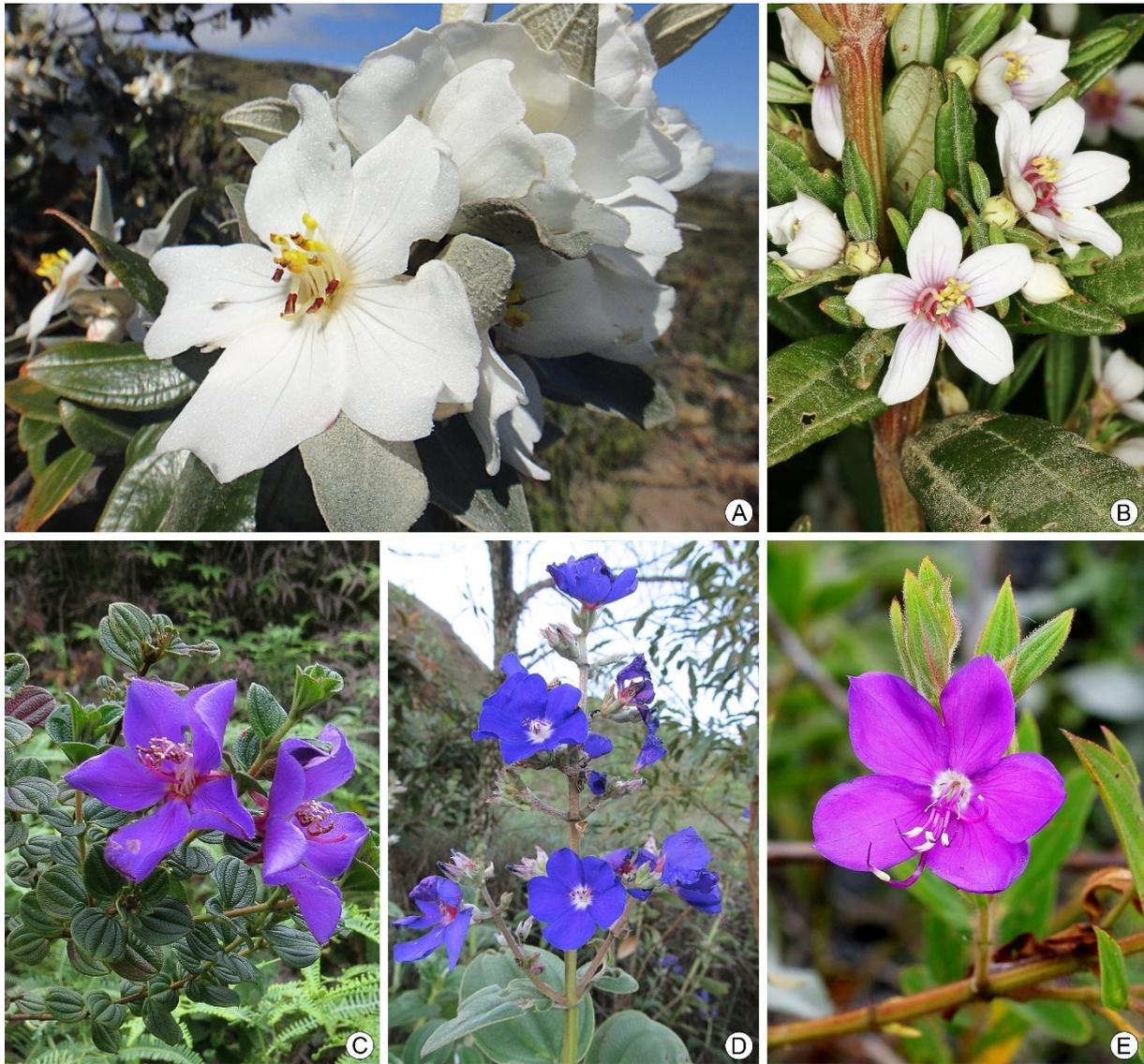


Figure 5. **A.** Flowers of *Microlicia laniflora* (D.Don) Baill.; **B.** Flowers of *M. parviflora* (D.Don) Versiane & R.Romero; **C.** Flowers of *Pleroma cardinale* (Bonpl.) Triana; **D.** Inflorescence of *P. heteromallum* D.Don; **E.** Flower of *Rhynchanthera grandiflora* (Aubl.) DC. Photos: **A.** A.F. Versiane; **B, E.** M. Mercadante; **C, D.** M.I. Calhau.

Taxonomic Treatment

Melastomataceae Jussieu (1789: 328)

Subshrubs, shrubs or trees. Branches flattened, quadrangular or terete, winged or not, vernicose or not, glutinous or not; young and old branches, leaf blade, hypanthium, and sepals covered with variable indumentum or glabrous. Leaves simple, opposite, petiolate or sessile, ascending,

descending or horizontal, imbricate or not, conduplicate or not, arranged in brachyblast or not, fasciculate or not; leaf blade membranaceous, chartaceous or coriaceous, concolor or discolor, variable shapes, 1–7-veined, basal or suprabasal, domatias present or not. Inflorescences or solitary flowers, terminal or lateral, bracts and bracteoles present or not. Flowers 4–6-merous, pedicellate or sessile; hypanthium campanulate, cylindric or urceolate, granular, smooth, wrinkled or 5, 8 or 10-costate, vernicose or not; sepals of variable shapes, dorsal projection present or not; petals lilac, magenta, pink, purple, red-orange with yellow base or half red-orange and half yellow, yellow or white, variable shapes; stamens 5–12, fertile, dimorphic, isomorphic or subisomorphic, filaments glabrous or covered with variable indumentum, connective thickened or not, glabrous, pedoconnective prolonged or not below the thecae, glabrous or covered with variable indumentum, dorsal appendage present or not, glabrous, ventral appendage present or not, glabrous or glandular-punctate, anthers concolor or bicolor, purple, pinkish, vinaceous, yellow or white, yellow, variable shapes, polysporangiate or tetrasporangiate, thecae prolonged or not below the connective, staminodes present or not; ovary 3–5-locular, inferior, partly inferior or superior, apex glabrous or covered with variable indumentum; style pink, purple, vinaceous, white or yellow, glabrous or covered with variable indumentum, stigma capitate, punctiform or truncate. Capsule or berry; seeds cochleate, hemispheric, ovate, pyramidal, reniform or subcochleate.

Identification key for Melastomataceae genera in the Serra da Piedade

- 1. Fruit berry..... 5. *Miconia*
- Fruit capsule..... 2
- 2. Petals red-orange with yellow base, half red-orange and half yellow or entirely yellow
..... 1. *Cambessedesia*
- Petals lilac, magenta, pink, purple or white 3

3. Stamens connective basally thickened, pedoconnective not prolonged below the thecae4. *Marcetia*
 - Stamens connective not thickened, pedoconnective prolonged below the thecae..... 4
4. Anthers apex rostrate; seeds reniform 5
 - Anthers apex attenuate; seeds cochleate or subcochleate 6
5. Stamens 5, fertile, one longer than the others, staminodes 58. *Rhynchanthera*
 - Stamens 10, fertile, five longer than the others, staminodes absent 6. *Microlicia*
6. Leaf blade 1-veined; hypanthium 8-costate; style glandular on the lower half; seeds subcochleate 3. *Fritzschia*
 - Leaf blade 5–7-veined; hypanthium smooth, wrinkled or 10-costate; style setose, villous or glabrous on the lower half; seeds cochleate 7
7. Hypanthium wrinkled or 10-costate; anthers yellow or reddish; style glabrous; calyx persistent in fruit.....2. *Chaetogastra*
 - Hypanthium smooth, not costate; anthers cream or purplish; style setose or villous; calyx deciduous in fruit.....7. *Pleroma*

1. *Cambessedesia* De Candolle (1828: 110).

Subshrubs or shrubs. Branches quadrangular to terete, not vernicose, not glutinous; young and old branches, leaf blade, hypanthium, and sepals covered with indumentum or glabrous. Leaves sessile or petiolate, ascending or horizontal, not imbricate, not conduplicate, arranged in brachyblast or not, fasciculate or not; leaf blade of variable shapes, 1–5-veined, basal or suprabasal. Inflorescences in dichasium, monochasium or reduced to solitary flowers, terminal or lateral, bracts present or not, bracteoles present. Flowers 5–6-merous, pedicellate; hypanthium cylindric or campanulate, 10-costate, not vernicose; sepals of variable shapes; petals bicolor, red-orange with yellow base or half red-orange and half yellow, or concolor,

entirely yellow, ovate, apex acuminate, margin entire, glandular-ciliate or glabrous; stamens 10–12, fertile, subisomorphic, filaments yellow, sparsely glandular or glabrous, connective yellow, dorsally thickened, glabrous, pedoconnective not prolonged below the thecae, glabrous, dorsal appendage absent, ventral appendage absent, anthers concolor, yellow, linear-oblong or narrowly oblong, apex attenuate, tetrasporangiate, theca prolonged below the connective, staminodes absent; ovary 3–6-locular, superior, apex glandular; style yellow, glandular, glandular-punctate or glabrous, stigma punctiform. Capsules cylindrical or pyriform, brownish; seeds pyramidal.

All 24 accepted species of *Cambessedesia* are endemic to Brazil (Pacífico & Fidanza 2023a). It is predominantly distributed in the Cerrado, with almost all species endemic to the *campos rupestres* from central and north-eastern Brazil (Rodrigues 2009; Bochorny *et al.* 2019; Pacífico & Fidanza 2023a). Minas Gerais has the highest diversity of *Cambessedesia* with 13 species, of which eight are endemic to the state (Pacífico & Fidanza 2023). In the Serra da Piedade are found four species.

Key to species of *Cambessedesia*

1. Petals bicolor, red-orange with yellow base or half red-orange and half yellow 2
 - Petals concolor, entirely yellow 3
2. Leaves not arranged in brachyblast, not fasciculate; leaf blade chartaceous, discolor 1.1. *Cambessedesia corymbosa*
 - Leaves arranged in brachyblast, fasciculate; leaf blade membranaceous, concolor 1.3. *Cambessedesia hilariana*
3. Leaves sessile; leaf blade chartaceous, concolor; hypanthium sparsely glandular, sepals glabrous 1.2. *Cambessedesia espora*

- Leaves petiolate; leaf blade coriaceous, discolor; hypanthium and sepals lanose-dendritic
..... 1.4. *Cambessedesia pityrophylla*

1.1. *Cambessedesia corymbosa* Mart. & Schrank ex De Candolle (1828:110).

Shrubs, ca. 1.5 m tall. Branches quadrangular or slightly terete, brownish; indumentum of young branches and hypanthium glandular, abaxial leaf blade velutinous-glandular, old branches glabrescent, sepals glabrous. Leaves petiolate, petiole 0.5–2 mm long, horizontal, not arranged in brachyblast, not fasciculate; leaf blade 8–17 × 7–13 mm, chartaceous, adaxial surface slightly bullate, abaxial surface foveolate, discolor, adaxial surface darker, ovate to widely ovate, apex acute, acuminate or obtuse, base cuneate or obtuse, margin entire, serrulate or slightly crenulate, not revolute, glandular-ciliate, rarely glabrous, 3–5-veined, basal or rarely suprabasal, glabrous on the adaxial surface. Inflorescences in compound dichasium, corymbiform, terminal, bracts present. Flowers 5-merous; sepals linear; petals bicolor, red-orange with yellow base, margin glabrous; stamens 10, filaments glabrous, anthers linear-oblong, ovary 3(–4)-locular; style glabrous. Capsules cylindrical.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, estrada para Casa dos Romeiros, 3 April 2001 (fl., fr.), *R.S. Rodrigues et al. 1182* (UEC-online image!).

Additional specimens examined:—BRAZIL. Minas Gerais: Nova Lima, Lagoa Grande, em área pertencente à Minerações Brasileiras Reunidas - MBR, 12 February 1995 (fl.), *M.S. Werneck 92* (HUFU!); Serra do Cipó, estrada Lagoa Santa - Conceição do Mato Dentro, km 113, 9 March 1995 (fl., fr.), *N.M. Castro 424* (HUFU!).

Cambessedesia corymbosa is endemic to Minas Gerais, occurring in Southern Espinhaço (Martins 1984; Alves *et al.* 2008; Rodrigues 2009; Pacifico & Fidanza 2023). In the Serra da Piedade occurs in *campo cerrado*. Collected with flowers and fruits in May. *Cambessedesia corymbosa* resembles *C. hilariana* in having a glandular indumentum covering the young

branches and hypanthium, glabrous sepals, 5-merous flowers, bicolor petals, and stamens with linear-oblong anthers. However, *C. corymbosa* differs by its velutinous-glandular indumentum on abaxial surface of the leaf blade (Fig. 6C) (*vs.* glabrous or sometimes sparsely glandular in *C. hilariana*), leaves not arranged in brachyblast and not fasciculate (*vs.* in brachyblast and fasciculate), discolor leaf blade, ovate to widely ovate, cuneate or obtuse at the base (*vs.* concolor, elliptic to narrowly elliptic or lanceolate, attenuate at the base), linear sepals (*vs.* cordate) and glabrous filaments (*vs.* sparsely glandular).

1.2. *Cambessedesia espora* (A.St.-Hil. ex Bonpl. in Humboldt & Bonpland 1823: 152) De Candolle (1828: 111).

Shrubs, ca. 0.4 m tall. Branches quadrangular or slightly terete, brownish; indumentum of young and old branches hirtellous-dendritic, hypanthium sparsely glandular, leaf blade and sepals glabrous. Leaves sessile, ascending, arranged in brachyblast, fasciculate; leaf blade 1.5–3.5 × 0.5–3 mm, chartaceous, both surfaces smooth, concolor, ovate, ovate-lanceolate or cordate, apex acute or acuminate, base cordate or rounded, margin serrate, not revolute, glabrous or glandular-ciliate, 1–3-veined, basal, sometimes sparsely glandular on both surfaces. Inflorescences reduced to solitary flowers, spiciform, terminal or lateral, bracts absent. Flowers 5-merous; sepals triangular-lanceolate; petals concolor, entirely yellow, margin glabrous; stamens 10, filaments sparsely glandular, anthers linear-oblong, ovary 3(–4)-locular; style sparsely glandular on the lower half. Capsules cylindrical.

Specimens examined:—BRAZIL. Minas Gerais. Caeté: estrada da Piedade, 16 June 1933 (fl.), *H.L.M. Barreto & Hoehne 6851* (BHCB!); Serra da Piedade, April 1971 (fl.), *M.A. Lisboa s.n.* (OUPR 35872!).

Additional specimens examined:—BRAZIL. Minas Gerais: Itabirito, Pico do Itabirito, 17 September 1993 (fl., fr.), *W.A. Teixeira s.n.* (HUFU 19282!); Ouro Preto, Chapada, distrito de Ouro Preto, 16 August 2002 (fl.), *G.E. Valente et al.* 995 (HUFU!).

Cambessedesia espora occurs in Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, São Paulo, and Distrito Federal (Rodrigues 2009; Pacifico & Fidanza 2023a). In the Serra da Piedade, it occurs in *cerrado*, and is known from only two specimens collected 50 years ago. Collected with flowers in April and June. *Cambessedesia espora* resembles *C. pityrophylla* in having leaves arranged in brachyblast and yellow petals (Fig. 3A). However, *C. espora* differs in having a small size with ca. 0.4 m tall (*vs.* 1–3 m in *C. pityrophylla*), sparsely glandular hypanthium and glabrous sepals (*vs.* dense whitish lanose-dendritic hypanthium and sepals), and petiolate, not fasciculate leaves (*vs.* sessile, fasciculate).

1.3. *Cambessedesia hilariana* (Kunth in Humboldt & Bonpland 1823: 147) De Candolle (1828: 111).

Subshrubs, 0.3–0.6 m tall. Branches quadrangular, brownish or vinaceous; indumentum of young branches and hypanthium sparsely glandular, old branches, leaf blade and sepals glabrous. Leaves sessile or petiolate, petiole up to 0.5 mm long, horizontal, arranged in brachyblast, fasciculate; leaf blade 3–15.5 × 1–5 mm, membranaceous, both surfaces smooth, concolor, elliptic to narrowly elliptic or lanceolate, apex acute, base attenuate, margin entire or 1–2 dentate, sometimes revolute, glabrous, 1–3-veined, basal or suprabasal, sometimes sparsely glandular on both surfaces. Inflorescences in dichasium, monochasium or reduced to solitary flowers, terminal or lateral, bracts present. Flowers 5-merous; sepals cordate; petals bicolor, red-orange with yellow base or half red-orange and half yellow, margin glabrous; stamens 10, filaments sparsely glandular, anthers linear-oblong, ovary 3(–4)-locular; style sparsely glandular-punctate on the lower half. Capsules cylindric.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, s.d. (fr.), *Claussen 131* (US-online image!); s.d. (fl., fr.), *Claussen 131B* (NY-online image!); 25 May 1970 (fl., fr.), *P. Occhioni et al. s.n.* (RFA 11925!); near summit of Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31, 1,800-2,000 m, 13 January 1971 (fl., fr.), *H.S. Irwin 30231* (UB!, NL, NY, US-online images!); Caeté, Serra da Piedade, alto da serra, 4 March 1976 (fl., fr.), *M. Brandão 5509* (HUFU!); idem, km 1-5 on road to top of Serra, 19°55'S, 43°45'W, 1,200-1,700 m, 2 February 1982 (fl., fr.), *L.R. Landrum 4287* (RB!, MBM, NY, US-online images!); idem, 15 April 1985 (fl., fr.), *T.S.M. Grandi & J.S.J. Paula 1638* (BHCB!); idem, estação de coleta 3, 19°49'S, 43°40'W, 1,670 m, 28 April 1985 (fl., fr.), *A.A.L. Silva et al. 1692* (BHCB!, HUFU!, MBM-online image!); idem, estação de coleta 2 e 3, 28 April 1985 (fl., fr.), *E.B. Sauder s.n.* (BHCB 5926!); idem, estação de coleta 3, 19°49'S, 43°40'W [19°49'S, 43°40'08"W], 1,670 m, 28 April 1985 (fl.), *L.C.R. Silva & T.S.M. Grandi s.n.* (BHCB 5847!, MBM-online image 178341!); idem, 2^a e 3^a estação, 19°49'S, 43°40'W, 1,650 e 1,670 m, 28 April 1985 (fl., fr.), *P.L. Maciel et al. s.n.* (BHCB 5875!, HUFU 6261!, MBM-online image 178342!); idem, 28 April 1985 (fl., fr.), *R. José s.n.* (BHCB 5993!, HUFU 6262!, MBM-online image 178343!); idem, 19°49'S, 43°40'W, 1,720 m, 28 April 1985 (fl., fr.), *T.S.M. Grandi s.n.* (FCAB 3724!, HUFU 82080!); idem, 31 January 1992 (fl., fr.), *A.L.F. Chaves 17* (BHCB!, UEC-online image!); idem, próximo ao campo aeronáutica, 19°49'20"S, 43°41'04"W, 1,593 m, 14 May 2012 (fl., fr.), *M.J.R. Rocha et al. 667* (BHCB!); idem, 19°49'22"S, 43°40'29"W, 1,697 m, 16 March 2016 (fl., fr.), *A. Aquino s.n.* (HPUC-MG 5323!); Serra da Piedade - trilha da Moto, 19°40'29"S, 43°40'29"W, 1,697 m, 09 May 2016 (fl., fr.), *B. Gustavo s.n.* (HPUC-MG 4560!).

Cambessedesia hilariana is the most widely distributed species of the genus, occurring in Bahia, Espírito Santo, Goiás, Minas Gerais, Paraná, Pernambuco, Piauí, Rio de Janeiro, São Paulo, Tocantins, and Distrito Federal (Rodrigues 2009; Pacífico & Fidanza 2023). In the Serra da Piedade, occurs in *campo cerrado*. Collected with flowers and fruits from January to May.

Cambessedesia hilariana is recognized in having a sparse glandular indumentum covering the young branches and hypanthium (Fig. 7F), glabrous or sometimes sparsely glandular leaf blade, leaves arranged in brachyblast, fasciculate, and flowers with bicolor petals (Fig. 3B). The differences between *C. hilariana* and *C. corymbosa* were noted under *C. corymbosa*.

1.4. *Cambessedesia pityrophylla* (Mart. ex De Candolle 1828: 139) A. B. Martins (1995: 148). Subshrubs or shrubs, 1–3 m tall. Branches terete, brownish; indumentum of young branches, abaxial leaf blade, hypanthium and sepals lanose-dendritic, old branches glabrescent. Leaves petiolate, petiole 1.5–5 mm long, horizontal, arranged in brachyblast, not fasciculate; leaf blade 12–40 × 3–13 mm, coriaceous, adaxial surface slightly bullate, discolor, adaxial surface darker, abaxial surface whitish due to the indumentum, elliptic to oblong-elliptic or lanceolate to oblong-lanceolate, apex acute, rarely obtuse, base cuneate or attenuate, margin entire or slightly crenulate, discretely revolute, glabrous, 3-veined, basal, glabrous on the adaxial surface. Inflorescences in compound dichasium, umbelliform, terminal, bracts present. Flowers 5–6-merous; sepals subulate; petals concolor, entirely yellow, margin glandular-ciliate; stamens 10–12, filaments sparsely glandular, anthers narrowly oblong, ovary 5–6-locular; style sparsely glandular-punctate on the lower half. Capsules pyriform.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, 1697 m, s.d. (fl., fr.), *V. João s.n.* (HPUC-MG 5318!); idem, s.d. (fl.), *Warming 2216* (MNHN-online image!); idem, 1840 (fl., fr.), *Claussen 114* (MNHN, NY-online images!); idem, 1,640 m, 28 March 1957 (fl.), *E. Pereira 2686 & G.F.J. Pabst. 3522* (RB-online image!); idem, perto de Belo Horizonte, 1800 m, 24 January 1970 (fl., fr.), *M.B. Ferreira 75* (UB!); idem, ca. 35 km E. of Belo Horizonte, near BR-31, ca. 1,850 m, 15 January 1971 (fl., fr.), *H.S. Irwin et al. 30393* (NY-online image!, UB!); idem, summit and upper slopes on S. side, ca. 5 km N. of Caeté., ca. 2,000 m, 20 January 1971 (fl., fr.), *H.S. Irwin et al. 28789* (NY-online image!, UB!); Caeté, Serra da Piedade, alto

da serra, s.d. (fl.), *L.B. Damazio s.n.* (OUPR 35913!); idem, 16 June 1933 (fl.), *H.L.M. Barreto 6752* (BHCB!); idem, 28 June 1933 (fl.), *H.L.M. Barreto 6751* (BHCB!); idem, km 1-5 on road to top of Serra, 19°55'S, 43°45'W, 1,200-1,700 m, 2 February 1982 (fl., fr.), *L.R. Landrum 4295* (MBM, NY-online images!); idem, 19°49'S, 43°40'W, 4 January 1986 (fl., fr.), *T.S.M. Grandi et al. s.n.* (BHCB 7153!, HUFU 6321!); idem, 31 March 1990 (fl., fr.), *A.L.F. Chaves 19872* (UEC-online image!), *A.L.F. Chaves s.n.* (BHCB 19872!); idem, 19°49'07.6"S, 43°40'44.1"W, 1480 m, 11 January 1996 (fl., fr.), *V.C. Souza et al. 10065* (ESA, MBM-online images!); idem, descendo da igreja em direção à base da serra, 10 April 1996 (fl., fr.), *J.A. Lombardi 1245* (BHCB!, HUFU!); idem, 1 February 2001 (fl., fr.), *R.C. Mota & A. Marques 351* (UPCB-online image!); idem, 19°49'24"S, 43°41'08"W, 1,398 m, 27 March 2001 (fl., fr.), *R. Romero & J.N. Nakajima 5995* (HUFU!, UEC-online image!); idem, 10 January 2006 (fl., fr.), *V.C. Souza 33802* (UPCB-online image!); idem, trilha próxima à lanchonete, lado direito, 19°49'20"S, 43°41'04"W, 1,593 m, 14 May 2012 (fl., fr.), *M.J.R. Rocha et al. 664* (BHCB!, HUFU!, RB-online image!).

Cambessedesia pityrophylla is endemic to the Iron Quadrangle, in Minas Gerais, with most of collections from the Serra da Piedade and Serra do Caraça, in Caeté and Santa Bárbara municipalities, respectively (Rodrigues 2009). In the Serra da Piedade, occurs in *campo rupestre ferruginoso*, on grassy fields, rock outcrops, and iron-rich substrates. Collected with flowers and fruits from January to May. *Cambessedesia pityrophylla* is recognized by the dense whitish lanose-dendritic indumentum covering young branches, abaxial leaf blade, hypanthium and sepals (Fig. 6E, E1), and flowers with yellow petals. The differences between *C. pityrophylla* and *C. espora* were noted under *C. espora*.

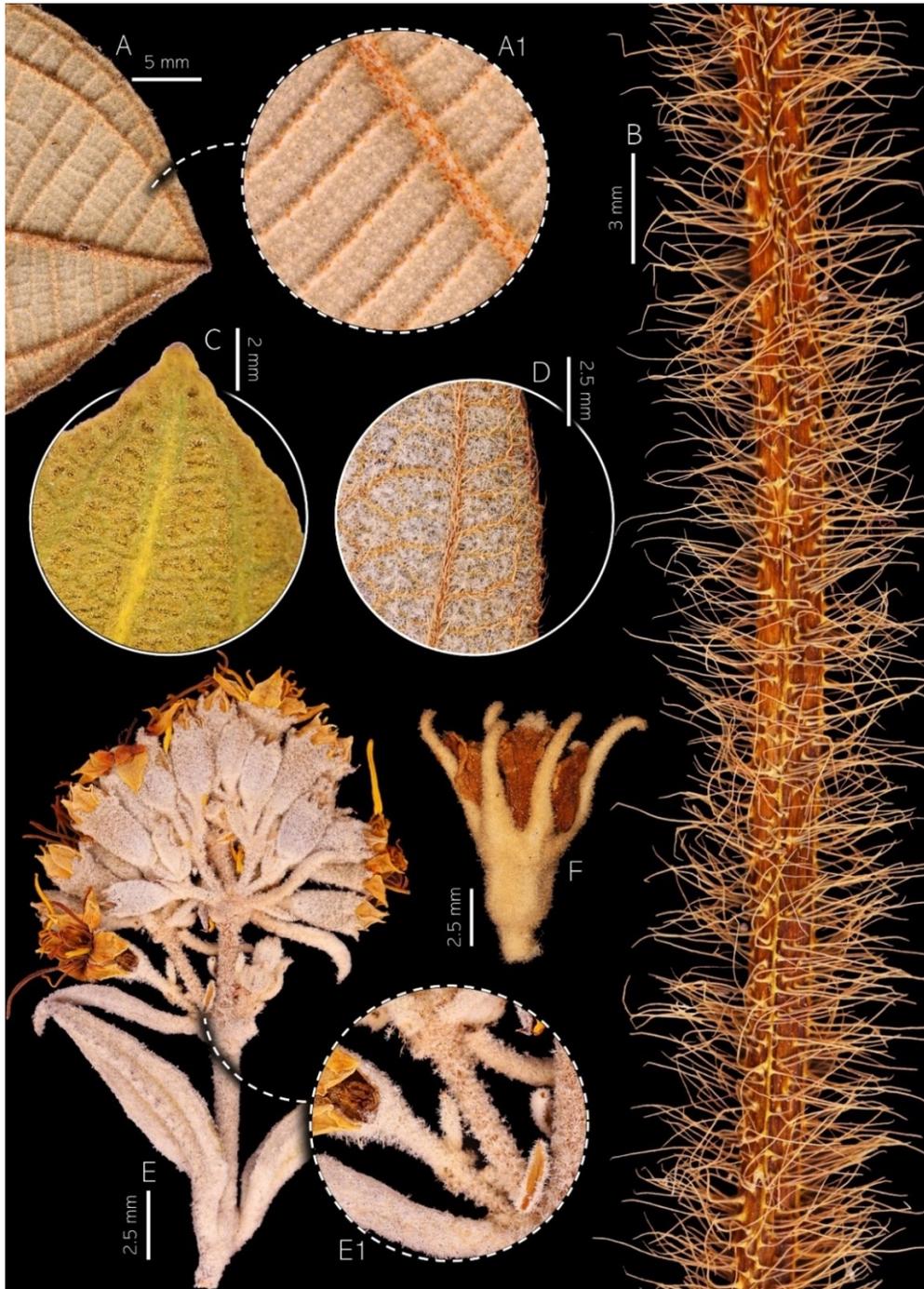


Figure 6. Type of indumentum in species of Melastomataceae from Serra da Piedade, Minas Gerais, Brazil. **A.** Lepidote-stellate on abaxial leaf blade in *Miconia sclerophylla* (I.M. Franco *et al.* 1153); **A1.** Lepidote-stellate indumentum detail; **B.** Hirsute on branch in *Chaetogastra hieracioides* (OUPR 3858); **C.** Velutinous-glandular on abaxial leaf blade in *Cambessedesia corymbosa* (M.S. Werneck 92); **D.** Villous-setose on abaxial leaf blade in *Pleroma heteromallum* (A.S.C. João 03); **E.** Lanose-dendritic in *Cambessedesia pityrophylla* (R. Romero & J.N. Nakajima 5995); **E1.** Dendritic trichomes detail; **F.** Lanose-glandular hypanthium and sepals in *Microlicia laniflora* (L. Krieger 20163).

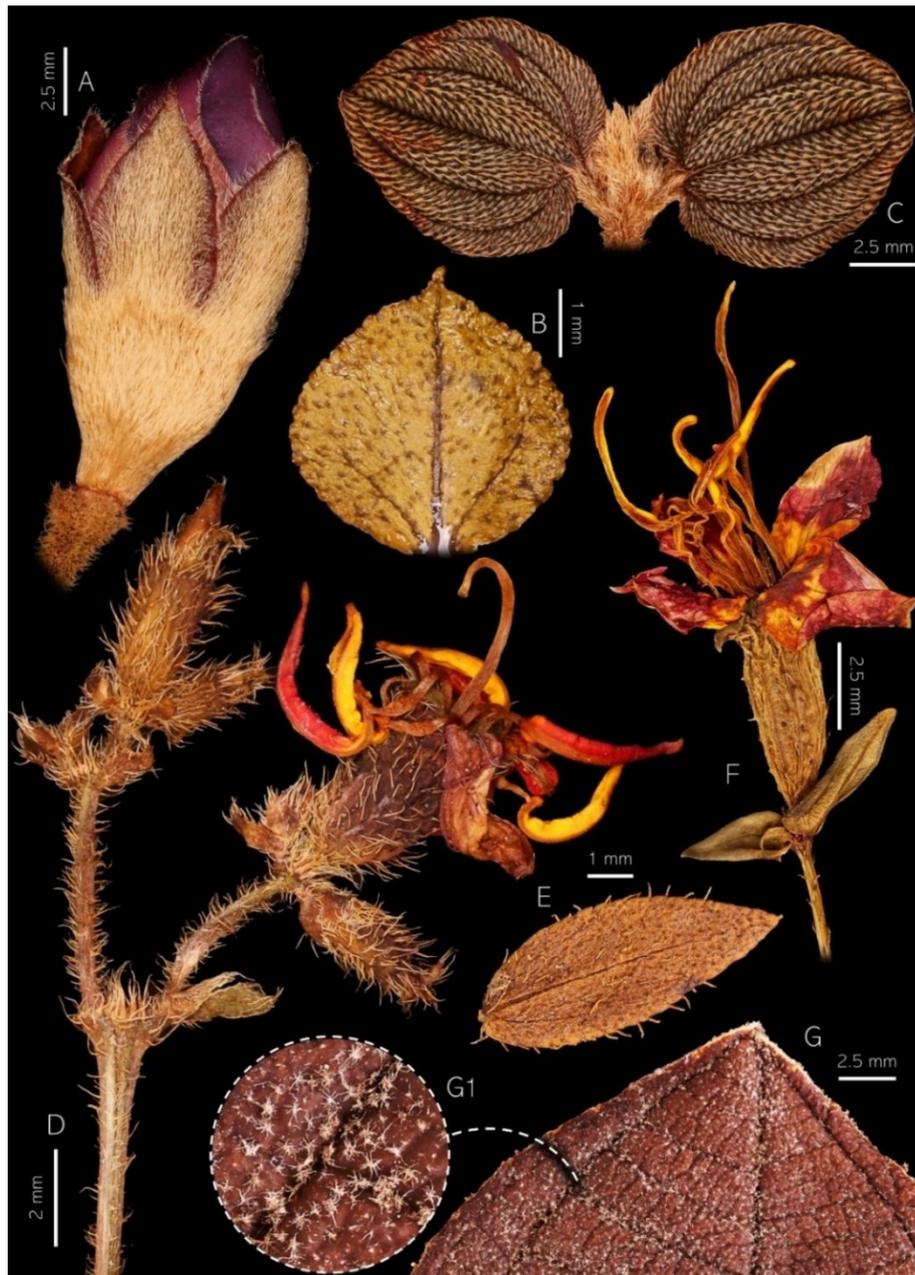


Figure 7. Type of indumentum in species of Melastomataceae from Serra da Piedade, Minas Gerais, Brazil. **A.** Sericeous-dendritic on hypanthium in *Pleroma canescens* (P.I.S. Braga et al. 2152); **B.** Glandular-punctate on abaxial leaf blade in *Microlicia crenulata* (H.S. Irwin et al. 30395); **C.** Strigose on adaxial leaf blade in *Pleroma cardinale* (R. Romero & J.N. Nakajima 5993); **D.** Hirtellous-setose and hirtellous-glandular on branch, and hirtellous-setose on hypanthium and sepals in *Chaetogastra sebastianopolitana* (Jane et al. 17); **E.** Setose on adaxial leaf blade in *Microlicia hirticalyx* (Mello Barreto 6991); **F.** Glandular on branch and hypanthium in *Cambessedesia hilariana* (A.A.L. Silva et al. 1692); **G.** Furfuraceous-stellate on adaxial leaf blade in *Miconia sclerophylla* (I.M. Franco et al. 1153); **G1.** Stellate trichomes detail.

2. *Chaetogastra* De Candolle (1828: 131).

Subshrubs or shrubs. Branches quadrangular to terete, not vernicose, not glutinous; young and old branches, leaf blade, hypanthium, and sepals covered with indumentum. Leaves petiolate, ascending or horizontal, not imbricate, not conduplicate, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, 5–7-veined, basal or suprabasal. Inflorescences in compound dichasium or thyrses, terminal or lateral, bracts and bracteoles present. Flowers 4–5-merous, pedicellate; hypanthium cylindric, wrinkled or 10-costate, not vernicose; sepals of variable shapes; petals purple, obovate, apex obtuse, margin entire, ciliate; stamens 8–10, fertile, subisomorphic, glabrous, filaments yellow, connective yellow, not thickened, pedoconnective prolonged below the thecae, yellow, dorsal appendage absent, ventral appendage yellow, bilobed, apex rounded, anthers concolor, yellow, oblong, apex attenuate, tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 4–5-locular, superior, apex setose; style yellow, glabrous, stigma punctiform. Capsules ovate, brownish or yellowish-brown, calyx persistent; seeds cochleate.

Chaetogastra comprises 117 species exclusive to the Neotropics, occurring from Mexico to Uruguay (Michelangeli *et al.* 2013; Meyer 2016; Meyer & Goldenberg 2016; Guimarães *et al.* 2019). Almost all of the 26 species that occur in Brazil have a predominant distribution in the Atlantic Forest domain, in open areas, exposed to light, in humid soil, under open vegetation (Meyer 2016; Goldenberg *et al.* 2023c). Eight species of *Chaetogastra* are found in Minas Gerais (Goldenberg *et al.* 2023c), of which two species occur in the Serra da Piedade.

Key to species of *Chaetogastra*

1. Subshrubs, not branched habit; leaf blade chartaceous; flowers 5-merous; hypanthium wrinkled; ten stamens2.1. *Chaetogastra hieracioides*

- Shrubs, much branched habit; leaf blade membranaceous; flowers 4-merous; hypanthium 10-costate; eight stamens2.2. *Chaetogastra sebastianopolitana*

2.1. *Chaetogastra hieracioides* Schrank & Mart. ex. De Candolle (1828:133).

Subshrubs, size not informed, not branched. Branches terete, yellowish-brown; indumentum of young and old branches, hypanthium and sepals hirsute, leaf blade sericeous-setose. Leaves petiole 1–2 mm long, ascending; leaf blade 26–60 × 13–19 mm, chartaceous, smooth on the both surfaces, discolor, adaxial surface slightly darker, narrowly elliptic, apex acute, base cuneate, margin entire or slightly crenulate, not revolute, ciliate, 5-veined, basal, the second pair merging above the first, indumentum denser along the veins on the abaxial surface. Inflorescences in compound dichasium, terminal. Flowers 5-merous; hypanthium wrinkled; sepals not foliaceous, triangular, apex acute with a long terminal trichome; stamens 10; ovary 5-locular. Capsules yellowish-brown.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, s.d. (fl.), *s.c.* (OUPR 3858!).

Additional specimen examined:—BRAZIL. 19 January 1981 (fl., fr.), *R.P. Martins et al. s.n.* (HUFU 6359!).

Chaetogastra hieracioides occurs in Minas Gerais, São Paulo, and Rio de Janeiro (Meyer 2016; Goldenberg *et al.* 2023c). This species is known in the Serra da Piedade from a single collection, and the habitat is not mentioned on the specimen label. *Chaetogastra hieracioides* resembles *C. sebastianopolitana* in having a sericeous-setose leaf blade, petiolate leaves. The flowers are pedicellate with a cylindrical hypanthium, purple petals, and concolor and tetrasporangiate anthers. However, *C. hieracioides* differs in having a subshrubby and not branched habit (*vs.* shrubby and branched in *C. sebastianopolitana*), hirsute indumentum covering young branches (Fig. 6B) (*vs.* hirtellous-setose and hirtellous-glandular), ascending

leaves (vs. horizontal), 5-merous flowers (vs. 4-merous), wrinkled hypanthium (vs. 10-costate), and ten stamens (vs. eight).

2.2. *Chaetogastra sebastianopolitana* (Raddi 1828:8) P.J.F.Guim. & Michelang. in Guimarães *et al.* (2019: 968).

Shrubs, size not informed, much branched. Branches quadrangular or slightly terete, brownish; indumentum of young branches hirtellous-setose and hirtellous-glandular, old branches, hypanthium and sepals hirtellous-setose, leaf blade sericeous-setose. Leaves petiole 4–18 mm long, horizontal; leaf blade 30–67 × 13–30 mm, membranaceous, smooth on the both surfaces, discolor, adaxial surface darker, ovate to elliptic, apex acute, base cuneate or obtuse, margin serrulate or slightly erose, not revolute, ciliate, 5–7-veined, suprabasal, the second pair merging above the first, indumentum denser along the veins on the abaxial surface. Inflorescences in thyrses, terminal or lateral. Flowers 4-merous; hypanthium 10-costate, sometimes sparsely hirtellous-glandular; sepals foliaceous, triangular-oblong, apex acute without a long terminal trichome; stamens 8; antesealous stamens anthers sometimes reddish; ovary 4-locular. Capsules brownish.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 4 June 1986 (fl., fr.), *Jane et al.* 17 (HUFU!).

Chaetogastra sebastianopolitana has a wide distribution, occurring in Bahia, Espírito Santo, Goiás, Minas Gerais Rio de Janeiro, and São Paulo (Meyer 2016; Goldenberg *et al.* 2023c). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with flowers and fruits in June. *Chaetogastra sebastianopolitana* can be recognized in having a shrubby and much branched habit, a hirtellous-setose and hirtellous-glandular indumentum covering young branches, hirtellous-setose hypanthium and sepals (Fig. 7D), sericeous-setose leaf blade. The flowers are 4-merous (Fig. 3C) with a 10-costate hypanthium, foliaceous sepals, eight

subisomorphic stamens with concolor and tetrasporangiate anthers. The differences between *C. sebastianopolitana* and *C. hieracioides* were noted under *C. hieracioides*.

3. *Fritzschia* Cham. in Garcke & Schlechtendal (1834: 397).

Shrubs. Branches terete, not vernicose, glutinous; young and old branches, leaf blade, hypanthium and sepals covered with indumentum or glabrous. Leaves sessile or petiolate, ascending or horizontal, not imbricate, not conduplicate, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, 1-veined. Inflorescences reduced to solitary flowers, terminal, bracts absent, bracteoles present. Flowers 4-merous, pedicellate; hypanthium cylindric, 8-costate, not vernicose; sepals oblong-triangular, apex acute; petals purple, obovate, apex obtuse, margin entire, glabrous; stamens 8, fertile, dimorphic, filaments yellow or vinaceous, glandular, connective yellow or vinaceous, not thickened, glabrous, pedoconnective prolonged below the thecae, yellow or vinaceous, glabrous, dorsal appendage absent, ventral appendage yellow, bilobed, apex obtuse, glabrous, anthers concolor, entirely yellow or vinaceous with yellow apex, oblong, apex attenuate, tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 4-locular, superior, apex glabrous; style yellow with vinaceous apex, glandular on the lower half, stigma punctiform. Capsules cylindric, brownish or vinaceous; seeds subcochleate.

Fritzschia is an exclusively Brazilian genus with 12 species (Rocha & Silva 2022; Silva *et al.* 2023). Almost all its species occur exclusively in *campos rupestres* of the Espinhaço Range on humid or sandy soils or in areas next to water courses (Rocha *et al.* 2018). Only *F. sertularia* occurs in the Serra da Piedade.

3.1. *Fritzschia sertularia* (Schrank & Mart. ex De Candole 1828: 125) M.J.R.Rocha &

P.J.F.Guim. *in* Rocha *et al.* (2018: 65).

Shrubs, 2 m tall. Young branches vinaceous, old branches brownish, peeling off with age; indumentum of young and old branches, abaxial leaf blade, hypanthium and sepals hirtellous-glandular. Leaves petiole up to 0.3 mm long; leaf blade 1.5–4 × 0.5–3 mm, chartaceous, smooth on the both surfaces, concolor, cordiform to ovate-oblong, apex rounded or rarely acute, base cordate, margin entire, strongly revolute, glandular-punctate, glabrous on the adaxial surface.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31. 1800 - 2000 m, 13 January 1971 (fl., fr.), *H.S. Irwin et al.* 30205 (UB!, NL, NY, P-online images!); idem, ca. 35 km E. of Belo Horizonte, near BR-31, ca. 1850 m, 13 January 1971 (fl., fr.), *H.S. Irwin et al.* 30396 (UB!, NL, NY, P, US-online images!).

Fritzschia sertularia is endemic to Minas Gerais, occurring in the Espinhaço Range (Rocha *et al.* 2020; Silva *et al.* 2023). This species is known in the Serra da Piedade from two collections made in *campo rupestre ferruginoso*, about 50 years ago. Collected with flowers and fruits in January. *Fritzschia sertularia* is recognized by having a dense hirtellous-glandular indumentum covering branches, abaxial leaf blade, hypanthium and sepals, chartaceous leaf blade, entire and strongly revolute at the margin. In addition, it has 4-merous flowers (Fig. 3E), 8-costate hypanthium, purple petals, dimorphic stamens, and concolor and tetrasporangiate anthers.

4. *Marcetia* De Candole (1828: 124).

Subshrubs or shrubs. Branches terete, not vernicose, not glutinous; young and old branches, leaf blade, hypanthium, and sepals covered with indumentum. Leaves sessile or petiolate, ascending or horizontal, not imbricate, not conduplicate, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, 1-veined. Inflorescences reduced to solitary flowers,

terminal or lateral, bracts absent, bracteoles present. Flowers 4-merous, pedicellate; hypanthium campanulate or cylindrical, 8-costate, not vernicose; sepals narrowly triangular to triangular, apex apiculate, revolute; petals white, obovate or ovate, apex acuminate, margin entire, glabrous; stamens 8, fertile, isomorphic, glabrous, filaments yellow, connective yellow or rarely reddish, basally thickened, pedoconnective not prolonged below the thecae, dorsal appendage absent, ventral appendage yellow or rarely reddish, bilobed, apex obtuse, anthers concolor, yellow or rarely reddish, oblong, apex attenuate, tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 4-locular, superior, apex glabrous; style yellow, glabrous, stigma punctiform. Capsule globose, brownish; seeds cochleate.

Marcetia consists of 30 species exclusive to Brazil, except for *Marcetia taxifolia*, which also occurs in Colombia, Guiana, and Venezuela (Santos 2023). In Brazil, all species are distributed mainly in *campos rupestres* of the Espinhaço Range (Santos 2023). Only *M. taxifolia* occurs in the Serra da Piedade.

4.1. *Marcetia taxifolia* (A.St.-Hil. In Humboldt & Bonpland 1823: 150) De Candolle (1828: 124).

Subshrubs or shrubs, 1.5 m tall. Branches brownish or reddish, old branch peeling off with age; indumentum of young and old branches, leaf blade, hypanthium and sepal hirtellous-setose and sparsely glandular. Leaves petiole up to 0.5 mm long; leaf blade 3–9 × 0.5–3 mm, chartaceous, smooth on both surfaces, concolor, lanceolate or narrowly oblong, apex acuminate or apiculate, base cordate, margin entire, revolute, ciliate, indumentum sparser on the adaxial surface.

Specimens examined:—BRAZIL. Serra da Piedade, s.d., (fl.), *Warming s.n.* (P-online image 05230779!); Minas Gerais: Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31, 1800 - 2000 m, 13 January 1971, (fl., fr.), *H.S. Irwin et al. 30208* (UB! NY, US-online image!); idem, 30 January 1977, (fl., fr.), *L. Krieger et al. s.n.* (RB 561678!, SPF 184412!,

MBM-online image 257934!); Caeté, Serra da Piedade, s.d., (fl., fr.), *Sellow s.n.* (US-online image 284620!); idem, 19 November 1938, (fl., fr.), *H.L.M. Barreto 8812* (NY-online image!); idem, 1800 m, 26 March 1957, (fl., fr.), *E. Pereira 2658* (RB!, US-online image!); idem, km 1-5 on road to top of Serra, 19°55'S, 43°45'W, 1200 - 1700 m, 2 February 1982, (fl., fr.), *L.R. Landrum 4271* (MBM!, NY-online image!); idem, 19°49'S, 43°40'W, 29 June 1985, (fl.), *J. Siqueira et al. s.n.* (BHCB 7978!, HUFU 6344!, HUEFS-online image 103057!); idem, 19°49'25,5"S, 43°40'18,7"W, 1640 m, 11 January 1996, (fl., fr.), *V.C. Souza et al. 10111* (ESA!); idem, vertente norte, 19°49'S, 43°40'W, 1675 m, 26 April 2013, (fl., fr.), *M.F. Vasconcelos et al. 13-286* (HPUC-MG!).

Marcetia taxifolia is the most widely distributed species of the genus, occurring in all regions of Brazil (Rocha *et al.* 2020; Santos 2022). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with flowers in January to March, June and November and fruits in January, February, and November. *Marcetia taxifolia* is recognized by the hirtellous-setose and sparsely glandular indumentum covering branches, leaf blade, hypanthium, and sepals. The flowers are 4-merous (Fig. 3D) with an 8-costate hypanthium, white petals, isomorphic stamens, basally thickened connective, and concolor and tetrasporangiate anthers.

5. *Miconia* Ruiz & Pavón (1794: 60).

Subshrubs, shrubs, or trees. Branches flattened, quadrangular to terete, not vernicose, not glutinous; young and old branches, leaf blade, inflorescences axis, hypanthium, and sepals covered with indumentum or glabrescent. Leaves petiolate, ascending, descending or horizontal, not imbricate, conduplicate or not, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, 3–7-veined, basal or suprabasal, domatias present or not. Inflorescences in compound spiciform, panicle or thyse (glomerulate, scorpioid or none), terminal or lateral, bracts and bracteoles present or not. Flowers 4–6-merous, pedicellate or

sessile; hypanthium campanulate, cylindric or urceolate, granular, smooth or slightly 10-costate, not vernicose; sepals of variable shapes, dorsal projection present or not; petals pinkish or white, variable shapes, margin entire, glabrous or glandular-ciliate; stamens 8–12, fertile, isomorphic or subisomorphic, glabrous, filaments pinkish or white, connective pinkish or white, dorsally thickened or not thickened, pedoconnective prolonged or not below the thecae, pinkish or white, dorsal appendage present or not, ventral appendage present or not, anthers concolor, pinkish, vinaceous, yellow or white, variable shapes, tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 3 or 5-locular, partly or totally inferior, apex glabrous, glandular, setose or stellate; style pinkish or white, glabrous, stigma capitate, punctiform or truncate. Berries globose or ovate, variable colors, calyx deciduous or persistent; seeds hemispheric, ovate or pyramidal.

Miconia encompasses approximately 1,900 species in the Neotropics, with 564 occurring in Brazil, of which 156 are endemic to the country (Michelangeli *et al.* 2020; Goldenberg *et al.* 2023b). The genus is considered the most diverse group of angiosperms in Brazil and is widely distributed across all phytogeographic domains (Goldenberg *et al.* 2023b). Among the Brazilian states, Minas Gerais exhibits the highest diversity of *Miconia* with 184 species, being 28 endemic to the state (Goldenberg *et al.* 2023b). Twenty species occur in the Serra da Piedade.

Key to species of *Miconia*

- 1. Hypanthium urceolate 2
- Hypanthium campanulate or cylindric 3
- 2. Leaf blade lanceolate, 3-veined; flowers 6-merous; hypanthium sericeous; anthers vinaceous
..... 5.11. *Miconia melastomoides*

| | |
|--|-----------------------------------|
| - Leaf blade ovate, 5–7-veined; flowers 5-merous; hypanthium hirtellous; anthers white | 5.12. <i>Miconia neourceolata</i> |
| 3. Flowers 4-merous..... | 4 |
| - Flowers 5-merous..... | 8 |
| 4. Inflorescences in glomerulate thyse..... | 5 |
| - Inflorescences in compound spiciform..... | 6 |
| 5. Leaf blade 3-veined, basal; inflorescences in glomerulate simple thyse; sepals triangular with dorsal projection linear-triangular; stamens isomorphic; calyx persistent in fruit | 5.14. <i>Miconia pepericarpa</i> |
| - Leaf blade 5-veined, suprabasal; inflorescences in glomerulate compound thyse; sepals ovate, dorsal projection absent; stamens subisomorphic; calyx deciduous in fruit | 5.20. <i>Miconia warmingiana</i> |
| 6. Leaf blade base rounded or slightly cordate; sepals with dorsal projection inconspicuous- linear; stamens isomorphic; ovary apex glabrous; Berries globose; calyx deciduous in fruit | 7 |
| - Leaf blade base attenuate; sepals with dorsal projection triangular; stamens subisomorphic; ovary apex stellate; Berries ovate; calyx persistent in fruit | 5.3. <i>Miconia fasciculata</i> |
| 7. Prominent interpetiolar ridges resembling stipules; young branches furfuraceous-dendritic; inflorescences axis lanose-dendritic; stamens connective dorsally thickened; stigma punctiform; seeds hemispheric..... | 5.18. <i>Miconia shepherdii</i> |
| - Prominent interpetiolar ridges absent; young branches and inflorescences axis lepidote- stellate; stamens connective not thickened; stigma truncate; seeds ovate | 5.17. <i>Miconia sclerophylla</i> |
| 8. Inflorescences in thyse..... | 9 |

| | |
|---|-------------------------------------|
| - Inflorescences in compound spiciform or in panicle | 15 |
| 9. Inflorescences in thyse, not glomerulate nor scorpioid | 10 |
| - Inflorescences in thyse glomerulate or scorpioid | 11 |
| 10. Young branches hirsute or villous-setose and furfuraceous-dendritic; domatias absent; flowers pedicellate; sepals inconspicuous-triangular with dorsal projection subulate; anthers pinkish, subulate..... | 5.13. <i>Miconia oligochaeta</i> |
| - Young branches furfuraceous-stellate and furfuraceous-glandular; domatias in tufts of trichomes at the base of abaxial leaf blade; flowers sessile; sepals deltate with dorsal projection narrowly triangular; anthers white, oblong | 5.15. <i>Miconia quinquedentata</i> |
| 11. Young branches lepidote-stellate; inflorescences in scorpioid simple thyse; stamens with dorsal appendage; ovary apex stellate | 5.2. <i>Miconia cubatanensis</i> |
| - Young branches furfuraceous-dendritic, furfuraceous-stellate, sparse setose or villous-setose; inflorescences in glomerulate compound thyse; stamens without dorsal appendage; ovary apex glabrous or setose | 12 |
| 12. Leaves ascending or descending; dorsal projection of sepals subulate; stamens isomorphic; anthers subulate; ovary apex setose | 5.1. <i>Miconia auricoma</i> |
| - Leaves horizontal; dorsal projection of sepals triangular or absent; stamens subisomorphic; anthers oblong; ovary apex glabrous..... | 13 |
| 13. Abaxial leaf blade lanose-dendritic; blade margin erose; bracts and bracteoles absent; sepals triangular without dorsal projection; calyx deciduous in fruit | 5.10. <i>Miconia macrothyrsa</i> |
| - Abaxial leaf blade furfuraceous-stellate, setose or villous-setose; blade margin entire or serrate; bracts and bracteoles present; sepals deltate or inconspicuous-ovate with dorsal projection triangular; calyx persistent in fruit | 14 |

14. Leaf blade membranaceous, smooth on the both surfaces; sepals inconspicuous-ovate; petals lanceolate, apex acute; anthers pinkish; style pinkish, stigma punctiform 5.6. *Miconia lasiostachya*
- Leaf blade chartaceous, adaxial surface bullate, abaxial surface foveolate; sepals deltate; petals obovate, apex rounded or obtuse; anthers white; style white, stigma capitate 5.5. *Miconia ibaguensis*
15. Abaxial leaf blade lepidote-stellate; inflorescences in compound spiciform 5.4. *Miconia flammea*
- Abaxial leaf blade furfuraceous-glandular, furfuraceous-stellate, hirtellous-dendritic, hirtellous-glandular, hirtellous-setose, inconspicuous glandular-punctate, sparse setose or glabrous; inflorescences in panicle 16
16. Leaves descending; blade coriaceous; petals triangular-lanceolate; stamens subisomorphic; anthers apex attenuate; ovary apex glandular 5.8. *Miconia leacinnamomifolia*
- Leaves ascending or horizontal; blade chartaceous or membranaceous; petals obovate; stamens isomorphic; anthers apex obtuse or truncate; ovary apex glabrous..... 17
17. Inflorescences axis inconspicuous glandular-punctate; anthers dehiscing through four small apical pores; calyx persistent in fruit..... 5.19. *Miconia theaezans*
- Inflorescences axis furfuraceous-stellate; anthers dehiscing through a small apical pore or a broad ventral pore, comprising $\frac{1}{2}$ or $\frac{2}{3}$ of the thecae length; calyx deciduous in fruit 18
18. Leaf blade membranaceous; flowers sessile; stamens with ventral appendage; anthers dehiscing through a broad ventral pore, comprising $\frac{1}{2}$ of the thecae length; stigma capitate; seeds hemispheric..... 5.7. *Miconia latecrenata*

- Leaf blade chartaceous; flowers pedicellate; stamens without ventral appendage; anthers dehiscing through a small apical pore or a broad ventral pore, comprising 2/3 of the thecae length; stigma punctiform; seeds ovate or pyramidal 19

19. Leaf blade concolor; domatias in crypt at the base of abaxial surface; anthers dehiscing through a broad ventral pore, comprising 2/3 of the thecae length; seeds pyramidal5.16. *Miconia rimalis*

- Leaf blade discolor, adaxial surface darker; domatias absent; anthers dehiscing through a small apical pore; seeds ovate 5.9. *Miconia ligustroides*

5.1. *Miconia auricoma* (Spring ex Martius 1837: 74) R.Goldenb. in Michelangeli *et al.* (2019: 87).

Subshrubs, size not informed. Branches terete, brownish, prominent interpetiolar ridges absent; indumentum of branches, abaxial leaf blade and inflorescences axis villous-setose or furfuraceous-dendritic, adaxial leaf blade sericeous-setose, hypanthium and sepal villous-setose or villous-dendritic. Leaves petiole 8–47 mm long, ascending or descending, not conduplicate; leaf blade 4.7–14 × 2.2–7.5 cm, chartaceous, adaxial surface smooth, abaxial surface slightly foveolate, concolor or discolor, adaxial surface darker, ovate or ovate-lanceolate, apex acuminate or acute, base rounded or slightly cordate, margin entire or crenulate, slightly revolute, ciliate, 7-veined, basal or suprabasal, domatias absent. Inflorescences in glomerulate compound thyse, terminal, bracts and bracteoles present. Flowers 5-merous, sessile; hypanthium cylindrical or campanulate, smooth; sepals triangular, apex acute, margin dendritic-ciliate or ciliate, dorsal projection subulate, apex acuminate; petals white or pinkish, lanceolate, apex acute, margin glabrous; stamens 10, isomorphic, filaments pinkish, connective pinkish, dorsally thickened, pedoconnective not prolonged below the theca, dorsal appendage absent, ventral appendage absent, anthers pinkish, subulate, apex attenuate, dehiscing through a small

apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex setose, style pinkish, stigma punctiform. Berries globose, immature green or reddish, mature blackish, calyx persistent; seeds pyramidal.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 19°49'S, 43°40'W, 1350 m, 07 October 1986 (fl., fr.), *T.S.M. Grandi & J.A. Paula 54* (BHCB!, HUFU!); idem, 19°49'22"S, 43°40'29"W, 1697 m, 09 May 2016 (fr.), *A. Aquino 035-16* (HPUC-MG 4557!).

Miconia auricoma occurs in Bolívia and Brazil in Bahia, Espírito Santo, Goiás, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina São Paulo, and Distrito Federal (Goldenberg *et al.* 2023). In the Serra da Piedade, it occurs in secondary forest. Collected with flowers in October and fruits in May and October. *Miconia auricoma* can be recognized by its villous-setose or furfureaceous-dendrite indumentum on the branches, abaxial leaf blade and inflorescences axis, sericeous-setose on the adaxial leaf blade, and villous-setose or villous-dendritic on the hypanthium and sepals. In addition, it has 7-veined leaf blade, 5-merous and sessile flowers arranged in a glomerulate compound thyse, triangular sepals with a subulate dorsal projection, white or pinkish petals, ten isomorphic stamens with pinkish and subulate anthers, and a persistent calyx in the fruit (Fig. 4A).

5.2. *Miconia cubatanensis* Hoehne (1922: 139).

Shrubs, ca. 2 m tall. Young branches flattened, ferruginous, old branches terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium and sepals lepidote-stellate, old branches and adaxial leaf blade glabrescent. Leaves petiole 5–11.5 mm long, horizontal, not conduplicate; leaf blade 4–10 × 1–2 cm, chartaceous, adaxial surface smooth, abaxial surface slightly foveolate, discolor, adaxial surface darker, lanceolate or oblong-elliptic, apex longest acuminate, base attenuate or

sometimes cuneate, margin entire, slightly revolute, glabrous, 3–5-veined, basal, adaxial surface sparse furfuraceous-stellate only on young leaf blade, domatias absent. Inflorescences in scorpioid simple thyrses, terminal, bracts and bracteoles absent. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals triangular, apex acute to obtuse, margin stellate-ciliate, dorsal projection linear-triangular, apex acute; petals white, oblong-obovate, apex rounded or sometimes retuse, margin glabrous; stamens 10, subisomorphic, filaments white, connective white, not thickened, pedoconnective white, dorsal appendage white, lobed, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a moderate apical pore, tetrasporangiate; antesealous stamens 5, pedoconnective ca. 0.1 mm long, dorsal appendage apex truncate; antepetalous stamens 5, pedoconnective ca. 0.05 mm long, dorsal appendage apex acute; ovary 3-locular, inferior, apex stellate, style white, stigma punctiform. Berries globose, immature green, mature atropurpureous, calyx deciduous; seeds hemispheric.

Specimens examined:—BRAZIL. Minas Gerais: Middle slopes of Serra da Piedade, ca. 40 km E. of Belo Horizonte, near BR-31, ca. 1800 m, 16 January 1971 (fl.), *H.S. Irwin et al. 30462* (NY-online image!); Caeté, Serra da Piedade, 28 September 1985 (fr.), *J.A. Paula et al. 1949* (BHCB-online image!, HUFU!); idem, 19°49'S, 43°40'W, 1620 m, 27 April 1986 (fr.), *T.S.M. Grandi et al. 2230* (BHCB 7507-online image!).

Additional specimens examined:—BRAZIL. Minas Gerais: Diamantina, Campus JK da UFVJM, 18°11'55"S, 43°34'17"W, 23 March 2010 (fl.), *F.A. Vitta 1174* (HUFU!); idem, Parque Estadual do Biribiri, Lapa do Forno, estrada Diamantina-Medanha, ca. 10 km da UFVJM - Campus JK, 18°10'03"S, 43°32'63"W, 1300 m, 19 May 2011 (fr.), *A.R. Rezende et al. 415* (HUFU!).

Miconia cubatanensis occurs in Bahia, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, and São Paulo (Goldenberg *et al.* 2023b). In the Serra da Piedade, it occurs in *campo rupestre ferruginoso*. Collected with flowers in January and

fruits in April and September. *Miconia cubatanensis* resembles *M. pepericarpa* DC. in having lepidote-stellate indumentum covering the young branches, abaxial leaf blade, inflorescences axis, hypanthium and sepals, commonly lanceolate leaf blade, sessile flowers, and triangular sepals with linear-triangular dorsal projection. However, *M. cubatanensis* differs in having a leaf blade long acuminate at the apex (*vs.* acute in *M. pepericarpa*), 5-merous flowers arranged in scorpioid simple thyse (*vs.* 4-merous in glomerulate simple thyse), ten subisomorphic stamens (*vs.* eight, isomorphic), lobed dorsal appendage (*vs.* absent), and deciduous calyx in the fruit (*vs.* persistent).

5.3. *Miconia fasciculata* Gardner in Hooker (1842: 533).

Shrubs, size not informed. Branches terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, inflorescences axis, hypanthium and sepals lepidote-stellate, abaxial leaf blade furfuraceous-stellate, old branches and adaxial leaf blade glabrescent. Leaves petiole 7–15.5 mm long, horizontal, not conduplicate; leaf blade 8.5–15 × 2.5–4 cm, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, ovate-lanceolate or oblong-elliptic, apex acuminate, base attenuate, margin entire, sometimes slightly sinuate, not revolute, glabrous, 3–5-veined, suprabasal, adaxial surface furfuraceous-stellate only on young blade, domatias absent. Inflorescences in compound spiciform, terminal, bracts and bracteoles present. Flowers 4-merous, sessile; hypanthium campanulate, smooth; sepals triangular, apex acute, margin stellate-ciliate, dorsal projection triangular, apex acute; petals white, obovate, apex rounded or slightly retuse, margin glabrous; stamens 8, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective ca. 0.8 mm long, white, dorsal appendage absent, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex stellate, style white,

stigma punctiform. Berries ovate, immature green, mature blackish, calyx persistent; seeds pyramidal.

Specimen examined:—BRAZIL. Serra da Piedade, s.d. (fl.), *Warming s.n.* (P05206607-online image!).

Additional specimens examined:—BRAZIL. São Paulo: Iporanga, Parque Estadual Turístico do Alto Ribeira, Núcleo Caboclos, Trilha do Chapéu, 24°26'3"S, 48°35'7"W, 609 m, 08 December 2009 (fl.), *R.L. Miashike et al. 65* (HUFU!); Rio de Janeiro: Rio de Janeiro, Parque Nacional da Tijuca, na trilha que leva à Pedra do Conde, pouco antes da "Escalaminhada", 22°56'56"S, 43°16'24"W, 776 m, 28 January 2022 (fr.), *D. Nunes & T. Lorenzetti 703* (HUFU!).

Miconia fasciculata occurs in Bahia, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, and São Paulo (Goldenberg *et al.* 2023b). In the Serra da Piedade is known from only one collection, and the habitat was not mentioned on the specimen label. *Miconia fasciculata* is recognized by its lepidote-stellate indumentum covering the young branches, inflorescences axis, hypanthium and sepals, and furfuraceous-stellate on abaxial surface of the leaf blade, 4-merous and sessile flowers arranged in a compound spiciform, eight subisomorphic stamens, and a persistent calyx in fruit.

5.4. *Miconia flammea* Casaretto (1845: 85).

Shrubs, 1.5–2 m tall. Young branches flattened, ferruginous, old branches slightly terete, brownish, prominent interpetiolar ridges absent; indumentum of branches, abaxial leaf blade, inflorescences axis, hypanthium and sepal dense lepidote-stellate, adaxial surface glabrous. Leaves petiole 11–34 mm long, horizontal, not conduplicate; leaf blade 6–20 × 2.5–8 cm, coriaceous, adaxial surface smooth, abaxial surface slightly foveolate, discolor, adaxial surface darker, elliptic, apex acute, base attenuate, margin entire, sometimes slightly revolute, glabrous,

3-veined, suprabasal, adaxial surface sometimes really sparse stellate, domatias absent. Inflorescences in compound spiciform, terminal, bracts and bracteoles absent. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals inconspicuous-triangular, apex acute or rounded, margin stellate-ciliate, dorsal projection absent; petals white, obovate, apex rounded or slightly retuse, margin glabrous; stamens 10, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.2 mm long, white, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a moderate apical-ventral pore, tetrasporangiate; antesealous stamens 5, dorsal appendage white, bituberculate, apex slightly rounded; antepetalous stamens 5, dorsal appendage absent; ovary 3-locular, partly inferior, apex glabrous, style white, stigma punctiform. Berries globose, immature green, mature blackish, calyx deciduous; seeds hemispheric.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Middle slopes of Serra da Piedade, ca. 40 km E. of Belo Horizonte, near BR-31, ca. 1800 m, 16 January 1971 (fr.), *H.S. Irwin et al.* 30469 (NL, NY, US-online images!); idem, Serra da Piedade, 19°49'S, 43°40'W, 27 April 1986 (fr.), *T.S.M. Grandi et al.* 2341 (BHCB!, HUFU!); idem, 15 June 1987 (fr.), *T.S.M. Grandi s.n.* (BHCB 17417!); idem, Alto da Serra, 20°40'S, 43°40'W, ca. 1600 m, 20 July 1987 (fr.), *D.C. Zappi et al.* CFCR11151 (HUFU!, SPF!); idem, 19°49'S, 43°40'W, 1635 m, 26 April 2013 (fr.), *M.F. Vasconcelos et al.* 13-320 (HPUC-MG 1791!).

Additional specimen examined:—BRAZIL. Minas Gerais: Belo Horizonte, Estação Experimental, 28 November 1939 (fl.), *H.L.M. Barreto* 10317 (HUFU!).

Miconia flammea occurs in Bahia, Espírito Santo, Goiás, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo, and Distrito Federal (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with fruits in January, April, June, and July. *Miconia flammea* is recognized by its lepidote-stellate indumentum covering the branches, abaxial leaf blade, inflorescences axis, hypanthium and sepals, glabrous or sometimes

sparse stellate on the adaxial leaf blade, coriaceous blade. In addition, it has 5-merous flowers arranged in compound spiciform (Fig. 3F), inconspicuous-triangular sepals without a dorsal projection, ten subisomorphic stamens, the antesealous stamens with a dorsal appendage, and a deciduous calyx in fruit.

5.5. *Miconia ibaguensis* (Bonpl. in Humboldt & Bonpland 1815: 105) Triana (1871: 110).

Shrubs, size not informed. Branches terete, brownish, prominent interpetiolar ridges absent; indumentum of branches, abaxial leaf blade, inflorescences axis, hypanthium and sepal furfuraceous-stellate and villous-setose, adaxial leaf blade sparse setose or sparse furfuraceous-stellate along the veins. Leaves petiole 7–15 mm long, horizontal, not conduplicate; leaf blade 5.5–14 × 1.5–4.5 cm, chartaceous, adaxial surface bullate, abaxial surface foveolate, concolor, lanceolate, apex acute or acuminate, base cuneate or attenuate, margin serrate, not revolute, ciliate, 5–7-veined, suprabasal, domatias absent. Inflorescences in glomerulate compound thyrses, terminal, bracts and bracteoles present. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals deltate, apex acute, margin stellate-ciliate, dorsal projection triangular, apex acute; petals white, obovate, apex rounded or obtuse, margin glabrous; stamens 10, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.1 mm long, white, dorsal appendage absent, ventral appendage white, biauriculate, apex slightly rounded, anthers white, oblong, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma capitate. Berries globose, immature light green, mature dark green, calyx persistent; seeds pyramidal.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 19°49'S, 43°40'W, 28 September 1986 (fr.), *P.I.S. Braga et al. 124* (BHCB-online image!, HUFU 6357!); idem, 19°49'S, 43°40'W, 15 July 1987 (fl.), *J.A. Paula et al. s.n.* (BHCB 18536-online

image!); idem, base da Serra da Piedade, 21 December 2012 (fr.), *M.F. Vasconcelos 12-206* (HPUC-MG 1317!)

Additional specimen examined:—BRAZIL. Minas Gerais: Santa Bárbara, Estrada Santa Bárbara - Caraça, antes da portaria do Parque, 10 September 1993 (fl.), *J. Semir et al. 28870* (HUFU!).

Miconia ibaguensis is widely distributed from southern Mexico to southern Brazil, occurring in almost states in the latter (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in *campo rupestre* and in the *floresta estacional semidecidual* borders. Collected with flowers in July and fruits in September and December. *Miconia ibaguensis* is recognized in having a furfuraceous-stellate and villous-setose indumentum covering the branches, abaxial leaf blade, inflorescences axis, hypanthium and sepals, concolor leaf blade, strongly bullate on adaxial surface and foveolate on abaxial surface, serrate and ciliate at the margin. It also has 5-merous and sessile flowers arranged in glomerulate compound thyrse, ten subisomorphic stamens with biauriculate ventral appendage, and a persistent calyx in the fruit.

5.6. *Miconia lasiostachya* (Cogniaux 1886: 172) R.Goldenb. in Michelangeli *et al.* (2019: 99).

Shrubs, size not informed. Branches brownish, young branches slightly quadrangular, old branches terete, prominent interpetiolar ridges absent; indumentum of young branches and abaxial leaf blade furfuraceous-stellate and sparse setose, inflorescence axis dense furfuraceous-stellate and villous-setose or hirtellous-setose, hypanthium outer surface furfuraceous-stellate, inner surface dense setose, sepals furfuraceous-stellate, old branches and adaxial leaf blade glabrescent. Leaves petiole 14–24 mm long, horizontal, not conduplicate; leaf blade 6.5–13.5 × 8–4 cm, membranaceous, smooth on the both surfaces, discolor, abaxial surface darker, ovate-lanceolate, apex acuminate, base rounded, margin entire, slightly

revolute, ciliate, 5-veined, basal, adaxial surface sometimes sparse setose along the midrib and arranged in parallel rows to first and second pair of veins, domatias absent. Inflorescences in glomerulate compound thyse, terminal, bracts and bracteoles present. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals inconspicuous-ovate, apex rounded, margin glabrous, dorsal projection triangular, apex acute; petals white-pinkish, lanceolate, apex acute, margin glabrous; stamens 10, subisomorphic, filaments pinkish, connective pinkish, dorsally thickened, pedoconnective not prolonged below the theca, dorsal appendage absent, ventral appendage absent, anthers pinkish, oblong, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style pinkish, stigma punctiform. Berries ovate, brownish, calyx persistent; seeds not seen.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, base da Serra da Piedade, 19°48'S, 43°39'W, 1410 m, 21 December 2012 (fl.), *M.F. Vasconcelos 12-209* (HPUC-MG 1315!).

Additional specimen examined:—BRAZIL. Minas Gerais: 1843 (fr.), *Claussen 390* (BR000000519385, P00117322, P00117378-online images!).

Miconia lasiostachya is endemic to Minas Gerais (Goldenberg *et al.* 2023b). This species remained for almost 180 years without new collection records, having been rediscovered from a collection in the Serra da Piedade on the *floresta estacional semidecidual* borders in December. *Miconia lasiostachya* is recognized by the furfuraceous-stellate and sparse setose indumentum covering the young branches and abaxial surface of the leaf blade, a dense villous-setose or hirtellous-setose ventrally on the petiole, furfuraceous-stellate outer surface and dense setose inner surface of hypanthium. In addition, it has 5-merous and sessile flowers arranged in glomerulate compound thyse, white-pinkish and lanceolate petals, 10 subisomorphic pinkish stamens, and a persistent calyx in the fruit.

5.7. *Miconia latecrenata* (De Candole 1828: 194) Naudin (1850: 239).

Shrubs, 2.5 m tall. Branches brownish, young branches flattened, old branches terete, prominent interpetiolar ridges absent; indumentum of young branches, inflorescences axis, hypanthium and sepals furfuraceous-stellate, old branches and leaf blade glabrescent. Leaves petiole 6.5–11 mm long, horizontal, not conduplicate; leaf blade 6–19.5 × 2–6 cm, membranaceous, smooth on the both surfaces, concolor or slightly discolor, adaxial surface darker, elliptic to oblong-elliptic, apex acuminate, base attenuate, margin crenate to repand, not revolute, glabrous, 3–5-veined, basal, both surfaces sparse furfuraceous-stellate on young blade and sometimes along the veins on old blade, domatias absent. Inflorescences in panicle, terminal or lateral, bracts and bracteoles present. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals deltate, apex acute, margin stellate-ciliate, dorsal projection inconspicuous-linear, apex acute; petals white, obovate, apex rounded, margin glabrous; stamens 10, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.1 mm long, white, dorsal appendage absent, ventral appendage white, inconspicuous-bilobed, apex slightly rounded, anthers white, oblong, apex obtuse, dehiscing through a broad ventral pore, comprising ½ of the thecae length, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma capitate. Berries globose, immature green, mature blackish, calyx deciduous; seeds hemispheric.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 19°49'S, 43°40'W, 1350 m, 15 June 1987 (fl., fr.), *T.S.M. Grandi et al.* 2456 (MBM!).

Additional specimen examined:—BRAZIL. Paraná: Antonina, Reserva Biológica de Sapatanduva, 27 April 1999 (fl.), *J.M. Silva et al.* 2950 (HUFU!).

Miconia latecrenata occurs in Bahia, Espírito Santo, Minas Gerais, Paraná, Pernambuco, Rio de Janeiro, Rio Grande do Sul, and São Paulo (Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade from one collect made in secondary forest, about 36 years ago. Collected with flowers and fruits in June. *Miconia latecrenata* is recognized by the

furfuraceous-stellate indumentum covering the young branches, inflorescences axis, hypanthium and sepals, and membranaceous leaf blade, crenate to repand at the margin, 5-merous and sessile flowers arranged in a panicle, ten subisomorphic stamens, anthers dehiscing through a broad ventral pore, comprising $\frac{1}{2}$ of the length of the thecae, and a deciduous calyx in the fruit.

5.8. *Miconia leacinnamomifolia* R. Goldenb. in Michelangeli *et al.* (2018: 99).

Subshrubs, size not informed. Branches brownish, young branches flattened, old branches terete, prominent interpetiolar ridges absent; indumentum of young branches, leaf blade, inflorescences axis, hypanthium and sepal furfuraceous-glandular, old branches glabrescent. Leaves petiole 5.5–8.5 mm long, descending, conduplicate or not; leaf blade 2–5 × 1–2 cm, coriaceous, smooth on the both surfaces, discolor, adaxial surface darker, elliptic, apex acute, base cuneate or attenuate, margin entire, slightly revolute, glabrous, 5-veined, basal, domatias absent. Inflorescences in panicle, lateral, bracts and bracteoles present. Flowers 5-merous, pedicellate; hypanthium campanulate, slightly 10-costate; sepals subulate, apex acute, margin glandular-ciliate, dorsal projection subulate, apex acute; petals white, triangular-lanceolate, apex acuminate, margin glandular-ciliate; stamens 10, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective white, dorsal appendage lobed, apex acute or slightly truncate, ventral appendage absent, anthers yellow or sometimes white, oblong, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; antesealous stamens 5, pedoconnective 0.1 mm long; antepetalous stamens 5, pedoconnective not prolonged; ovary 3-locular, partly inferior, apex glandular, style white, stigma punctiform. Berries globose, green, calyx persistent; seeds hemispheric.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, 1843 (fl.), *Claussen 217* (P01168066-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Itabirito, Pico do Itabirito, 13 September 1994 (fl.), *W.A. Teixeira s.n.* (HUFU 19275!).

Miconia leacinnamomifolia is endemic to Minas Gerais, occurring exclusively in the Espinhaço Range, from Serra de Ouro Branco to Serra do Cipó (Souza 1998; Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade only from the holotype made 180 years ago, and the habitat is not mentioned on the specimen label. *Miconia leacinnamomifolia* is recognized by the furfuraceous-glandular indumentum covering the young branches, leaf blade, inflorescences axis, hypanthium and sepals, descending leaves, and coriaceous leaf blade. In addition, it has 5-merous and pedicellate flowers arranged in a panicle, slightly 10-costate hypanthium, glandular-ciliate petals at the margin, ten subisomorphic stamens with a lobed dorsal appendage, yellow or sometimes white anthers, and a persistent calyx in the fruit.

5.9. *Miconia ligustroides* (De Candolle 1828: 194) Naudin (1851: 167).

Shrubs or trees, ca. 2 m tall. Branches brownish, young branches flattened, old branches terete, prominent interpetiolar ridges absent; indumentum of young branches, inflorescences axis, hypanthium and sepals sparse furfuraceous-stellate, old branches and leaf blade glabrescent. Leaves petiole 2.5–6 mm long, ascending or horizontal, not conduplicate; leaf blade 2–7.5 × 1–2.5 cm, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, elliptic, apex acute or obtuse, base cuneate, margin entire, slightly revolute, glabrous, 5-veined, basal or suprabasal, both surfaces both surfaces sometimes sparse furfuraceous-stellate, domatias absent. Inflorescences in panicle, terminal, bracts absent, bracteoles present. Flowers 5-merous, pedicellate; hypanthium campanulate, smooth; sepals triangular, apex acute or rounded, margin glabrous or stellate-ciliate, dorsal projection inconspicuous-linear, apex acute, sometimes glabrous; petals white, obovate, apex rounded or obtuse, margin glabrous; stamens 10, isomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.3 mm

long, white, dorsal appendage unilobed, apex acute, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma punctiform. Berries globose, blackish, calyx deciduous; seeds ovate.

Specimens examined:—BRAZIL. Minas Gerais: base of Serra da Piedade, ca. 35 km E. of Belo Horizonte, road to Caeté, ca. 1600 m, 13 January 1971 (fr.), *H.S. Irwin et al. 30285* (NY-online image!); Serra da Piedade, ca. 40 km E. of Belo Horizonte, near BR-31, ca. 1800 m, 16 January 1971 (fl., fr.), *H.S. Irwin et al. 30536* (NY-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Ouro Branco, Serra do Ouro Branco, 24°29'37.8"S, 43°40'52.7"W, 21 January 2003 (fl.), *C.C. Paula et al. 606* (HUFU!).

Miconia ligustroides is a widely distributed Brazilian species, occurring in Bahia, Ceará, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, São Paulo, and Distrito Federal (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in secondary forest. Collected with flowers and fruits in January. *Miconia ligustroides* is recognized by the sparse furfuraceous-stellate indumentum covering the young branches, inflorescences axis, hypanthium and sepals, chartaceous, blackish (in dry material), elliptic and glabrescent leaf blade, 5-merous and pedicellate flowers arranged in a panicle (Fig. 4B), ten isomorphic stamens, which have a lobed dorsal appendage, anther truncate at the apex, and a deciduous calyx in the fruit.

5.10. *Miconia macrothyrsa* Bentham *in* Hooker (1840: 312).

Shrubs, size not informed. Branches terete, young branches ferruginous, old branches brownish, prominent interpetiolar ridges absent; indumentum of young branches, inflorescences axis, hypanthium and sepals furfuraceous-dendritic, abaxial leaf blade lanose-dendritic, old branches and adaxial leaf blade glabrescent. Leaves petiole 6–16 mm long,

horizontal, not conduplicate; leaf blade 5–10.5 × 3.5–6 cm, chartaceous, adaxial surface smooth, abaxial surface slightly foveolate, discolor, adaxial surface darker, ovate, apex acute, base slightly cordate, margin erose, not revolute, ciliate, 5-veined, basal, adaxial surface furfuraceous-dendritic only on young blade, domatias absent. Inflorescences in glomerulate simple thyrse, terminal, bracts and bracteoles absent. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals triangular, apex acute, margin dendritic-ciliate, dorsal projection absent; petals white, obovate, apex rounded or slightly retuse, margin glabrous; stamens 10, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.3 mm long, white, dorsal appendage absent, ventral appendage white, anthers white, oblong, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; antesealous stamens 5, ventral appendage biauriculate, apex acute; antepetalous stamens 5, ventral appendage biauriculate, apex truncate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma capitate. Berries globose, immature reddish, mature blackish, calyx deciduous; seeds pyramidal.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, September 1940 (fl., fr.), *H.L.M. Barreto s.n.* (RB 43569!).

Additional specimen examined:—BRAZIL. Minas Gerais: Belo Horizonte, Reserva da Copasa-Barreiro, 28 August 1998 (fl.), *G. Souza 231* (HUFU!).

Miconia macrothyrsa occurs in Central America (Trinidad & Tobago) and South America (Goldenberg *et al.* 2013). In Brazil, it is distributed in Bahia, Goiás, Maranhão, Mato Grosso, Minas Gerais, Pará, Piauí, Roraima, São Paulo, Tocantins, and Distrito Federal (Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade from a single collection made almost 85 years ago, and the habitat is not mentioned on the specimen label. Collected with flowers and fruits in September. *Miconia macrothyrsa* is recognized by the furfuraceous-dendritic indumentum covering the young branches, inflorescences axis, hypanthium and sepals, ovate

leaf blade, erose at the margin, and dense lanose-dendritic on the abaxial surface. In addition, it has 5-merous and sessile flowers arranged in glomerulate simple thyrses, ten subisomorphic stamens with a biauriculate ventral appendage, and a deciduous calyx in the fruit.

5.11. *Miconia melastomoides* (Raddi 1820: 386) R. Goldenb. in Michelangeli *et al.* (2019: 104)

Shrubs or small trees, ca. 2 m tall. Branches terete, brownish, prominent interpetiolar ridges absent; indumentum of branches hirtellous-setose or strigose, inflorescences axis, hypanthium and sepals sericeous-setose, leaf blade strigose. Leaves petiole 5.5–10 mm long, horizontal, not conduplicate; leaf blade 3–14.5 × 0.5–3.5 cm, chartaceous, adaxial surface slightly bullate-scabrous, abaxial surface foveolate, discolor, adaxial surface slightly darker, lanceolate, apex acute or acuminate, base attenuate or cuneate, margin entire, slightly revolute, ciliate, 3-veined, suprabasal, adaxial surface sericeous-setose along the midrib, domatias absent. Inflorescences in glomerulate compound thyrses, terminal, bracts and bracteoles present. Flowers 6-merous, sessile; hypanthium urceolate, smooth; sepals triangular, apex acute, margin ciliate, dorsal projection subulate, apex acuminate; petals white, lanceolate, apex acute, with a terminal glandular trichome in flower bud, margin glabrous; stamens 12, subisomorphic, filaments white, connective white, dorsally thickened, pedoconnective not prolonged below the theca, dorsal appendage absent, ventral appendage absent, anthers vinaceous, linear-subulate, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex setose, style white, stigma punctiform. Berries globose, immature green, mature blackish, calyx persistent; seeds pyramidal.

Specimens examined:—BRAZIL. Minas Gerais: middle slopes of Serra da Piedade, ca. 40 km E. of Belo Horizonte, near BR-31, ca. 1800 m, 16 January 1971 (fl., fr.), *H.S. Irwin et al.* 30454 (NL, NY-online images!); Base da Serra da Piedade, 21 July 2012 (fl.), *M.F.*

Vasconcelos 12-176 (HPUC-MG 1890!); Caeté, Serra da Piedade, 15 June 1987 (fr.), *T.S.M. Grandi et al. s.n.* (BHCB 1740!); idem, 19°49'S, 43°40'W, 15 July 1987 (fr.), *J.A. Paula et al. s.n.* (BHCB 18537!);

Additional specimen examined:—BRAZIL. Minas Gerais: Caeté, Asilo São Luiz, 11 February 1993 (fl., fr.), *E. Bastos 530* (HUFU!).

Miconia melastomoides occurs in Bahia, Ceará, Espírito Santo, Goiás, Minas Gerais, Paraíba, Paraná, Rio de Janeiro, Santa Catarina, São Paulo, and Distrito Federal (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in secondary forest and *floresta estacional semidecidual* borders. Collected with flowers in January and July and fruits in January, June and July. *Miconia melastomoides* can be recognized by the lanceolate leaf blade with three suprabasal veins, 6-merous and sessile flowers arranged in a glomerulate compound thyrse, and stamens with vinaceous anthers. The calyx is persistent in the fruit.

5.12. *Miconia neourceolata* Michelang. in Michelangeli *et al.* (2019: 107).

Shrubs, ca. 2 m tall. Branches terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals hirtellous-dendritic, hirtellous-glandular and hirtellous-setose, adaxial leaf blade dense hirtellous-glandular, sparse setose and dendritic, old branches glabrescent. Leaves petiole 4.5–17 mm long, horizontal, not conduplicate; leaf blade 40–11 × 2–5 cm, chartaceous, adaxial surface slightly bullate-scabrous, abaxial surface slightly foveolate, discolor, adaxial surface darker, ovate, apex acuminate, base rounded or slightly cordate, margin denticulate, not revolute, ciliate, 5–7-veined, basal, domatias absent. Inflorescences in panicle, lateral, bracts and bracteoles present. Flowers 5-merous, pedicellate; hypanthium urceolate, smooth; sepals ovate, apex rounded, margin dendritic-ciliate and glandular-ciliate, dorsal projection linear, apex acute; petals white-translucent, oblong-obovate, apex obtuse, margin glabrous; stamens

10, isomorphic, filaments white-translucent, connective white, not thickened, pedoconnective not prolonged below the theca, dorsal appendage absent, ventral appendage absent, anthers white, subulate, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 5-locular, inferior, apex glandular, style white, stigma capitate. Berries globose, immature green, mature atropurpureous, calyx persistent; seeds pyramidal.

Specimen examined:—BRAZIL. Minas Gerais: base of Serra da Piedade, ca. 35 km E. of Belo Horizonte, BR-31, ca. 1600 m, 14 January 1971 (fr.), *H.S. Irwin et al.* 30350 (UB!, NL, NY, US-online images!).

Additional specimens examined:—BRAZIL. Minas Gerais: São Gonçalo do Rio Preto, Parque Estadual do Rio Preto, próximo à Casa de Vigilantes, 18°07'26"S, 43°20'48"W, 714 m, 21 October 2005 (fl., fr.), *F.N. Costa & L.G. Lessa* 910 (HUFU!); Diamantina, Parque Estadual do Biribiri, 18°08'48.4"S, 43°36'54.1"W, 1058 m, 13 March 2012 (fl., fr.), *I.M. Araújo et al.* 228 (HUFU!).

Miconia neourceolata occurs from Central America to southern Brazil in Amazonas, Bahia, Espírito Santo, Goiás, Maranhão, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Santa Catarina, São Paulo, and Distrito Federal (Goldenberg *et al.* 2005, 2023b). In the Serra da Piedade occurs in pasture slopes and stream margin. Collected with fruits in January. *Miconia neourceolata* resembles *M. oligochaeta* (Cham.) R.Goldenb. in having a similar leaf blade shape, 5–7 basal veins, 5-merous and pedicellate flowers, ten isomorphic stamens, subulate anthers, attenuate at the apex, and persistent calyx in fruit. However, *M. neourceolata* differs in having a hirtellous indumentum covering the young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals (*vs.* hirsute or villous-setose, and furfuraceous-dendritic in *M. oligochaeta*), inflorescences in lateral panicle (Fig. 3G) (*vs.* terminal thyse), urceolate hypanthium (*vs.* campanulate to cylindrical), ovate sepals with

rounded apex (*vs.* inconspicuous-triangular with obtuse apex), oblong-obovate petals (*vs.* lanceolate), white anthers (*vs.* pinkish), and 5-locular ovary (*vs.* 3-locular).

5.13. *Miconia oligochaeta* (Cham. in Garcke & Schlechtendal 1835a: 45) R. Goldenb. in Michelangeli *et al.* (2018: 107).

Subshrubs or shrubs, ca. 1.5 m tall. Branches terete, brownish to blackish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals hirsute or villous-setose and furfuraceous-dendritic, adaxial leaf blade hirtellous-setose or sericeous-setose, old branches glabrescent. Leaves petiole 4–18 mm long, horizontal, not conduplicate; leaf blade 3–9.5 × 2–5 cm, chartaceous, adaxial surface smooth or bullate-scabrous, abaxial surface slightly foveolate, concolor or discolor, adaxial surface darker, ovate or elliptic, apex acute or acuminate, rarely obtuse, base cuneate, rounded or slightly cordate, margin crenulate, sometimes slightly revolute, ciliate, 5–7-veined, basal, adaxial surface rarely glabrescent, domatias absent. Inflorescences in thyrses, not glomerulate nor scorpioid, terminal, bracts and bracteoles present. Flowers 5-merous, pedicellate; hypanthium campanulate to cylindrical, smooth; sepals inconspicuous-triangular, apex obtuse, margin stellate-ciliate, dorsal projection subulate, apex acute; petals white, lanceolate, apex acuminate, margin glabrous; stamens 10, isomorphic, filaments pinkish, connective pinkish, dorsally thickened, pedoconnective 0.2 mm long, pinkish, dorsal appendage absent, ventral appendage absent, anthers pinkish, subulate, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous or sparse setose, style pinkish, stigma punctiform. Berries globose, immature green, mature blackish-vinaceous, calyx persistent; seeds ovate.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 20 October 1973 (fl., fr.), *C. Koczicki* 287 (MBM!, US-online image!); *idem*, 29 October 1971 (fl., fr.), *J. Lanna*

& Strang 1936 (US-online image!); idem, 19°49'S, 43°40'W, 1620 m, 15 August 1985 (fl.), T.S.M. Grandi et al. 1881 (BHCB 7506!); idem, 19°49'S, 43°40'W, 29 September 1985 (fl.), J.A. Paula et al. 1944 (BHCB!, HUFU!); idem, 19°49'S, 43°40'W, 1350 m, 07 October 1986 (fl.), T.S.M. Grandi & J.A. Paula 91 (BHCB!, HUFU!); idem, 13 November 1993 (fl.), J.P. Lemos-Filho s.n. (BHCB 2499!); idem, 19°49'23.6"S, 43°40'11.6"W, 1520 m, 11 January 1996 (fr.), V.C. Souza et al. 10090 (RB!, SORO!, ESA-online image!); idem, 19°49'23.3"S, 43°41'07.5"W, 1540 m, 11 January 1996 (fr.), V.C. Souza et al. 10127 (RB!, SORO!, ESA-online image!); idem, 19°49'22"S, 43°40'29"W, 1697 m, 16 March 2017 (fl.), A. Almeida 3 (HPUC-MG 5348!); ibidem, 16 March 2017 (fl., fr.), M. Fernanda s.n. (HPUC-MG 5397!).

Miconia oligochaeta occurs in Goiás, Minas Gerais, and Rio de Janeiro (Goldenberg et al. 2023b). In the Serra da Piedade occurs in *campo rupestre ferruginoso* on steep slopes. Collected with flowers in March, August to November and fruits in January, March and October. *Miconia oligochaeta* can be recognized by the hirsute or villous-setose and furfureaceous-dendritic indumentum covering the young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals, hirtellous-setose or sericeous-setose adaxial leaf blade, 5-merous and pedicellate flowers arranged in thyrse not glomerulate nor scorpioid, lanceolate petals, and isomorphic stamens with pinkish and subulate anthers. The differences between *M. oligochaeta* and *M. neourceolata* were noted under *M. neourceolata*.

5.14. *Miconia pepericarpa* De Candolle (1828: 182).

Slender trees, ca. 3 m tall. Young branches flattened, brownish to ferruginous, old branches terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals lepidote-stellate, adaxial leaf blade and old branches glabrescent. Leaves petiole 4–22 mm long, ascending or horizontal, not conduplicate; leaf blade 4.5–12.5 × 1–2 cm, chartaceous, smooth on the both surfaces, discolor,

adaxial surface darker, lanceolate to oblong-lanceolate, apex acute, base cuneate, margin entire, slightly revolute, glabrous, 3-veined, basal, adaxial surface sometimes sparse furfuraceous-stellate, domatias absent. Inflorescences in glomerulate simple thyrses, terminal or lateral, bracts absent, bracteoles present. Flowers 4-merous, sessile; hypanthium campanulate, smooth; sepals triangular, apex acute to obtuse, margin stellate-ciliate, dorsal projection linear-triangular, apex acute; petals white, oblong-ovate, apex rounded, margin glabrous; stamens 8, isomorphic, filaments white, connective white, not thickened, pedoconnective 0.3 mm long, white, glabrous, dorsal appendage absent, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a small apical-ventral pore, tetrasporangiate; ovary 3-locular, partly inferior, apex stellate, style white, stigma punctiform. Berries globose, blackish, calyx persistent; seeds ovate.

Specimen examined:—BRAZIL. Minas Gerais: base of Serra da Piedade, ca. 35 km E. of Belo Horizonte, road to Caeté, ca. 1600 m, 13 January 1971 (fr.), *H.S. Irwin et al.* 30276 (NL, NY, US-online images!).

Additional specimens examined:—BRAZIL. Minas Gerais: Belo Horizonte, Vila Geraldo Dias, Trilha fechada da Copasa depois da portaria 1 do Parque Estadual Serra do Rola Moça, 19 November 2021 (fl.), *A.A. Santos et al.* 40 (HUFU!); Lavras, Parque Ecológico Quedas do Rio Bonito, s.d. (fl.), *M.L. Gavilanes & B. Queiroz* 3777 (HUFU!).

Miconia pepericarpa occurs in Bahia, Goiás, Minas Gerais, São Paulo, and Distrito Federal (Goldenberg *et al.* 2023b). In the Serra da Piedade is known from only one collection made almost 52 years ago in secondary forest, on steep slopes. Collected with fruits in January. *Miconia pepericarpa* is recognized by the lepidote-stellate indumentum covering the young branches, the abaxial surface of the leaf blade, inflorescences axis, hypanthium and sepals. It also has a lanceolate to oblong-lanceolate leaf blade with three basal veins, and 4-merous and sessile flowers, arranged in a glomerulate simple thyrses (Fig. 3H). The calyx is persistent in

fruit. The differences between *M. pepericarpa* and *M. cubatanensis* were noted under *M. cubatanensis*.

5.15. *Miconia quinquedentata* (De Candolle 1828: 190) R. Goldenb. in Michelangeli *et al.* (2019: 110).

Shrubs, size not informed. Branches brownish, young branches flattened, old branches slightly terete, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals furfuraceous-glandular and furfuraceous-stellate, adaxial leaf blade and old branches glabrescent. Leaves petiole 8–21.5 mm long, ascending, not conduplicate; leaf blade 2.5–8.5 × 1.5–4.5 cm, chartaceous, smooth or slightly granular on the both surfaces, concolor, ovate-lanceolate to elliptic or sometimes obovate, apex acute or acuminate, base attenuate or cuneate, margin entire, slightly revolute, glabrous, 3–5-veined, suprabasal, adaxial surface sometimes sparse furfuraceous-glandular and furfuraceous-stellate along the veins and marginal portion, abaxial surface sometimes sparse setose at base of the primary veins, domatias in tufts of trichomes at base of abaxial leaf blade. Inflorescences in thyse, not glomerulate nor scorpioid, terminal, bracts and bracteoles present. Flowers 5-merous, sessile; hypanthium campanulate, smooth; sepals deltate, apex acute or obtuse, margin glandular-ciliate, dorsal projection narrowly triangular, apex acuminate; petals white, lanceolate, apex acute, margin glabrous; stamens 10, isomorphic, filaments white, connective white, not thickened, pedoconnective 0.3 mm long, white, dorsal appendage absent, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma punctiform. Berries ovate, immature green, mature purpureus, calyx persistent; seeds pyramidal.

Specimens examined:—BRAZIL. Serra da Piedade, s.d. (fl., fr.), *s.c.* (OUPR 37379!); Minas Gerais: Serra da Piedade, 25 May 1970 (fl.), *P. Occhioni et al. s.n.* (RFA 11927!, US

2734155-online image!); Caeté, Serra da Piedade, 19°49'S, 43°40'W, 1720 m, 06 June 1985 (fl.), *J.A. Paula & T.S.M. Grandi s.n.* (BHCB 7508!); ibidem, 1620 m, 27 April 1986 (fl.), *T.S.M. Grandi et al. 2230* (BHCB!, HUFU!).

Additional specimen examined:—BRAZIL. Minas Gerais: Parque Estadual do Itacolomi, 16 June 2010 (fl., fr.), *T.P. Rolim et al. 365* (HUFU!).

Miconia quinquedentata occurs in Bahia, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, and São Paulo (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with flowers in April to June. *Miconia quinquedentata* is recognized by the furfuraceous-glandular and furfuraceous-stellate indumentum covering the young branches, the abaxial surface of the leaf blade, inflorescences axis, hypanthium, and sepals. In addition, it has domatias in tufts of trichomes at the base on the abaxial surface of the blade, 5-merous and sessile flowers arranged in thyrses not glomerulate nor scorpioid, lanceolate petals, and ten isomorphic stamens.

5.16. *Miconia rimalis* Naudin (1851: 238).

Shrubs, ca. 1.5 m tall. Branches brownish, young branches flattened, old branches terete, prominent interpetiolar ridges absent; indumentum of young branches and inflorescences axis furfuraceous-stellate and sparse setose, hypanthium and sepals furfuraceous-stellate, abaxial leaf blade sparse furfuraceous-stellate, furfuraceous-glandular and setose, old branches and adaxial leaf blade glabrescent. Leaves petiole 4.5–11 mm long, horizontal, not conduplicate; leaf blade 2–8 × 1–2.5 cm, chartaceous, adaxial surface bullate, abaxial surface foveolate, concolor, lanceolate to ovate-lanceolate, apex acuminate, base cuneate, margin serrate or entire, sometimes slightly revolute, conduplicate or not, glabrous, 3–5-veined, suprabasal or sometimes basal, adaxial surface furfuraceous-stellate only on young blade, domatias in crypt at the base of abaxial surface. Inflorescences in panicle, terminal, bracts absent, bracteoles

present. Flowers 5-merous, pedicellate; hypanthium campanulate, smooth; sepals deltate, apex acute, margin stellate-ciliate, dorsal projection subulate, apex acute; petals white, obovate, apex rounded or slightly retuse, margin glabrous; stamens 10, isomorphic, filaments white, connective white, not thickened, pedoconnective 0.2 mm long, white, dorsal appendage absent, ventral appendage absent, anthers white, oblong, apex truncate, dehiscing through a broad ventral pore, comprising 2/3 of the thecae length, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma punctiform. Berries globose, yellow and green, calyx deciduous; seeds pyramidal.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31, 1800-2000 m, 13 January 1971 (fr.), *H.S. Irwin et al. 30214* (NL, P, US-online images!); Caeté, Serra da Piedade, 19°49'20"S, 43°40'37"W, 1746 m, 10 October 2001 (fl.), *F. Almeda et al. 8421* (UEC-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Itabirito, Pico do Itabirito, 04 August 1993 (fl.), *W.A. Teixeira s.n.* (HUFU 19260!).

Miconia rimalis occurs in Bahia and Minas Gerais (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in *campo rupestre ferruginoso*, frequently at iron-rich rock slopes nearness to the summit. Collected with flowers in October and fruits in January. *Miconia rimalis* is recognized by the furfuraceous-stellate and sparse setose indumentum covering the young branches and inflorescences axis, furfuraceous-stellate hypanthium and sepals, sparse furfuraceous-stellate, furfuraceous-glandular and setose abaxial leaf blade, and domatias in crypt at the base of abaxial surface. In addition, it has 5-merous and pedicellate flowers arranged in a panicle (Fig. 4C), ten isomorphic stamens with anthers dehiscing through a broad ventral pore, comprising 2/3 of the thecae length, and a deciduous calyx in fruit. Some collections were mistakenly identified as *M. sellowiana* Naudin, a species that does not occur in the Serra da Piedade. Both species are similar, but longitudinal anther dehiscence comprising 3/4 or more

than thecae length in *M. rimalis* is the main character used to differentiate them (Goldenberg *et al.* 2023b).

5.17. *Miconia sclerophylla* Triana (1871: 119).

Slender trees, 4 m tall. Branches slightly terete, young branches ferruginous, old branches brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium, and sepals lepidote-stellate, old branches and adaxial leaf blade glabrescent. Leaves petiole 21–40 mm long, horizontal, not conduplicate; leaf blade 9–17 × 4.5–9 cm, coriaceous, adaxial surface smooth, abaxial surface slightly foveolate, discolor, adaxial surface darker, ovate or elliptic, apex acute, base rounded or slightly cordate, margin entire, slightly sinuate and revolute, glabrous, 5-veined, basal, adaxial surface furfuraceous-stellate only on young blade, domatias absent. Inflorescences in compound spiciform, terminal, bracts present, bracteoles absent. Flowers 4-merous, sessile; hypanthium campanulate, smooth; sepals ovate, apex rounded, margin stellate-ciliate, dorsal projection inconspicuous-linear, apex acute; petals white, oblong, apex obtuse, margin glabrous; stamens 8, isomorphic, filaments white, connective white, not thickened, pedoconnective 0.5 mm long, white, dorsal appendage absent, ventral appendage absent, anthers yellow or white, oblong, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma truncate. Berries globose, green, calyx deciduous; seeds ovate.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, ca. 40 km E. of Belo Horizonte, near BR-31, 1800 m, 16 January 1971 (fr.), *H.S. Irwin et al.* 30463 (NY-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Diamantina, Parque Estadual do Biribiri, "Alto da Jacuba", 15 March 2012 (fr.), *I.M. Araújo et al. 260* (HUFU!); idem, Mata de Rivalino, 04 December 2012 (fl.), *I.M. Araújo et al. 1153* (HUFU!).

Miconia sclerophylla occurs in Bahia and Minas Gerais (Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade from a single collection made on middle slopes in low dense woodland on iron-rich soil interspersed with many outcrops about 50 years ago. Collected with fruits in January. *Miconia sclerophylla* resembles *M. shepherdii* R.Goldenb. & Reginato in having a discolor leaf blade, similar in shape, entire and slightly sinuate margin, and five basal veins. In addition, both species have 4-merous and sessile flowers arranged in compound spiciform (Fig. 4D), and eight isomorphic stamens. The calyx is deciduous in the fruit. However, *M. sclerophylla* differs by the lepidote indumentum covering the young branches, the abaxial surface of leaf blade (Fig. 6A, A1), inflorescences axis, hypanthium, and sepals (*vs.* furfuraceous on young branches, abaxial leaf blade, hypanthium and sepals, and lanose inflorescences axis in *M. shepherdii*), prominent interpetiolar ridges absent (*vs.* present, resembling stipules), coriaceous leaf blade (*vs.* chartaceous), and yellow or white anthers dehiscing through a small apical pore (*vs.* white, dehiscing through a moderate apical-ventral pore).

5.18. *Miconia shepherdii* R.Goldenb. & Reginato (2007: 334).

Trees, ca. 4 m tall. Branches brownish, young branches flattened, old branches slightly terete, prominent interpetiolar ridges present, resembling stipules; indumentum of young branches furfuraceous-dendritic, abaxial leaf blade, hypanthium and sepals furfuraceous-stellate and furfuraceous-dendritic, inflorescences axis lanose-dendritic old branches and adaxial leaf blade glabrescent. Leaves petiole 18–51 mm long, horizontal, not conduplicate; leaf blade 10.5–22 × 6–15 cm, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, ovate or

elliptic, apex acuminate, base rounded or slightly cordate, margin entire, slightly sinuate, not revolute, glabrous, 5-veined, basal, adaxial surface sometimes really sparse dendritic, indumentum denser along the primary and secondary veins on abaxial surface, domatias absent. Inflorescences in compound spiciform, terminal, bracts and bracteoles absent. Flowers 4-merous, sessile; hypanthium campanulate, smooth; sepals broadly triangular, apex acute, margin stellate-ciliate, dorsal projection inconspicuous-linear, apex acute; petals white, oblong to slightly obovate, apex rounded or emarginate and asymmetric, margin glabrous; stamens 8, isomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.3–0.4 mm long, white, dorsal appendage absent, ventral appendage absent, anthers white, oblong, apex rounded, dehiscing through a moderate apical-ventral pore, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma punctiform. Berries globose, mature orange, calyx deciduous; seeds hemispheric.

Specimens examined:—BRAZIL. Minas Gerais: lower slopes of Serra da Piedade, road between BR-31 and Caeté, 1600 M, 19 January 1971 (fr.), *H.S. Irwin et al. 28713* (UB!, NL, NY, UEC, US-online images!).

Miconia shepherdii occurs in Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro, and São Paulo (Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade only from the paratype collected in secondary forest about 50 years ago. Collected with fruits in January. *Miconia shepherdii* is recognized by the furfuraceous-stellate and furfuraceous-dendritic abaxial leaf blade, hypanthium and sepals, and lanose-dendritic inflorescences axis, the prominent interpetiolar ridges resembling stipules, and the ovate or elliptic leaf blade with five basal veins. In addition, it has 4-merous and sessile flowers arranged in compound spiciform (Fig. 4E), eight isomorphic stamens, white anthers dehiscing through a moderate apical-ventral pore. The differences between *M. shepherdii* and *M. sclerophylla* were noted under *M. sclerophylla*.

5.19. *Miconia theaezans* (Humboldt & Bonpland 1807: 17) Cogniaux (1888: 419).

Shrubs, size not informed. Branches slightly terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade and inflorescences axis inconspicuous glandular-punctate, old branches, adaxial leaf blade, hypanthium and sepals glabrescent. Leaves petiole 9–25 mm long, horizontal, not conduplicate; leaf blade 5.5–12.5 × 2–5.5 cm, chartaceous, smooth or slightly granular on the both surfaces, concolor, obovate or sometimes oblong-elliptic, apex acute or sometimes acuminate, base cuneate, margin entire or slightly denticulate, slightly revolute, glabrous or ciliate, 3-veined, basal, abaxial surface sometimes sparse setose along the veins, domatias absent. Inflorescences in panicle, terminal, bracts and bracteoles present. Flowers 5-merous, pedicellate; hypanthium campanulate, smooth or granular, sometimes inconspicuous glandular-punctate; sepals deltate, apex acute to obtuse, margin glabrous, dorsal projection triangular, apex acute, sometimes inconspicuous glandular-punctate; petals white, obovate, apex rounded, margin glabrous; stamens 10, isomorphic, filaments white, connective white, dorsally thickened, pedoconnective 0.2 mm long, white, dorsal appendage absent, ventral appendage white, bituberculate, apex rounded, anthers white, oblong, apex truncate, dehiscing through four small apical pores, tetrasporangiate; ovary 3-locular, partly inferior, apex glabrous, style white, stigma capitate. Berries globose, immature green, mature vinaceous to blackish, calyx persistent; seeds pyramidal.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31, 1,600 m, 14 January 1971 (fl., fr.), *H.S. Irwin et al.* 30362 (NY-online image!); Base da Serra da Piedade, 21 December 2012 (fl.), *M.F. Vasconcelos & F.A. Valério* 12-204 (HPUC-MG 1318!), 12-165 (HPUC-MG 1264!).

Additional specimen examined:—BRAZIL. Minas Gerais: Uberlândia, Estação Ecológica do Panga, 07 November 1986 (fl.), *G.M. Araújo s.n.* (HUFU 718!).

Miconia theaezans occurs in Bahia, Espírito Santo, Goiás, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo, Tocantins, and Distrito Federal (Goldenberg *et al.* 2023b). In the Serra da Piedade occurs in *campo úmido* on pasture slopes and stream margin. Collected with flowers in January and December and fruits in January. *Miconia theaezans* is recognized by the inconspicuous glandular-punctate indumentum covering the young branches, abaxial surface of the leaf blade and inflorescences axis, 5-merous and pedicellate flowers arranged in panicle (Fig. 4F), ten isomorphic stamens with anthers dehiscing through four small apical pores.

5.20. *Miconia warmingiana* Cogniaux (1887: 282).

Shrubs, ca. 1.5 m tall. Young branches slightly quadrangular, whitish, old branches slightly terete, brownish, prominent interpetiolar ridges absent; indumentum of young branches, abaxial leaf blade, inflorescences axis, hypanthium and sepals furfuraceous-dendritic, old branches and adaxial leaf blade glabrescent. Leaves petiole 7–12 mm long, horizontal, leaf blade 3–16 × 1–5.5 cm, coriaceous, adaxial surface smooth, abaxial surface slightly foveolate, discolor, adaxial surface darker, elliptic or oblong-lanceolate, apex acute, base cuneate or sometimes rounded, margin slightly crenulate, not revolute, glabrous, 5-veined, suprabasal, adaxial surface furfuraceous-dendritic on young blade and sometimes at base of old blade veins, domatias absent. Inflorescences in glomerulate compound thyse, terminal, bracts present, bracteoles absent. Flowers 4-merous, sessile; hypanthium campanulate, smooth; sepals ovate, apex rounded, margin dendritic-ciliate, dorsal projection absent; petals white, ovate, apex truncate, margin glabrous; stamens 8, subisomorphic, filaments white, connective white, not thickened, pedoconnective not measured, dorsal appendage absent, ventral appendage absent, anthers white, linear, apex attenuate, dehiscing through a small apical pore, tetrasporangiate; ovary

locules unknown, partly inferior, apex glabrous, style white, stigma punctiform. Berries globose, mature light gray-green, calyx deciduous; seeds not seen.

Specimen examined:—BRAZIL. Minas Gerais: Base of Serra da Piedade, ca. 35 km E. of Belo Horizonte, road to Caeté, ca. 1600 m, 13 January 1971 (fr.), *H.S. Irwin et al. 30284* (NL, NY, US-online images!).

Miconia warmingiana is endemic to the Iron Quadrangle in Minas Gerais (Goldenberg *et al.* 2023b). This species is known in the Serra da Piedade from a single collection made in secondary forest about 50 years ago. Collected with fruits in January. *Miconia warmingiana* is recognized by the furfuraceous-dendritic indumentum covering the abaxial surface of the leaf blade, inflorescences axis, hypanthium and sepals, 4-merous and sessile flowers arranged in glomerulate compound thyse, eight subisomorphic stamens with linear anthers.

6. *Microlicia* Don (1823: 283).

Subshrubs or shrubs. Branches quadrangular to terete, vernicose or not, not glutinous; young and old branches, leaf blade, hypanthium, and sepals covered with indumentum or glabrous. Leaves sessile or petiolate, ascending or horizontal, imbricate or not, conduplicate or not, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, with the same size or larger in the main branches, 1–5-veined, basal. Inflorescences in dichasia, reduced to one flower or solitary flowers, terminal or lateral, bracts and bracteoles present or not. Flowers 5-merous, pedicellate or sessile; hypanthium campanulate or urceolate, 5–10-costate or smooth, vernicose or not; sepals of variable shapes; petals lilac, magenta, pink, purple or white, variable shapes, margin entire, glabrous, glandular or glandular-punctate at the apex; stamens 10, fertile, dimorphic, glabrous, filaments of variable colors, connective of variable colors, not thickened, pedoconnective prolonged below the thecae, variable colors, dorsal appendage absent, ventral appendage of variable colors and shapes, anthers concolor or bicolor, variable colors and

shapes, apex rostrate, polysporangiate or tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 3 or 5-locular, superior, apex glabrous; style of variable colors, glabrous, stigma punctiform. Capsules globose, oblong or pyriform, brownish; seeds reniform.

Microlicia is the second richest genus of the Neotropical Melastomataceae and the largest in Lavoisierae, with approximately 250 species (Versiane *et al.* 2021; Versiane *et al.* 2022; Romero *et al.* 2023). Almost all its species are endemic to *campos rupestres* of the Espinhaço Range, with about ten species occurring in Bolivia, Colombia, Guyana, Peru, and Venezuela (see Versiane *et al.* 2020; Gali *et al.* 2022; Romero *et al.* 2022; Versiane *et al.* 2022). Minas Gerais state is one of the diversity centers of *Microlicia*, with 146 species (Gali *et al.* 2022; Pacifico *et al.* 2020; Pacifico & Almeda 2022), 10 of them occurring in the Serra da Piedade.

Key to species of *Microlicia*

1. Flowers petiolate; petals pink, white, lilac or purple 2
 - Flowers sessile; petals magenta 6.7. *Microlicia macrophylla*
2. Leaves petiolate 3
 - Leaves sessile 4
3. Young branches terete; leaf blade coriaceous; hypanthium and sepals lanose-glandular; filaments and style white 6.6. *Microlicia laniflora*
 - Young branches quadrangular; leaf blade chartaceous; hypanthium and sepals glandular, glandular-punctate or hirtellous-glandular; filaments and style pink 5
4. Leaf blade slightly punctate on the both surfaces, margin glabrous; hypanthium only with glandular-punctate indumentum 6
 - Leaf blade smooth on the both surface, margin ciliate; hypanthium glandular-punctate associated with villous or hirtellous-setose indumentum 7

5. Hypanthium and sepals only with glandular-punctate indumentum; sepals linear-triangular; anthers oblong; antepetalous stamens with ventral appendage inconspicuous 8
- Hypanthium and sepals glandular-punctate associated with glandular or hirtellous-glandular indumentum; sepals narrowly triangular; anthers obovate or ovate-oblong; antepetalous stamens with ventral appendage apex bilobed or rounded 9
6. Leaf blade discolor, orbicular to orbicular-ovate, margin crenulate; glandular trichome between the sepals present; petals pink 6.2. *Microlicia crenulata*
- Leaf blade concolor, linear or narrowly elliptic, margin entire; glandular trichome between the sepals absent; petals lilac or purple 6.5. *Microlicia isophylla*
7. Leaf blade villous and glandular-punctate; anthers polysporangiate 6.3. *Microlicia hirsuta*
- Leaf blade sparsely setose and glandular-punctate; anthers tetrasporangiate 6.4. *Microlicia hirticalyx*
8. Leaf blade discolor, elliptic to oblong; bracts present; hypanthium 5-costate; ovary 5-locular 6.1. *Microlicia calycina*
- Leaf blade concolor, linear; bracts absent; hypanthium 10-costate; ovary 3-locular 5.7. *Microlicia multicaulis*
9. Leaf blade villous-glandular and glandular-punctate; hypanthium urceolate, not vernicose; petals white; ovary 5-locular 6.8. *Microlicia parviflora*
- Leaf blade glabrous or sparsely glandular-punctate; hypanthium campanulate, vernicose; petals pink; ovary 3-locular 6.10. *Microlicia warmingiana*

6.1. *Microlicia calycina* (Cham. in Garcke & Schlechtendal 1835b: 430) Versiane &

R.Romero in Versiane *et al.* (2021: 52).

Shrubs, 1.5–2.5 m tall. Branches brownish, young branches quadrangular, vernicose, old branches terete, not vernicose; indumentum of young branches, leaf blade, hypanthium and sepals glandular-punctate, old branches glabrescent. Leaves petiolate, petiole 1–2 mm long., ascending or horizontal, not imbricate, not conduplicate; leaf blade 8–19 × 3–8 mm, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, elliptic to oblong, apex acute or rarely obtuse, base attenuate, margin dentate on the upper third or sometimes entire, discreetly revolute, glabrous, 1-veined. Inflorescences reduced to one flower, terminal or lateral, bracts present, bracteoles absent. Flowers pedicellate; hypanthium campanulate, 5-costate, vernicose or not; sepals linear-triangular, apex acute, glandular trichome between the sepals absent; petals pink, obovate, apex acute, margin glabrous; stamens filaments, connective, and pedoconnective pink, anthers bicolor, oblong, tetrasporangiate; antesepalous stamens 5, connective vinaceous, ventral appendage yellow, apex truncate, anthers vinaceous, beak white; antepetalous stamens 5, connective yellow, ventral appendage inconspicuous, anthers yellow, beak yellow; ovary 5-locular; style pink. Capsules globose.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 28 September 1985 (fl., fr.), *P.I.S. Braga & T.S.M. Grandi 1942* (BHCB!); idem, 19°49'S, 43°40'W, 1720 m, 28 September 1985 (fr.), *T.S.M. Grandi & J.C. Siqueira s.n.* (FCAB 3721!, HUFU 82082!); idem, 28 September 1986 (fl., fr.), *T.S.M. Grandi et al. 1944* (HUFU!).

Microlicia calycina is endemic to Minas Gerais, with distribution to the Serra da Piedade, Serra do Capanema, Serra de Ouro Preto, and Serra do Caraça in the Iron Quadrangle (Martins 1997; Brito 2022; Pacifico *et al.* 2022; Pacifico & Fidanza 2023b). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with flowers and fruits in September.

Microlicia calycina resembles *M. parviflora* (D.Don) Versiane & R.Romero in having discolor and commonly elliptic leaf blade, pedicellate flowers, and stamens with bicolor and tetrasporangiate anthers. However, *M. calycina* differs in having only glandular-punctate indumentum on young branches, leaf blade, hypanthium and sepals (*vs.* villous-glandular and glandular-punctate young branches and leaf blade, glandular and glandular-punctate hypanthium and sepals in *M. parviflora*), leaf margin frequently dentate on the upper third (*vs.* entire), solitary flowers (*vs.* simple or compound dichasium), pink petals (*vs.* white) and antepetalous stamens with inconspicuous ventral appendage (*vs.* bilobed).

6.2. *Microlicia crenulata* (De Candolle 1828: 111) Martius (1832: 106).

Subshrubs or shrubs, 0.3–0.8 m tall. Branches terete or slightly quadrangular, brownish, young branches vernicose, old branches not vernicose; indumentum of young branches, leaf blade, hypanthium and sepals glandular-punctate, old branches glabrescent. Leaves sessile, ascending, not imbricate, conduplicate or not; leaf blade 2.5–7.5 × 2–5.5 mm, with the same size in main and lateral branches, chartaceous, slightly punctate on the both surfaces, discolor, adaxial surface darker, orbicular to orbicular-ovate, apex acute or acuminate, base rounded or sometimes slightly truncate, margin crenulate, not revolute, glabrous, 1–3-veined. Solitary flowers, terminal, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate, 10-costate, vernicose or not; sepals narrowly triangular, apex acute, glandular trichome between the sepals present; petals pink, obovate-oblong, apex acuminate, margin glabrous; stamens ventral appendage yellow, anthers bicolor or rarely concolor yellow, oblong, tetrasporangiate; antesealous stamens 5, filaments, connective and pedoconnective pink, ventral appendage apex truncate, anthers vinaceous, beak white; antepetalous stamens 5, filaments, connective and pedoconnective yellow, ventral appendage slightly bilobed, apex rounded or, anthers yellow, beak white; ovary 3-locular; style pink with yellow apex. Capsules globose.

Specimens examined:—BRAZIL. Serra da Piedade, s.d. (fl.), *Warming 2229* (US-online image!); Minas Gerais: Serra da Piedade, ca. 35 km E. of Belo Horizonte, near BR-31., 1800 - 2000 m, 13 January 1971 (fl., fr.), *H.S. Irwin et al. 30236* (UB!, K, NL, NY-online images!); idem, ca. 35 km E. of Belo Horizonte, near BR-31., 1850 m, 15 January 1971 (fl., fr.), *H.S. Irwin et al. 30395* (P, NY, US-online images!); Caeté, 19°49'S, 43°40'W, 27 February 1986 (fl.), *T.S.M. Grandi & P.I.S. Braga 2219* (BHCB!, FCAB!, HUFU!); idem, 4ª estação de coleta, 19°49'S, 43°40'W, 1350 m, 16 May 1987 (fl., fr.), *J.A. Paula et al. s.n.* (BHCB 8975!, HUFU 6273!); idem, Serra da Piedade, 19°49'24"S, 43°40'08"W, 1398 m, 27 March 2001 (fr.), *R. Romero & J.N. Nakajima 5992* (HUFU!), *R. Romero & J.N. Nakajima 5994* (HUFU!, K-online image!); idem, vertente Norte, 1650 m, 10 November 2006 (fl., fr.), *M.F. Vasconcelos & C.A.R. Matrangolo s.n.* (BHCB 104157!).

Microlicia crenulata is endemic to Minas Gerais, occurring in the Iron Quadrangle (Jacobi *et al.* 2007; Romero *et al.* 2023). In the Serra da Piedade occurs in *campo rupestre ferruginoso*, frequently at iron-rich rocks slopes. Collected with flowers in January, February, May, and November and fruits in January, March, May, and November. *Microlicia crenulata* resembles *M. warmingiana* Cogn. in having often conduplicate leaves, chartaceous, discolor and commonly orbicular leaf blade, 1–3-basal veins. In addition, both species have solitary and pedicellate flowers, narrowly triangular sepals, and stamens with bicolor and tetrasporangiate anthers (Fig. 4G). However, *M. crenulata* differs in having a glandular-punctate indumentum on young branches, hypanthium and sepals (*vs.* hirtellous-glandular and glandular punctate in *M. warmingiana*), sessile leaves (*vs.* petiolate), abaxial surface of the leaf blade is not maculate (*vs.* maculate), crenulate margin (*vs.* entire), glandular trichome between the sepals (*vs.* absent).

6.3. *Microlicia hirsuta* (De Candolle 1828: 119) R.Romero, Versiane & Woodgyer in Romero *et al.* (2022: 113).

Shrubs, ca. 0.5 m tall. Branches not vernicose, young branches quadrangular, ferruginous, old branches terete, brownish; indumentum of young branches, leaf blade, hypanthium and sepals villous-setose and glandular-punctate, old branches glabrescent. Leaves sessile, ascending, not imbricate, not conduplicate; leaf blade 3–8 × 2–5 mm, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, concolor or discolor, adaxial surface slightly darker, ovate to lanceolate, apex acute or apiculate, base rounded or cuneate, margin entire, not revolute, ciliate, 1–3-veined, sometimes sparsely setose on both surfaces. Solitary flowers, terminal or lateral, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate or urceolate, slightly 10-costate, not vernicose; sepals triangular, apex acute, apiculate, glandular trichome between the sepals absent; petals pink, obovate, apex apiculate, margin glandular-punctate at the apex; stamens filaments pink, ventral appendage yellow, anthers bicolor, ovate-oblong, polysporangiate; antesealous stamens 5, connective and pedoconnective pink, ventral appendage apex truncate, anthers vinaceous, beak white; antepetalous stamens 5, connective and pedoconnective yellow, ventral appendage apex rounded, anthers yellow, beak white; ovary 3-locular; style pink. Capsules oblong or pyriform.

Specimen examined:—BRAZIL. Serra da Piedade, s.d. (fl., fr.), *Clausen 305* (K, NY-online images!).

Microlicia hirsuta is widely distributed in Bahia, Goiás, Minas Gerais, São Paulo and Distrito Federal (Romero *et al.* 2023). This species is known in the Serra da Piedade from a collection made over 180 years ago, probably in *campo rupestre ferruginoso*. *Microlicia hirsuta* resembles *M. macrophylla* Naudin in having a dense indumentum covering the young branches, leaf blade, hypanthium and sepals, sessile leaves, chartaceous and ovate to lanceolate leaf blade, and bicolor anthers. However, *M. hirsuta* differs by the villous-setose and glandular-punctate

indumentum (*vs.* hirtellous-glandular and glandular-punctate in *M. macrophylla*), pedicellate flowers (*vs.* sessile), slightly 10-costate hypanthium (*vs.* smooth), pink petals (*vs.* magenta), and polysporangiate anthers (*vs.* tetrasporangiate). *Microlicia hirsuta* also resembles *M. hirticalyx* R.Romero & Woodgyer in having a sessile leaves, chartaceous leaf blade, entire and ciliate margin, pedicellate flowers, campanulate or urceolate and slightly 10-costate hypanthium, pink petals and dimorphic and bicolor stamens. However, *M. hirsuta* differs in having a dense villous-setose and glandular-punctate indumentum covering the leaf blade (*vs.* sparsely setose and glandular-punctate in *M. hirticalyx*), triangular sepals (*vs.* narrowly triangular), and polysporangiate anthers (*vs.* tetrasporangiate).

6.4. *Microlicia hirticalyx* R.Romero & Woodgyer (2011: 163).

Shrubs, ca. 0.5 m tall. Branches not vernicose, young branch quadrangular, ferruginous, old branches terete, glabrescent, brownish; indumentum of young branches, hypanthium and sepals hirtellous-setose and glandular-punctate, leaf blade sparsely setose and glandular-punctate, old branches glabrescent. Leaves sessile, ascending, not imbricate, not conduplicate; leaf blade 3–8 × 2–5 mm, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, discolor, adaxial surface slightly darker, elliptic to ovate, apex acute or apiculate, base cuneate, margin entire, not revolute, ciliate, 1–3-veined. Solitary flowers, terminal or lateral, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate or urceolate, slightly 10-costate, not vernicose; sepals narrowly triangular, apex acuminate with a terminal pale trichome, glandular trichome between the sepals absent; petals pink, obovate, apex apiculate, margin glabrous; stamens filaments pink, ventral appendage yellow, anthers bicolor, ovate-oblong, tetrasporangiate; antesealous stamens 5, connective and pedoconnective purple, ventral appendage apex truncate, anthers purple, beak white; antepetalous stamens 5,

connective and pedoconnective yellow, ventral appendage apex rounded, anthers yellow, beak white; ovary 3-locular; style pink. Capsules oblong.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, estrada para Piedade, 16 June 1933 (fl., fr.), *H.L.M. Barreto 6991* (HUFU!).

Microlicia hirticalyx is endemic to Southern Espinhaço, occurring from Diamantina Plateau to Iron Quadrangle in Minas Gerais (Romero & Woodgyer 2011; Romero *et al.* 2023). This species is known in the Serra da Piedade only from the paratype collected 90 years ago in *campo rupestre ferruginoso*. Collected with flowers and fruits in June. *Microlicia hirticalyx* is recognized by the hirtellous-setose and glandular-punctate indumentum covering the branches, hypanthium and sepals, sparsely setose (Fig. 7E) and glandular-punctate leaf blade, ascending and not imbricate leaves, entire and ciliate at the margin, pedicellate flowers, slightly 10-costate hypanthium, and bicolor and tetrasporangiate anthers. The differences between *M. hirticalyx* and *M. hirsuta* were noted under *M. hirsuta*.

6.5. *Microlicia isophylla* De Candolle (1828: 120).

Subshrubs, size not informed. Branches brownish, young branches quadrangular, vernicose, old branches slightly terete, not vernicose; indumentum of young branches, leaf blade, hypanthium and sepals glandular-punctate, old branches glabrescent. Leaves sessile, ascending, not imbricate, not conduplicate; leaf blade 2.5–5.5 × 0.5–1 mm, with the same size in main and lateral branches, chartaceous, slightly punctate on the both surfaces, concolor, linear or narrowly elliptic, apex acute, apiculate, base attenuate, margin entire, not revolute, glabrous, 1-veined. Solitary flowers, terminal or lateral, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate, slightly 10-costate, vernicose; sepals narrowly triangular, apex acute, apiculate, glandular trichome between the sepals absent; petals lilac or purple, oblong, apex acute, margin glabrous; stamens filaments vinaceous, ventral appendage bilobed, yellow,

anthers bicolor, ovate-oblong, tetrasporangiate; antesealous stamens 5, connective and pedoconnective vinaceous, ventral appendage apex truncate, anthers vinaceous, beak white; antepetalous stamens 5, connective and pedoconnective yellow, ventral appendage apex obtuse, anthers yellow, beak yellow; ovary 3-locular; style vinaceous. Capsules globose.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, 29 January 1977 (fl., fr.), *L. Krieger s.n.* (HUFU 38895!).

Microlicia isophylla occurs in Espírito Santo, Minas Gerais, São Paulo, and Rio de Janeiro states (Romero *et al.* 2023). This species is known in the Serra da Piedade from a single collection made in *campo rupestre ferruginoso* about 50 years ago. Collected with flowers and fruits in January. *Microlicia isophylla* resembles *M. multicaulis* Mart. ex Naudin in having a much-branched habit, vernicose young branches and hypanthium, glandular-punctate indumentum covering the young branches, leaf blade, hypanthium and sepals, concolor and linear leaf blade, 1-veined. In addition, both species have solitary and pedicellate flowers (Fig. 4H), and stamens with bicolor and tetrasporangiate anthers. However, *M. isophylla* differs in having sessile leaves, with the same size of the internode (*vs.* petiolate, longer than the internode in *M. multicaulis*), narrowly triangular sepals (*vs.* linear-triangular), lilac or purple and oblong petals (*vs.* pink and obovate-elliptic), and antepetalous stamens with bilobed ventral appendage (*vs.* inconspicuous).

6.6. *Microlicia laniflora* (D.Don 1823: 292) Baillon (1876: 95).

Shrubs, size not informed. Branches terete, not vernicose, young branches cream, old branches brownish; indumentum of young branches, abaxial leaf blade, hypanthium and sepals lanose-glandular. Leaves petiolate, petiole 3.5–5 mm long., ascending or horizontal, not imbricate, not conduplicate; leaf blade 15–45 × 6–20 mm, with the same size in main and lateral branches, coriaceous, smooth on the both surfaces, discolor, adaxial surface darker, ovate to elliptic, apex

acute or rarely rounded, base attenuate, margin entire, not revolute, glabrous, 3-veined, adaxial surface glabrous or sometimes sparse furfuraceous-glandular. Inflorescences in dichasium or reduced to one flower, terminal or lateral, bracts and bracteoles present. Flowers pedicellate; hypanthium campanulate, smooth, not vernicose; sepals narrowly triangular, apex acute, glandular trichome between the sepals absent; petals white, obovate, apex acuminate, margin glabrous; stamens filaments white, pedoconnective white, ventral appendage yellow, apex truncate, anthers bicolor, obovate, tetrasporangiate; antesealous stamens 5, connective and anthers vinaceous, beak white; antepetalous stamens 5, connective and anthers yellow, beak white; ovary 5-locular; style white. Capsules globose.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 06 May 1984 (fl.), *L. Krieger s.n.* (UB 181100!, MBM 271889-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Itabirito, 10 June 1971 (fr.), *L. Krieger 10641* (HUFU!).

Microlicia laniflora is endemic to Minas Gerais, occurring exclusively in Espinhaço Range, from the Diamantina Plateau to the Iron Quadrangle (Martins 1997; Pacifico & Fidanza 2022; Romero *et al.* 2023). This species is known in the Serra da Piedade from a single collection made in *campo rupestre ferruginoso* about 50 years ago. Collected with flowers in May. *Microlicia laniflora* is readily recognized by the lanose-glandular indumentum covering the young branches, abaxial leaf blade, hypanthium, and sepals (Fig. 6F), coriaceous and discolor leaf blade, white petals (Fig. 5A), and bicolor and tetrasporangiate anthers.

6.7. *Microlicia macrophylla* Naudin (1845: 173).

Shrubs, ca. 0.3 m tall. Branches terete or slightly quadrangular, not vernicose, ocher to brown; indumentum of young and old branches, leaf blade, hypanthium and sepals hirtellous-glandular and glandular-punctate. Leaves sessile, ascending or horizontal, imbricate or not, not

conduplicate; leaf blade 5.5–20.5 × 3–14.5 mm, of the main branch larger or with the same size as lateral branches; chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, ovate to lanceolate, apex acute, base rounded or cordate, margin slightly crenulate or serrulate, not revolute, glandular-ciliate, 3–5-veined. Solitary flowers, terminal, bracts and bracteoles absent. Flowers sessile; hypanthium campanulate, smooth, not vernicose; sepals triangular or oblong, apex acuminate, apiculate, glandular trichome between the sepals absent; petals magenta, obovate, apex apiculate, margin glabrous; stamens filaments purple, pedoconnective purple, ventral appendage yellow, anthers bicolor, oblong, tetrasporangiate; antesealous stamens 5, connective vinaceous, ventral appendage apex truncate or slightly bilobed, anthers vinaceous, beak white; antepetalous stamens 5, connective yellow, ventral appendage apex truncate or slightly bilobed, anthers yellow, beak white; ovary 3-locular; style pink. Capsules globose.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, 15 May 1970 (fl., fr.), *P. Occhioni & E. Campos s.n.* (RFA 11926!, US 2734079-online images!); Caeté, Serra da Piedade, trilha do mato, 19°49'22"S, 43°40'29"W, 09 May 2016 (fl.), *A. Aquino s.n.* (HPUC-MG 4566!).

Microlicia macrophylla is endemic to Minas Gerais, occurring from the Diamantina Plateau to the Iron Quadrangle (Romero & Castro 2014; Romero *et al.* 2023). This species is known in the Serra da Piedade from a single collection made in *campo rupestre ferruginoso* about 55 years ago. Collected with flowers and fruits in May. *Microlicia macrophylla* is recognized by the dense hirtellous-glandular and glandular-punctate indumentum covering the branches, leaf blade, hypanthium, and sepals, and slightly crenulate or serrulate leaf blade, glandular-ciliate at the margin. In addition, it has sessile flowers, smooth hypanthium, magenta petals, and bicolor and tetrasporangiate anthers. The differences between *M. macrophylla* and *M. hirsuta* were noted under *M. hirsuta*.

6.8. *Microlicia multicaulis* Mart. ex Naudin (1845: 184).

Shrubs, size not informed. Young branch quadrangular, vernicose, greenish, old branches terete, not vernicose, brownish; indumentum of young branches, leaf blade, hypanthium and sepals glandular-punctate, old branches glabrescent. Leaves petiolate, petiole up to 0.5 mm long., ascending, not imbricate, not conduplicate; leaf blade measure not collected, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, concolor, linear, apex acute or apiculate, base attenuate, margin entire, not revolute, glabrous, 1-veined. Solitary flowers, terminal or lateral, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate, 10-costate, vernicose; sepals linear-triangular, apex acute, apiculate, glandular trichome between the sepals absent; petals pink, obovate-elliptic, apex acute, margin glabrous; stamens filaments pink, anthers bicolor, oblong, tetrasporangiate; antesealous stamens 5, connective and pedoconnective pink, ventral appendage yellow, apex truncate, anthers pink, beak white; antepetalous stamens 5, connective and pedoconnective yellow, ventral appendage inconspicuous, anthers yellow, beak yellow; ovary 3-locular; style pink. Capsules globose.

Specimen examined:—BRAZIL. Minas Gerais: Serra da Piedade, s.d. (fl., fr.), *Gounelle s.n.* (P 05316883-online image!).

Additional specimen examined:—BRAZIL. Minas Gerais: Catas Altas, RPPN do Caraça, Serra do Caraça, Pico do Inficcionado, 09 September 2013 (fl., fr.), *J. Ordones 2241* (HUFU!).

Microlicia multicaulis occurs in Minas Gerais state, from the Diamantina Plateau to the Iron Quadrangle (Romero 2013; Pacifico & Fidanza 2018; Romero *et al.* 2023). This species is known in the Serra da Piedade from a single collection and the habitat and date of collection were not informed. *Microlicia multicaulis* is recognized by the shrubby much-branched habit, glandular-punctate indumentum covering the young branches, leaf blade, hypanthium, and

sepals. In addition, it has petiolate and ascending leaves, linear leaf blade, attenuate at the base, linear-triangular sepals, pink petals, and bicolor and tetrasporangiate anthers. The differences between *M. multicaulis* and *M. isophylla* were noted under *M. isophylla*.

6.9. *Microlicia parviflora* (D.Don 1823: 323) Versiane & R.Romero in Versiane *et al.* (2021: 54).

Shrubs, 0.5–2.5 m tall. Branches not vernicose, brownish, young branches quadrangular, old branches terete, glabrescent; indumentum of young branches and leaf blade villous-glandular and glandular-punctate, hypanthium and sepals glandular and glandular-punctate, old branches glabrescent. Leaves petiolate, petiole 3–12 mm long., horizontal, not imbricate, not conduplicate; leaf blade 15–107 × 5.5–28 mm, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, elliptic or lanceolate, apex acute, base attenuate, margin entire, sometimes discreetly revolute, glabrous, 3–5-veined, indumentum sparser on the adaxial surface. Inflorescences in simple or compound dichasium, terminal or lateral, bracts and bracteoles present. Flowers pedicellate; hypanthium urceolate, 10-costate, not vernicose; sepals narrowly triangular, apex acute, glandular trichome between the sepals absent; petals white, obovate, apex acuminate, margin glandular; stamens filaments pink, ventral appendage yellow, anthers bicolor, obovate, tetrasporangiate; antesealous stamens 5, connective and pedoconnective pink, ventral appendage apex emarginate, anthers vinaceous, beak white; antepetalous stamens 5, connective and pedoconnective yellow, ventral appendage apex bilobed, anthers yellow, beak white; ovary 5-locular; style pink. Capsules globose.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 29 June 1985 (fl., fr.), *P. Siqueira & T.S.M. Grandi 1867* (BHCB!, HUFU!); idem, 07 October 1986 (fr.), *J.A. Paula & T.S.M. Grandi 1438* (HUFU!), *J.A. Paula & T.S.M. Grandi s.n.* (MBM 178326-online

image!); idem, 19°49'S, 43°40'W, 07 October 1986 (fr.), *T.S.M. Grandi & A.P. Jane s.n.* (BHCB 7956!); idem, 19°49'S, 43°40'W, 15 June 1987 (fl., fr.), *T.S.M. Grandi et al. 2445* (BHCB!).

Microlicia parviflora is a widely distributed species, occurring in Bahia, Espírito Santo, Goiás, Minas Gerais, Paraná, Rio de Janeiro, São Paulo, and Distrito Federal (Pacífico & Fidanza 2023b). In the Serra da Piedade is found in *campo rupestre ferruginoso*. Collected with flowers in June and fruits in June and October. *Microlicia parviflora* is recognized by the villous-glandular and glandular-punctate indumentum covering the young branches and leaf blade, pedicellate flowers, urceolate hypanthium, white petals (Fig. 5B), and bicolor and tetrasporangiate anther. The differences between *M. parviflora* and *M. calycina* were noted under *M. calycina*.

6.10. *Microlicia warmingiana* Cogniaux (1883: 47).

Subshrubs, size not informed. Branches not vernicose, young branches quadrangular, greenish, old branches terete, brownish; indumentum of young branches, hypanthium and sepals sparsely hirtellous-glandular and glandular-punctate, old branches glabrescent, leaf blade glabrous. Leaves petiolate, petiole up to 0.5 mm long., ascending, imbricate or not, conduplicate or not; leaf blade 3–6.5 × 1.5–4 mm, with the same size in main and lateral branches, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, abaxial surface maculate, ovate or ovate-lanceolate, apex acuminate or cuspidate, base rounded, margin entire, not revolute, glabrous, 1–3-veined, sometimes sparsely glandular-punctate on both surfaces. Solitary flowers, terminal, bracts and bracteoles absent. Flowers pedicellate; hypanthium campanulate, slightly 10-costate, vernicose; sepals narrowly triangular, apex acute, glandular trichome between the sepals absent; petals pink, obovate-oblong, apex acuminate, margin glabrous; stamens filaments pink, ventral appendage yellow, anthers bicolor, ovate-oblong,

tetrasporangiate; antesealous stamens 5, connective and pedoconnective pink, ventral appendage apex retuse, anthers vinaceous to nigrescent, beak white; antepetalous stamens 5, connective and pedoconnective yellow, ventral appendage apex rounded, anthers yellow, beak yellow; ovary 3-locular; style pink. Capsules oblong.

Specimen examined:—BRAZIL. Serra da Piedade, s.d. (fl., fr.), *Warming s.n.* (C 10014919, C 0014920, P 05316796-online images!).

Additional specimen examined:—BRAZIL. Minas Gerais: Itabirito, Pico do Itabirito, 25 February 1995 (fl.), *W.A. Teixeira s.n.* (HUFU 19273!).

Microlicia warmingiana is endemic to Minas Gerais, occurring in the Iron Quadrangle (Santos 2005; Romero *et al.* 2023). This species is known in the Serra da Piedade only from the type collection made about 160 years ago during an expedition carried out by Eugenius Warming (see Gomes 2006; Lage 2011). The habitat was not informed. *Microlicia warmingiana* is recognized by the hirtellous-glandular and glandular-punctate indumentum covering young branches, hypanthium and sepals, glabrous or sparsely glandular-punctate leaf blade, petiolate and often conduplicate leaves, discolor, maculate on the abaxial surface and acuminate or cuspidate at the apex. In addition, it has pedicellate flowers and bicolor and tetrasporangiate anthers. The differences between *M. warmingiana* and *M. crenulata* were noted under *M. crenulata*.

7. *Pleroma* D.Don (1823: 283, 293).

Subshrubs, shrubs, or trees. Branches quadrangular to terete, winged or not, not vernicose, not glutinous; young and old branches, leaf blade, bracteoles, hypanthium, and sepals covered with indumentum. Leaves petiolate, ascending or horizontal, not imbricate, not conduplicate, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, 5-veined, basal. Inflorescences in dichasium, thyrse, or reduced to solitary flowers, terminal, bracts present or

not, bracteoles present. Flowers 5-merous, pedicellate or sessile; hypanthium cylindric or campanulate, smooth, not vernicose; sepals of variable shapes; petals purple, obovate, apex emarginate, obtuse or rounded, margin entire, ciliate; stamens 10, fertile, dimorphic or subisomorphic, filaments purplish or white, glandular or villous, connective purplish, not thickened, glabrous, pedoconnective prolonged below the thecae, purplish or whitish, glabrous or glandular, dorsal appendage absent, ventral appendage purplish, whitish or yellow, variable shapes, glabrous or glandular-punctate, anthers concolor, cream or purplish, linear-subulate, apex attenuate, tetrasporangiate, theca not prolonged below the connective, staminodes absent; ovary 5-locular, superior, apex dense sericeous-setose; style purplish, setose or villous, stigma punctiform. Capsules globose or ovate, brownish or cream, calyx deciduous, seeds cochleate.

Pleroma is the largest genus in Melastomateae, with 159 species in Brazil, of which 156 are endemic (Guimarães 2023). The species are widely distributed in eastern Brazil, mainly in Atlantic Forest and Cerrado biomes, in forest physiognomies, rocky outcrops, high-altitude grasslands, and shrubby restinga (Guimarães *et al.* 2019). Minas Gerais has the highest diversity of *Pleroma* with 56 species, with at least 28 species endemics to the state (Guimarães 2023). In the Serra da Piedade occur five species.

Key to species of *Pleroma*

1. Flowers sessile, antesealous pedoconnective 4.5–5.3 mm long 7.5. *Pleroma semidecandrum*
- Flowers pedicellate, antesealous pedoconnective 0.5–2.2 mm long 2
2. Branches winged; abaxial leaf blade villous-setose; pedoconnective glandular, anthers cream 7.4. *Pleroma heteromallum*
- Branches not winged; abaxial leaf blade sericeous-setose or sericeous-dendritic; pedoconnective glabrous, anthers purplish 3

3. Leaf blade ovate to very widely ovate, apex obtuse or rounded; abaxial leaf blade, bracteoles, hypanthium and sepals sericeous-setose 7.2. *Pleroma cardinale*
 - Leaf blade ovate-lanceolate, apex acute or acuminate; abaxial leaf blade, bracteoles, hypanthium and sepals sericeous-dendritic 4
4. Branches terete; leaf blade discolor, adaxial surface sericeous-dendritic; flowers in compound dichasium, bracteoles in calyptra; stamens dimorphic, ventral appendage dense glandular-punctate 7.1. *Pleroma canescens*
 - Branches quadrangular; leaf blade concolor, adaxial surface strigose; flowers in thyrses, bracteoles lanceolate; stamens subisomorphic, ventral appendage glabrous 7.3. *Pleroma estrellense*

7.1. *Pleroma canescens* (D. Don 1823: 296) P.J.F. Guim. & Michelang. in Guimarães *et al.* (2019: 976).

Trees, 3–5 m tall. Branches terete, not winged, brownish; indumentum of young branches hirtellous-dendritic, leaf blade, bracteoles, hypanthium and sepals sericeous-dendritic, old branches glabrescent. Leaves petiole 5.5–14.5 mm long, ascending; leaf blade 3–7.5 × 1.5–3 cm, chartaceous, smooth on the both surfaces, discolor, adaxial surface slightly darker, ovate-lanceolate, apex acute or acuminate, base cuneate, margin entire, not revolute, ciliate, indumentum denser along the veins on the abaxial surface. Inflorescences in compound dichasium, bracts present, bracteoles in calyptra, caducous in flower bud. Flowers pedicellate; hypanthium campanulate; sepals ovate, apex obtuse, margin ciliate; petals apex emarginate; stamens dimorphic, filaments white with purplish apex, dense glandular, pedoconnective purplish, glabrous, ventral appendage purplish, bituberculate, apex rounded, dense glandular-punctate, anthers purplish; antesealous stamens 5, pedoconnective up to 0.5 mm long;

antepetalous stamens 5, pedoconnective not prolonged; style dense setose on the lower half. Capsules ovate, cream.

Specimens examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, 19°49'S, 43°40'W, 1720 m, 29 October 1971 (fl., fr.), *Lanna & Strang 1923* (K, NY-online images!); idem, 20 October 1973 (fl., fr.), *C. Koczicki 291* (MBM!, US-online image!); idem, sopé da Serra, 19°49'S, 43°40'W, 04 November 1985 (fl., fr.), *P.I.S. Braga et al. 2152* (BHCB!, HUFU!, MBM-online image!).

Pleroma canescens is distributed in Minas Gerais and Rio de Janeiro (Guimarães 2023). In the Serra da Piedade occurs in *campo rupestre ferruginoso*. Collected with flowers and fruits in October and November. *Pleroma canescens* resembles *P. estrellense* (Raddi) P.J.F.Guim. & Michelang. in having a hirtellous-dendritic indumentum covering the young branches and sericeous-dendritic on the abaxial surface of the leaf blade, hypanthium and sepals. In addition, both species have ascending leaves with an ovate-lanceolate blade, pedicellate flower and antesealous stamen with pedoconnective prolonged up to 0.5 mm long. However, *P. canescens* differs in having a sericeous-dendritic indumentum on adaxial surface of the leaf blade (*vs.* strigose in *P. estrellense*), discolor blade (*vs.* concolor), flowers in compound dichasium (*vs.* thyse), bracteoles in calyptra (*vs.* lanceolate), campanulate hypanthium (*vs.* cylindric), dimorphic stamens (*vs.* subisomorphic), and dense glandular-punctate ventral appendage (*vs.* glabrous).

7.2. *Pleroma cardinale* (Bonpl. in Humboldt & Bonpland 1818: 96) Triana (1871: 44).

Subshrubs, shrubs or small trees, 0.5–3 m tall. Branches slightly terete, not winged, brownish; indumentum of young branches, abaxial leaf blade, bracteoles, hypanthium, and sepals sericeous-setose, adaxial leaf blade strigose, old branches glabrescent, peeling off with age. Leaves petiole 1–3 mm long, ascending or horizontal; leaf blade 6.5–20 × 4.5–20 mm,

chartaceous, adaxial surface slightly scabrous, discolor, adaxial surface darker, ovate to very widely ovate, apex obtuse or rounded, base rounded or cordate, margin entire or slightly crenulate, sometimes discreetly revolute, ciliate, the second pair of veins merging above the first, indumentum denser along the veins on the abaxial surface. Inflorescences in compound dichasium or reduced to solitary flowers, bracts present, bracteoles ovate or lanceolate, persistent in flowers. Flowers pedicellate; hypanthium cylindrical; sepals triangular-lanceolate, apex acute, margin ciliate; petals apex rounded or obtuse; stamens dimorphic, filaments white with purplish apex, sparse glandular ventrally, pedoconnective whitish, glabrous, ventral appendage yellow, glabrous, anthers purplish; antesealous stamens 5, pedoconnective 1–2.2 mm long, ventral appendage bituberculate, apex slightly retuse; antepetalous stamens 5, pedoconnective inconspicuous or up to 0.5 mm long, ventral appendage bituberculate, apex rounded; style sparse setose on the lower half. Capsules ovate or globose, brownish or cream.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, 20 November 1903 (fl.), *M. Gomes et al. 1410* (BHCB!); idem, ca. 35 km E. of Belo Horizonte, near BR-31, ca. 1850 m., 15 January 1971 (fl., fr.), *H.S. Irwin et al. 30381* (IAN, NY, US-online images!); Caeté, Serra da Piedade, 28 June 1933 (fl.), *H.L.M. Barreto 6907* (SJRP!, RB-online image!); idem, 29 November 1933 (fl.), *H.L.M. Barreto 6909* (BHCB!); idem, km 1-5 on road to top of Serra (ca. 19°55'S, 43°45'W), 1200-1700 m., 02 February 1982 (fr.), *L.R. Landrum 4267* (MBM!, NY, US-online images!); idem, 19°49'S, 43°40'W, 15 April 1985 (fl.), *J.C. Siqueira et al. 1641* (BHCB!, HUFU!); idem, 04 December 1992 (fl., fr.), *A.A. Arantes s.n.* (BHCB 21148!, HUFU 4384!); idem, 19°49'23.6"S, 43°41'11.6"W, 1520 m., 11 January 1996 (fl., fr.), *V.C. Souza et al. 10076* (HUFU!, RB!, SORO!, ESA, UEC-online images!); idem, 19°49'23.6"S, 43°41'11.6"W, 1520 m, 12 January 1996 (fr.), *V.C. Souza et al. 10086* (ESA-online image); idem, 04 December 1997 (fl.), *M.F. Vasconcelos s.n.* (BHCB 40013!, SPF 134032!); idem, 19°49'24"S, 43°41'08"W, 1398 m, 27 March 2001 (fl., fr.), *R. Romero & J.N. Nakajima 5993*

(HUFU!); idem, 19°49'60"S, 43°40'57"W, 1441 m, 10 October 2001 (fl.), *F. Almeda et al.* 8425 (UEC-online image!); idem, próximo ao campo aeronáutica, 19°49'20"S, 43°41'04"W, 1593 m, 14 May 2012 (fl., fr.), *M.J.R. Rocha et al.* 665 (BHCB!, NY, RB-online images!); idem, 19°49'22"S, 43°40'29"W, 1697 m, 15 September 2016 (fl.), *L. Lene* 3 (HPUC-MG!).

Pleroma cardinale is endemic to Minas Gerais, occurring mainly in Southern Espinhaço (Nunes *et al.* 2008; Rolim 2011; Araújo 2013; Teixeira & Lemos Filho 2013; Hemsing 2018; Lauriano & Romero 2022; Guimarães 2023). In the Serra da Piedade occurs in *campo rupestre ferruginoso*, frequently on iron-rich rocks slopes. Collected with flowers in January, March to June, and September to December and fruits in January to March, May, and December. *Pleroma cardinale* is recognized by the sericeous-setose indumentum covering the young branches, abaxial surface of the leaf blade, bracteoles, hypanthium (Fig. 7A) and sepals and strigose and slightly scabrous on adaxial surface of the leaf blade (Fig. 7C). In addition, it has ovate to broadly ovate leaf blade, pedicellate flowers solitary or arranged in a compound dichasium, purple petals (Fig. 5C) and dimorphic stamens with sparse glandular filaments ventrally. Some collections were mistakenly identified as *P. dendroides* (Naudin) Triana, a species that does not occur in the Serra da Piedade. Both species are very similar, however the ovate and 3-veined leaf blade, and sericeous-strigose indumentum on the abaxial surface in *P. dendroides*, are the main characteristics used to differentiate them (Guimarães 2023).

7.3. *Pleroma estrellense* (Raddi 1820: 9) P.J.F.Guim. & Michelang. in Guimarães *et al.* (2019: 979).

Shrubs, size not informed. Branches quadrangular, not winged, brownish; indumentum of young branches hirtellous-dendritic, abaxial leaf blade, bracteoles, hypanthium, and sepals sericeous-dendritic, adaxial leaf blade strigose, old branches glabrescent. Leaves petiole 9.5–22 mm long, ascending; leaf blade 5–15 × 2–5 cm, chartaceous, adaxial surface slightly bullate-

scabrous, concolor, ovate-lanceolate, apex acute, base cuneate or attenuate, margin entire, discreetly revolute, ciliate, the second pair of veins merging above the first, indumentum denser along the veins on the abaxial surface. Inflorescence in thyrses, bracts present, bracteoles lanceolate, caducous in flower bud. Flowers pedicellate; hypanthium cylindrical; sepals ovate, apex obtuse, margin ciliate, indumentum on the central portion; petals apex rounded; stamens subisomorphic, filaments purplish, dense villous on the superior half, pedoconnective purplish, glabrous, ventral appendage purplish, bituberculate, apex slightly truncate, glabrous, anthers purplish; antesealous stamens 5, pedoconnective up to 0.5 mm long; antepetalous stamens 5, pedoconnective inconspicuous or up to 0.3 mm long; style dense villous on the lower half. Capsules ovate, brownish.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Serra da Piedade, ao pé da serra, 19°49'S, 43°40'W, 07 October 1986 (fl., fr.), T.S.M. Grandi & J.A. Paula 108 (BHCB!, HUFU!).

Pleroma estrellense occurs in Espírito Santo, Minas Gerais, Rio de Janeiro, and São Paulo (Guimarães 2023). This species is known in the Serra da Piedade from a single collection made in secondary forest about 37 years ago. Collected with flowers and fruits in October. *Pleroma estrellense* is recognized by the sericeous-dendritic indumentum covering the abaxial surface of the leaf blade, hypanthium, and sepals, and by the strigose and slightly bullate-scabrous on adaxial surface of the leaf blade. In addition, it has flowers arranged in thyrses, lanceolate bracteoles, purple petals, subisomorphic stamens, and filaments dense villous on the superior half. The differences between *P. estrellense* and *P. canescens* were noted under *P. canescens*.

7.4. *Pleroma heteromallum* D. Don (1823: 295).

Subshrubs or shrubs, 0.8–1 m tall. Branches quadrangular, winged, brownish; indumentum of young branches, adaxial leaf blade, bracteoles, hypanthium and sepals sericeous-setose, abaxial

leaf blade villous-setose, old branches glabrescent. Leaves petiole 4–13.5 mm long, horizontal; leaf blade 3.5–12.5 × 2–6.5 cm, chartaceous, adaxial surface slightly bullate, abaxial surface slightly foveolate, discolor, adaxial surface darker, ovate, ovate-lanceolate or sometimes lanceolate, apex acute or sometimes obtuse, base cordate, margin entire, not revolute, ciliate, sericeous-setose along the veins on the abaxial surface. Inflorescence in thyrses, bracts present, bracteoles lanceolate, caducous in flower bud. Flower pedicellate; hypanthium cylindrical; sepals lanceolate, apex acute, margin ciliate; petals sometimes white at the base, apex obtuse; stamens dimorphic, filaments white or purplish, glandular on the lower half, pedoconnective 0.5 mm long, purplish, glandular, ventral appendage whitish, slightly bilobate, apex rounded, glandular, anthers cream; style sparse setose on the lower half. Capsules ovate, brownish or cream.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, 1800 m, 27 March 1957 (fl., fr.), *E. Pereira & Pabst 2675* (RB!); idem, 25 May 1970 (fl., fr.), *P. Ochido et al. s.n.* (RFA 11928!, US 2734093-online image!); idem, ca. 40 km E. of Belo Horizonte, near BR-31, ca. 1,800 m, 16 January 1971 (fl.), *H.S. Irwin et al. 30525* (NL, NY, US-online images!); idem, 28 December 1975 (fl., fr.), *M.B. Ferreira 5615* (HUFU!); Caeté, Serra da Piedade, 20 October 1973 (fl., fr.), *C. Koczicki 301* (MBM!, US-online image!); idem, km 1-5 on road to top of Serra (ca. 19°55'S, 43°45'W), 1,200-1,700 m, 02 February 1982 (fl.), *L.R. Landrum 4250* (MBM!, NY-online image!); idem, estação de coleta 3, 19°49'S, 43°40'W, 1670 m, 28 April 1985 (fl., fr.), *L. Cunha et al. s.n.* (BHCB 5848!); idem, estação de coleta, 19°49'S, 43°40'W, 1,620 m, 28 April 1985 (fl., fr.), *E.C. Assis et al. 1673* (HUFU!, MBM-online image!); idem, primeira estação de coleta, 19°49'S, 43°40'W, 1,620 m, 28 April 1985 (fl., fr.), *L.H. Mundim et al. 1745* (BHCB!); idem, pé da serra, 19°49'S, 43°40'W, 1,720 m, 29 June 1985 (fr.), *J. Siqueira et al. 1866* (BHCB!, HUFU!, UB!); idem, 19°49'25.5"S, 43°40'18.7"W, 1,640 m, 11 January 1996 (fl., fr.), *V.C. Souza et al. 10115* (HUFU!, SJRP!, ESA-online image!); idem, próximo ao campo aeronáutica, 14 May 2012 (fl., fr.), *M.J.R. Rocha et al. 666* (RB-online image!); idem,

19°49'22"S, 43°40'29"W, 1,697 m, 14 May 2013 (fr.), *M.F.V. Starling s.n.* (HPUC-MG 2479!); idem, 19°49'22"S, 43°40'29"W, 1,697 m, 09 May 2016 (fl., fr.), *A. Aquino 032-16* (HPUC-MG 4554!), *A. Aquino 033-16* (HPUC-MG 4555!); idem, 19°49'22"S, 43°40'29"W, 1,697 m, 16 March 2017 (fl.), *A.S.C. João 3* (HPUC-MG 5362!); idem, 19°49'22"S, 43°40'29"W, 1,697 m, 16 March 2017 (fl., fr.), *T.P.S. Matos s.n.* (HPUC-MG 4937!).

Pleroma heteromallum is endemic to eastern Brazil, in Alagoas, Bahia, Ceará, Espírito Santo, Goiás, Minas Gerais, Paraíba, Pernambuco, Rio de Janeiro, Rio Grande do Norte, and São Paulo states (Guimarães 2023). In the Serra da Piedade occurs in *campo rupestre ferruginoso* on grassy fields, rock outcrops, and iron-rich substrates. Collected with flowers in January to May, October, and December and fruits in January, March to June, October, and December. *Pleroma heteromallum* resembles *P. semidecandrum* Triana in having a sericeous-setose indumentum covering the young branches, adaxial surface of the leaf blade, bracteoles, hypanthium, and sepals. Both species have an ovate to lanceolate leaf blade, bullate on the adaxial surface and foveolate on the abaxial surface, and lanceolate sepals. However, *P. heteromallum* differs in having a quadrangular and winged branches (*vs.* slightly quadrangular, not winged in *P. semidecandrum*), leaf blade cordate at the base (*vs.* cuneate or sometimes obtuse), villous-setose indumentum on abaxial surface (Fig. 6D) (*vs.* sericeous-setose), pedicellate flowers arranged in thyrse (Fig. 5D) (*vs.* sessile flowers in simple dichasium or solitary), lanceolate bracteoles (*vs.* widely ovate), and short and glandular pedoconnective, 0.5 mm long (*vs.* glabrous, 1.3–5.3 mm long).

7.5. *Pleroma semidecandrum* (Schrank & Mart. ex De Candolle 1828: 129) Triana (1871: 41). Subshrubs or shrubs, 1–1.5 m tall. Branches slightly quadrangular, not winged, brownish, young branches reddish in fresh material; indumentum of young branches, leaf blade, bracteoles, hypanthium, and sepals sericeous-setose, old branches glabrescent, peeling off with

age. Leaves petiole 4–12 mm long, ascending or horizontal; leaf blade 2.5–7.5 × 1.5–3.5 cm, chartaceous, adaxial surface slightly bullate, abaxial surface foveolate, discolor, adaxial surface darker, ovate-lanceolate, ovate-elliptic or lanceolate, apex acute or obtuse, base cuneate or sometimes obtuse, margin entire, not revolute, ciliate, indumentum denser on the abaxial surface. Inflorescences in simple dichasium or reduced to solitary flowers, bracts absent, bracteoles very widely ovate, caducous in flower bud or rarely persistent in flowers. Flowers sessile; hypanthium cylindric; sepals lanceolate, apex acute, margin ciliate; petals apex obtuse; stamens dimorphic, filaments white with purplish apex, glandular on the lower half, pedoconnective purplish, glabrous, ventral appendage whitish, biauriculate, apex rounded, glabrous, anthers purplish; antesealous stamens 5, pedoconnective 4.5–5.5 mm long; antepetalous stamens 5, pedoconnective 1.3–1.8 mm long; style dense setose on the lower half. Capsules globose, cream.

Specimens examined:—BRAZIL. Minas Gerais: Serra da Piedade, *s.d.* (fl.), *s.c.* (P05315992-online image!); idem, 18 April 1985 (fl.), *L. Fiedler & T.S.M. Grandi 637* (BHCB!); Caeté, Serra da Piedade, 28 June 1933 (fr.), *H.L.M. Barreto 6890* (RB!, US-online image!); idem, 15 April 1985 (fl., fr.), *J. Siqueira et al. 1640* (BHCB!, HUFU!, SPF!); idem, 16 April 1985 (fl.), *T.S.M. Grandi et al. s.n.* (FCAB 3728!, HUFU 82078!); idem, alto da serra, 20°40'S, 43°40'W, ca. 1600 m, 20 July 1987 (fl., fr.), *J.R. Pirani et al. 11155* (MBM!, SPF!); idem, 19 September 1993 (fr.), *J.P. Lemos Filho s.n.* (BHCB 22500!); idem, 19°49'22"S, 43°40'29"W, 1697 m, 09 May 2016 (fr.), *A. Aquino 028-16* (HPUC-MG 4550!).

Pleroma semidecandrum occurs in Minas Gerais, Rio de Janeiro, and São Paulo (Guimarães 2023). In the Serra da Piedade occurs in *campo rupestre ferruginoso*, sometimes on humid soil. Collected with flowers in April and July and fruits from April to July and September. *Pleroma semidecandrum* is recognized by the sericeous-setose indumentum covering the young branches, both surfaces of the leaf blade, bracteoles, hypanthium and sepals, sessile flowers

solitary or arranged in simple dichasium, purple petals, and stamens with the longest pedoconnective (4.5–5.5 mm long) among *Pleroma* species in the Serra da Piedade. The differences between *P. semidecandrum* and *P. heteromallum* were noted under *P. heteromallum*.

8. *Rhynchanthera* De Candole (1828: 106).

Shrubs. Branches not vernicose, not glutinous, young branches slightly terete, old branches terete; young and old branches, leaf blade, hypanthium and sepals covered with indumentum or glabrous. Leaves petiolate, ascending or horizontal, not imbricate, not conduplicate, not arranged in brachyblast, not fasciculate; leaf blade of variable shapes, with the same size in main and lateral branches, 3–7-veined, basal. Inflorescences in thyrses with distally monochasium, terminal, bracts present, bracteoles absent. Flowers 5-merous, pedicellate; hypanthium campanulate, slightly 10-costate, not vernicose; sepals linear-triangular, apex acuminate; petals lilac or purple, obovate, apex acuminate, margin entire, glabrous or sparsely glandular; stamens 5, fertile, dimorphic, one longer than the others, glabrous, filaments purple, connective purple, not thickened, pedoconnective prolonged below the thecae, purple, dorsal appendage absent, ventral appendage inconspicuous, anthers concolor, cream, oblong, apex rostrate, tetrasporangiate, theca not prolonged below the connective, staminodes 5; ovary 3–4-locular, superior, apex glabrous; style purple, glabrous, stigma punctiform. Capsules globose, brownish; seeds reniform.

Rhynchanthera comprises 15 species, occurring in southern Mexico, Central America, and South America (Renner 1990). Eleven species occur in Brazil (Goldenberg *et al.* 2015; Versiane *et al.* 2023) of which, five species are found in Minas Gerais (Versiane *et al.* 2023). Only *R. grandiflora* occurs in the Serra da Piedade.

8.1. *Rhynchanthera grandiflora* (Aublet 1775: 414) De Candolle (1828: 107).

Shrubs, ca. 0.7 m tall. Branches brownish; indumentum of young branches, leaf blade, hypanthium and sepals hirtellous-glandular, old branches glabrescent. Leaves petiole 1.5–7.5 mm long; leaf blade 1–5.5 × 0.5–2 cm, chartaceous, smooth on the both surfaces, discolor, adaxial surface darker, lanceolate or ovate-lanceolate, apex acute, base rounded or cordate, margin serrulate, not revolute, glandular-ciliate, 3–7-veined, basal. Antesepalous stamens 5, beak purple; antepetalous staminodes 5, cream.

Specimen examined:—BRAZIL. Minas Gerais: Caeté, Estrada para a Piedade, 16 June 1933 (fl., fr.), *H.L.M. Barreto 6934* (BHCB!).

Rhynchanthera grandiflora is a widely distributed species from Mexico to the southeast of Brazil occurring in open humid vegetation (Renner 1990). This species is known in the Serra da Piedade from a single collection made in *cerrado*, on humid area, near to grotto, about 90 years ago. Collected with flowers and fruits in June. *Rhynchanthera grandiflora* is recognized by the hirtellous-glandular indumentum covering the young branches, leaf blade, hypanthium and sepals, petiolate leaf, lanceolate or ovate-lanceolate blade. In addition, it has haplostemonous flowers with five fertile dimorphic stamens, one larger than the other, and five staminodes (Fig. 5E).

Conclusion

The Iron Quadrangle territory is historically marked by the exploitation of its natural resources (Crespo 2015). The landscapes in this mineral-rich region can be symbols of degradation, given the intense exploratory anthropic activity that, over the years, has promoted social, cultural, and environmental damage (Crespo 2015; Sampaio & Monteiro 2016). Among Brazil's 100 largest exploration mines, 30 are in the Iron Quadrangle, and six of the ten largest mining municipalities (Crespo 2015). Even though the Iron Quadrangle is an area of special biological

importance for the biodiversity conservation in Minas Gerais (Drummond *et al.* 2005), and many of its mountains are already protected as environmental and cultural heritage (Crespo 2015), mining is still causing negative impacts. Then, discussions regarding the legality and continuity of such exploratory activity, especially in the mountain complex of the Serra do Curral and Serra da Piedade, have been raised in the Brazilian political sphere (see Girundi 2019; Nascimento 2021; Sanches 2021; ALMG 2022; Utida 2022; Augusto 2023; EM 2023; Pimenta 2023).

Floristic studies are essential to improve knowledge about the morphological variance and geographic distribution of the species, as well as denounce environmental crimes that are impacting and making it difficult to preserve the Brazilian mountains. Considering the richness of Melastomataceae, the quality of the collections and the current threats in the Serra da Piedade, we emphasize that it is imperative that new field expeditions be carried out with the objective of sampling the diversity of its flora. It is essential to assess the degree of conservation of this mountain range given the damage suffered due to the different exploratory activities in this location.

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