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Original Paper

Acanthaceae in the Serra Negra, Minas Gerais, Brazil

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Abstract

We provide the floristic treatment for Acanthaceae in the Serra Negra, a region belonging to the Mantiqueira Range. We recorded nine genera and 16 species of Acanthaceae: *Aphelandra longiflora*, *Hygrophila costata*, *Hypoestes phyllostachya*, *Justicia carnea*, *J. citrina*, *J. dasyclados*, *J. minensis*, *J. serrana*, *Lepidagathis kameyamana*, *Mendoncia puberula*, *M. velloziana*, *Odontonema barleriodes*, *Ruellia brevifolia*, *R. elegans*, *R. macrantha*, and *Staurogyne euryphylla*. They occur naturally in the Atlantic Rainforest and other Brazilian domains, found predominantly in forest environments. Species studied had their distribution area expanded, with new records for the Atlantic Rainforest and for the state of Minas Gerais. Morphological descriptions, identification key, photographs, and the geographic distribution are provided for each species.
Key words: Atlantic Rainforest, *campos rupestres*, flora, Serra da Mantiqueira, taxonomy.

Resumo

Apresentamos o tratamento florístico de Acanthaceae na Serra Negra, região pertencente à Serra da Mantiqueira. Registramos nove gêneros e 16 espécies de Acanthaceae: *Aphelandra longiflora*, *Hygrophila costata*, *Hypoestes phyllostachya*, *Justicia carnea*, *J. dasyclados*, *J. minensis*, *J. serrana* e *J. citrina*, *Lepidagathis kameyamana*, *Mendoncia puberula*, *M. velloziana*, *Odontonema barleriodes*, *Ruellia brevifolia*, *R. elegans*, *R. macrantha* e *Staurogyne euryphylla*. Ocorrem naturalmente na Mata Atlântica e em outros domínios brasileiros, encontradas predominantemente em ambientes florestais. Espécies estudadas tiveram sua área de distribuição ampliada, com novos registros para a Mata Atlântica e para o estado de Minas Gerais. São apresentadas descrições morfológicas das espécies, chave de identificação, fotografias e dados sobre distribuição geográfica.
Palavras-chave: Floresta Atlântica, campos rupestres, flora, Serra da Mantiqueira, taxonomia.

Introduction

The Acanthaceae Juss. are widely distributed, pantropical, and comprise about 240 genera and 4,750 species (McDade *et al.* 2008; Daniel & McDade 2014; Wasshausen & Wood 2004). The family main centers of diversity are in Southeast Asia, Malaysia, India, tropical Africa, Madagascar, Brazil, the Andean region, Mexico, and Central America (Daniel 2000). In Brazil, it is represented by about 48 genera and 498 species, among which five genera and 292 species are endemic (BFG 2015; Braz *et al.* 2020). The family is widely distributed in all Brazilian phytogeographic domains, occurring mainly in forest environments (Vilar *et al.* 2010; Braz *et al.* 2020).

In the state of Minas Gerais, Acanthaceae are represented by 27 genera and 133 species (BFG 2015; Braz *et al.* 2020). Floristic studies concerning the family are restricted to Serra do Cipó (Kameyama 1995), Reserva Florestal da Mata do Paraíso in the municipality of Viçosa (Braz *et al.* 2002), Grão-Mogol (Kameyama 2003), and

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Parque Estadual do Ibitipoca (Martinelli & Mello-Silva 2015). Although some species are included in generic revisions, most of the taxa have only been treated in their original descriptions.

The Serra da Mantiqueira is one of the largest mountain ranges in southeastern Brazil. It is encompassed in the states of Espírito Santo, São Paulo, Rio de Janeiro, and Minas Gerais, where the Atlantic Rainforest has high species richness (fauna and flora), and is recognized as a priority area for biodiversity conservation (Drummond *et al.* 2005). The Serra Negra composes the ecological corridor of the Mantiqueira Complex, which contains highly connected Atlantic Rainforest remnants (Costa & Hermann 2006) and covers about 10,000 hectares (Souza *et al*. 2012). Its vegetation is a mosaic of *campos rupestres* (rocky grasslands), cloud scrub, seasonal semideciduous to perennial forests, and cloud forests, with a flora rich in species and endemism (Menini Neto *et al.* 2009; Souza *et al*. 2012; Salimena *et al*. 2013). The Parque Estadual da Serra Negra da Mantiqueira was created on the 4th of July, 2018, with an extension of 4,203.96 hectares in order to preserve its biodiversity (Minas Gerais 2018).

Between 2003 and 2010, the initial and broader project entitled Floristic Studies in the Serra Negra, Minas Gerais, was conducted by the Universidade Federal de Juiz de Fora, which generated several publications about the flora of the region and to establish the basis for the park creation (Menini Neto *et al.* 2009; Souza *et al*. 2012; Salimena *et al*. 2013). To continue the floristic studies in the Serra Negra, this floristic treatment surveys the taxonomic diversity of Acanthaceae in the region and provides morphological descriptions, an identification key, geographic distribution data, and photographs of the species found.

Material and Methods

The Serra Negra is located in the southern Zona da Mata Mineira, in the municipalities of Lima Duarte, Rio Preto, Santa Bárbara do Monte Verde, and Olaria, within the following coordinates: 21º58'11"S, 43º53'21"W (northern); 22º01'46.4"S, 43º52'31.5"W (southern); 21º58'21.4"S, 43º50'06.5"W (eastern); and 21º58'53"S, 43º56'08"W (western) (Menini Neto *et al.* 2009; Souza *et al*. 2012; Salimena *et al*. 2013). The climate is classified as Cwb (Köppen), humid mesothermic, with a dry and cold winter and a humid and mild summer, and an annual average rainfall of 1,886 mm (Menini Neto *et al*. 2009; Valente *et al*. 2011; Salimena *et al*. 2013).

The collected specimens are housed in the "Leopoldo Krieger" Herbarium (CESJ) (acronym following Thiers, continuously updated). Specimens from other localities (listed under additional specimens examined) were also analyzed to complement the morphological descriptions of some species. The terminology in the descriptions follows Harris & Harris (2001), Stearn (1998), and Gonçalves & Lorenzi (2011) for general vegetative and floral structures, and literature about the family (Ezcurra 1993, 2002; Wasshausen & Wood 2004; Wasshausen 2006). The phytogeographic domains Atlantic Rainforest, Amazon Rainforest, and Central Brazilian Savanna - here denominated *Cerrado* -, as well as their respective vegetation types, follow the classification of Flora do Brasil 2020 (continuously updated). The geographic distribution of species was based on the taxonomic revisions of Flora do Brasil 2020 (continuously updated), with additional specific literature for some species (Kameyama 1995, 2003; Rizzini 1954), and for extra-Brazilian or cultivated species (Lorenzi & Souza 2008; Wasshausen & Wood 2004).

Results and Discussion

Acanthaceae is represented in the Serra Negra by nine genera and 16 species: *Aphelandra longiflora* (Lindl.) Profice, *Hygrophila costata* Nees, *Justicia carnea* Lindl., *J. citrina* (Wawra) Costa-Lima & E.C.O. Chagas, *J. dasyclados* (Nees) Lindau, *J. minensis* Profice, *J. serrana* Kameyama, *Lepidagathis kameyamana* Gnanasek. & Arisdason, *Mendoncia puberula* Mart., *M. velloziana* Mart., *Odontonema barlerioides* (Nee) Kuntze, *Ruellia brevifolia* (Pohl) C. Ezcurra, *R. elegans* Poir., *R. macrantha* Mart. *ex* Nees, *Staurogyne euryphylla* Hossain, and the exotic species *Hypoestes phyllostachya* Baker, which is cultivated and occurs in anthropic areas.

The native species are herbs, shrubs and vines that occur mostly in forest environments in the Atlantic Rainforest and other Brazilian domains, such as the Amazon Rainforest and Cerrado (central Brazilian savanna). They have the following distributions in Brazil: *Aphelandra longiflora*, *Mendoncia puberula*, and *Ruellia brevifolia* are widely distributed in the Amazon Rainforest, Atlantic Rainforest, and Cerrado; *Hygrophila costata* occurs throughout Brazil; *Justicia dasyclados*, *Odontonema barlerioides*, *Ruellia elegans*, and *R. macrantha* occur in the

Cerrado and Atlantic Rainforest and, *J. serrana* that was previously found only in the Cerrado, based on the present study, the distribution is here expanded to include these two domains; *Justicia carnea*, *J. citrina*, *J. minensis*, *Lepidagathis kameyamana*, *Mendoncia velloziana*, and *Staurogyne euryphylla* are endemic to the Atlantic Rainforest. *J. carnea* and *R. brevifolia* are widely cultivated as ornamental plants in South America (and other places around the world) and have been naturalized in different environments (Ezcurra 1989, 2002; Wasshausen & Wood 2004). Besides, *A. longiflora*, *H. costata*, *M. puberula*, and *M. velloziana* have also been recorded in other South American countries (Profice 1988; Ezcurra 1989, 1993, 2002; Wasshausen & Wood 2004; Profice & Andreata 2011). The other nine species are endemic to Brazil.

Based on other studies in the state of Minas Gerais, the widely distributed *Mendoncia velloziana* and *Ruellia brevifolia* are the only species found in both the Serra Negra and Reserva Florestal Mata do Paraíso, a semideciduous forest in the Zona da Mata of the state (Braz *et al.* 2002). Among the Acanthaceae species in Parque Estadual do Ibitipoca (Martinelli & Mello-Silva 2015), which is close to the Serra Negra (near 20 km), only *Justicia dasyclados* occurs in both areas. In the Cerrado domain, the Serra do Cipó shares *J. serrana*, *R. brevifolia*, *R. elegans*, and *R. macrantha* (Kameyama 1995), while Serra do Grão-Mogol, in the northern Espinhaço Range (Kameyama 2003), shares only *J. serrana*.

As new records, the distribution of *Justicia serrana* is expanded to the Atlantic Rainforest domain, that of *Staurogyne euryphylla* was expanded to Minas Gerais, and that of *J. minensis* is widened.

Taxonomic treatment

Acanthaceae Juss.

Prostrate or erect herbs, subshrubs, shrubs, or vines. Leaves simple, opposite, decussate, rarely 3 whorled, exstipulate, margins entire to crenate, commonly with cystoliths. Inflorescence terminal and/or axillary, in cymes, thyrses, racemes, spikes, or solitary flowers; 1 bract and 2 bracteoles per flower, bract and bracteoles leaf-like or petaloid, bracteoles sometimes enclosing the corolla tube. Flowers sessile to petiolate, bisexual, 5-merous; calyx (4–)5-lobed, equal, unequal or strongly reduced; corolla gamopetalous, zygomorphic, bilabiate, tubular, infundibuliform or hypocrateriform, the basal tube and throat distinct; stamens 2 or 4, epipetalous, staminodes 1–2 or absent, anthers free, 1–2-thecous, muticous or basally spurred; nectar disk annular around the ovary base, ovary superior, 2-locular, ovules 2–12 superposed per locule, rarely one locule stunted and 1-ovulate, style filiform, stigma 2-lobed. Fruit a loculicidal, 2-valved capsule, with a solid and sterile basal portion and explosive dehiscence, generally with funicles modified into hooks that are persistent on the fruits (retinacula), fruit rarely drupaceous; seeds 2–24, flattened or orbicular.

Key to the Acanthaceae species in the Serra Negra, Minas Gerais, Brazil

1. Vines; calyx reduced; fruit drupaceous.
   2. Corolla yellow; stigma fimbriate, with unequal lobes ..... 10. *Mendoncia puberula*
   2’. Corolla red; stigma not fimbriate, with equal lobes ..... 11. *Mendoncia velloziana*

1’. Herbs to shrubs; calyx with well-developed segments; fruit capsule.
   3. Calyx lobes strongly unequal, posterior one elliptical, lateral two subulate, and anterior two linear, lanceolate, or obovate-lanceolate.
      4. Stamens 4; fruit without retinacula ..... 16. *Staurogyne euryphylla*
      4’. Stamens 2; fruit with retinacula ..... 9. *Lepidagathis kameyamana*
   3’. Calyx lobes equal to subequal.
      5. Leaves with pink spots; anthers with only one functional theca..... ..... 3. *Hypoestes phyllostachya*
      5’. Leaves without pink spots; anthers 2-thecous, the two thecae functional or not, or 1-thecous.
         6. Flowers in axillary, constrained, and congested cymes ..... 2. *Hygrophila costata*
         6’. Flowers in other types of axillary or terminal inflorescences.
            7. Corolla bilabiate.
               8. Inflorescence terminal.
                  9. Inflorescence a thyrse; anthers muticous.

10. Bracts linear-lanceolate, lanuginose; corolla yellow ..... 5. *Justicia citrina*
10'. Bracts ovate, glabrous; corolla pink ..... 4. *Justicia carnea*
9'. Inflorescence a spike; anthers with spurred basal thecae ..... 7. *Justicia minensis*
8'. Inflorescence axillary.
11. Corolla purple with white macula on the throat; thecae unequal ..... 6. *Justicia dasyclados*
11'. Corolla red, without macula; thecae equal ..... 8. *Justicia serrana*
7'. Corolla tubular, infundibuliform, or sub-hypocrateriform.
12. Stamens 2 ..... 12. *Odontonema barlerioides*
12'. Stamens 4.
13. Stamens isodynamous; anthers adpressed, 1-thecous; stigma entire ..... 1. *Aphelandra longiflora*
13'. Stamens didynamous; anthers free, 2-thecous; stigma 2-lobed.
14. Flowers solitary, axillary; corolla pink, infundibuliform ..... 15. *Ruellia macrantha*
14'. Flowers in cymes, terminal or axillary; corolla red, gibbous or sub-hypocrateriform.
15. Inflorescences paniculiform cymes, with a pair of lateral and long-pedunculate axes with 2–4 flowers; corolla sub-hypocrateriform; anthers muticous ..... 14. *Ruellia elegans*
15'. Inflorescences multiflorous cymes, highly branched, with short-pedunculate axes; corolla gibbous; anthers basally spurred ..... 13. *Ruellia brevifolia*

1. *Aphelandra longiflora* (Lindl.) Profice, Bradea 10: 18. 2004. Fig. 1a

Shrubs, 0.6–2 m tall. Stems cylindrical, glabrate, sericeous at the extremities. Petiole 1–2 cm long, sericeous, trichomes glandular, sessile, sparse; leaf blades discolor, 7–17(–22) × 1.5–4.5 cm, narrowly elliptical, apex attenuate, base decurrent, strigose on both surfaces, trichomes glandular, sessile, sparse on the adaxial surface, restricted to the veins on the abaxial surface, cystoliths absent. Inflorescence a terminal, panicle of spikes, 4.5–10(–14) cm long; bracts deltoid, 2–5 × 2–4 mm, sericeous, trichomes glandular, sessile, sparse, bracteoles ovate, 2–4 × 1–2 mm, imbricate, sericeous, trichomes glandular, sessile, sparse. Flowers sessile to pedicellate, pedicels 2–4 mm long; calyx 4–7 mm long, lobes linear, hirsute, trichomes glandular, sessile, sparse; corolla tubular, red, 2–4 cm long, gamopetalous portion 2–3 × 0.2–0.5 cm, lobes 2–4 × 2–3 mm, externally sericeous, glabrate, trichomes glandular, sessile and subsessile, sparse; stamens 4, homodynamous, included, 2.4 cm long, anthers adpressed, 1-thecous, glabrous, filament glabrous; ovary oval, 3 mm long, ovules 2 per locule, style 2 cm long, hirsute, stigma entire, 0.5 mm long, glabrous. Fruit not seen.

Specimens examined: Lima Duarte, estrada Santa Bárbara do Monte Verde para Monte Verde de Cima, 8.VI.2012, fl., *V.R. Ferrari et al. 9* (CESJ). Rio Preto, Sumidouro, 28.IV.2012, fl., *V.R. Ferrari 3 & 4* (CESJ); vilarejo do Funil, cânion do Funil, 29.IV.2007, fl., *L. Menini Neto et al. 395* (CESJ); 21.V.2004, fl., *F.R.G. Salimena et al. 1342* (CESJ).

Aphelandra longiflora is characterized by the inflorescence in a panicle of spikes, red, tubular corolla, and 1-thecous, adpressed anthers. In Brazil, it occurs in Amazon Rainforest, Atlantic Rainforest and Cerrado, in the states of Acre, Bahia, Pará, Rondônia, and all the states in the Central-west, Southeast and South Regions. In the Serra Negra, it is known to occur in ravine forest, humid forest, humid environments of semideciduous forests, and *campo rupestre* on roadsides; it has been collected with flowers from April to June.

2. *Hygrophila costata* Nees & T. Nees, Pl. Hort. Bonn. Icon. 2: 7-8. 1824.

Herbs, about 1 m tall. Stems tetragonal, sulcate, constricted above the nodes, sparsely pilose. Leaves subsessile to short-petiolate, petiole up to 25 mm long, pilose; leaf blade 1.4–8.5 × 0.5–2.8 cm, elliptical, oblong-elliptical, or elliptical-ovate, apex acuminate, base decurrent, margins slightly crenate, ciliate, adaxial surface pilose, cystoliths present. Inflorescence a congested cyme, containing 2–14 flowers, axillary at every node, subsessile, peduncle up to 1 mm long; bracts and bracteoles lanceolate, 0.5–3 × 5–18 mm, pilose, ciliate. Flowers sessile to subsessile, pedicel up to 1 mm long; calyx 6–12 mm long, merged up to 2 mm, lobes triangular-lanceolate, pilose, the upper lobe slightly longer than the others; corolla bilabiate,

white, 15–18 mm long, externally pubescent, gamopetalous portion 1.5–2 × 10–13 mm, upper lip 3–4 × 5 mm, lower lip 6–7 × 5 mm; stamens 4, didynamous, subexserted, the longer pair 7 mm long, the shorter pair 6 mm long, filaments pilose on the basal 2 mm, anthers oblong, muticous, glabrous; ovary elliptical, 4 mm long, pubescent, ovules 9 per locule, style 11 mm long, pilose, stigma slightly bilobed. Fruit a fusiform capsule, short-stipitate, 11–13 × 1 mm, glabrous, retinacula present; seeds

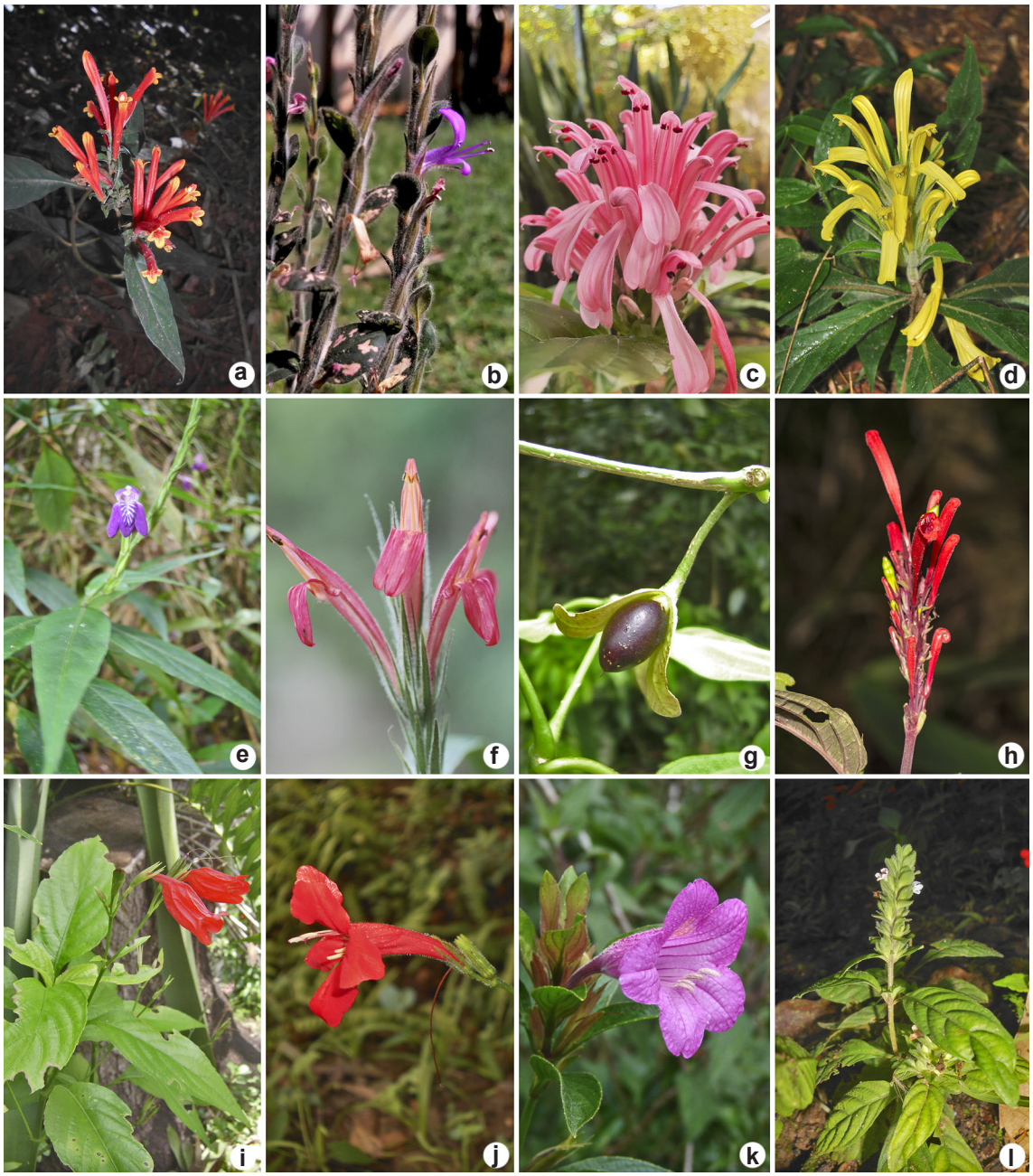

Figure 1 – a-l. Acanthaceae in the Serra Negra, Minas Gerais, Brazil – a. *Aphelandra longiflora*; b. *Hypoestes phyllostachya*; c. *Justicia carnea*; d. *J. citrina*; e. *J. dasyclados*; f. *J. minensis*; g. *Mendoncia velloziana*; h. *Odontonema barlerioides*; i. *Ruellia brevifolia*; j. *R. elegans*; k. *R. macrantha*; l. *Staurogyne euryphylla*. (photos: a, b, i, j, l. I.H.F. Azevedo; c, g. D.M. Braz; d, h, k. L. Menini Neto; e. F.S. Souza; f. P.H. Nobre).

16–18, suborbicular, lanate, trichomes glandular, sessile.
Specimen examined: Rio Preto, RPPN, São Lourenço do Funil, 18.IV.2014, fl., *M.C.A. Mota et al. 2* (CESJ).

Hygrophila costata is easily recognized by the flowers on congested cymes in the leaf axils along the stem, bilabiate corolla, didynamous stamens with muticous anthers, and capsules with over 15 seeds. It occurs in highly humid and even flooded environments (Wasshausen & Wood 2004) in ombrophilous and gallery forests in most parts of Brazil. In the Serra Negra, it has been found in *campo rupestre* with wet soil, in anthropic areas; it has been collected with flowers in April.

3. *Hypoestes phyllostachya* Baker, Journal of the Linnean Society, Botany 22: 511. 1887. Fig. 1b

Herbs, about 30 cm tall. Stems subtetragonal, constricted above the nodes, strigose at the extremities, glabrate below, trichomes glandular, sessile to stalked, setaceous at the nodes. Petiole 0.5–2.5 cm long, lanate, trichomes glandular, sessile to stalked; leaf blade with pink spots, 1.5–4 × 1–2 cm, ovate, apex acute, base rounded, strigose on both surfaces, adaxial surface with sparse, sessile, eglandular trichomes, abaxial surface with sessile, glandular trichomes restricted to the veins, cystoliths present. Inflorescence an axillary spike, 4.5–10 cm long; bracts imbricate, 1–1.5 × 0.1–0.2 cm, lanceolate, strigose, trichomes glandular, sessile to stalked, bracteoles imbricate, 1–1.5 × 0.1–0.2 cm, lanceolate, strigose. Flowers sessile; calyx 0.7–1.5 cm long, lobes lanceolate, strigose; corolla bilabiate, resupinate, purple, 1–2.5 cm long, upper lip 0.8–1 × 0.3–0.5 cm, lower lip 0.5–1 × 0.1–0.2 cm, gamopetalous portion 0.5–1 × 0.2–0.5 cm, externally villous; stamens 2, 1.8 cm long, one functional theca per anther, glabrous, filament glabrous; ovary oval-elliptical, 2 mm long, glabrous, ovules 2 per locule, style 1.9 cm long, glabrous, stigma bilobed, lobes equal, 1 mm long. Fruit a stipitate capsule, 0.5–1.5 × 0.1–0.3 cm, tomentulose, retinacula present; seeds 4, suborbicular, papillate.
Specimens examined: Olaria, estrada Monte Verde de Cima, 8.VI.2012, fl. and fr., *V.R. Ferrari et al. 10* (CESJ); Rio Preto, estrada do Vilarejo do Funil, 21.V.2004, fl., *K. Antunes et al. 127* (CESJ).

Hypoestes phyllostachya is characterized by the leaves with pink spots, purple flowers, and anthers with only one functional theca. It is native to Madagascar but widely distributed in Brazil and subspontaneous (Lorenzi & Souza 2008). In the Serra Negra, it has been found on roadsides; it has been collected with flowers from May to June and with fruits in June. This species is a popular ornamental due to its purple flowers and maculate leaves (Lorenzi & Souza 2008).

4. *Justicia carnea* Lindl., Edwards's Bot. Reg. 17: t. 1397. 1831. Fig. 1c

Shrubs, about 1.5 m tall. Stems quadrangular, striated, lanuginose at the extremities, glabrate below, trichomes glandular, sessile and subsessile. Petiole 3.5–9 cm long, strigose, trichomes glandular, sessile, sparse; leaf blade 20–25 × 7.5–11.5 cm, ovate, apex acuminate, base rounded, decurrent, strigose on both surfaces, trichomes glandular, sessile, sparse on adaxial surface, restricted to the veins on the abaxial surface, cystoliths present. Inflorescence a terminal thyrse, 9–11 cm long; bracts ovate, 1–2 × 0.5–1.5 cm, glabrous, bracteoles lanceolate, 1–1.5 × 0.3–0.5 cm, glabrous. Flowers sessile to subsessile; calyx 0.5–1 cm long, lobes lanceolate, strigose, trichomes glandular, sessile, sparse; corolla bilabiate, pink, 2–5 cm long, upper lip 1.5–2 × 0.3–0.5 cm, lower lip 1–1.5 × 0.2–0.3 cm, gamopetalous portion 1.5–2 × 0.5–0.7 cm, trichomes on the external surface glandular, sessile to stalked; stamens 2, 4 cm long, glabrous, anthers muticous, thecae unequal; ovary ovoid, 2 mm long, glabrous, style 2.7 cm long, basally fimbriate, stigma 0.5 mm. Fruit not seen.
Specimen examined: Rio Preto, RPPN Mato Limpo, Gruta dos Macacos, 6.X.2007, fl., *F.R.G. Salimena & P.H. Nobre 2483* (CESJ).

Justicia carnea is characterized by having quadrangular and striated stems, terminal thyrses with sessile to subsessile flowers, and a showy pink corolla. It is cultivated for its dense and large inflorescences with numerous pink flowers that are often visited by hummingbirds (Lorenzi & Souza 2008). In Brazil, it is distributed in the Atlantic Rainforest throughout the South and Southeast Regions and in the state of Bahia. In the Serra Negra, it is known to occur along watercourses inside forests; it has been collected with flowers in October.

5. *Justicia citrina* (Wawra) Costa-Lima & E.C.O. Chagas, Phytotaxa 393: 127. 2019. Fig. 1d

Shrubs, 0.7–3 m tall. Stems quadrangular, constricted above the nodes, tomentose at the extremities, glabrate below. Leaves opposite or 3 whorled; petiole 0.5–2.5 cm long, tomentose, trichomes glandular, subsessile, sparse; leaf blade

9–17 × 2–6 cm, lanceolate to elliptical, apex acuminate, base attenuate, lanuginose on both surfaces, trichomes glandular, sessile, sparse, cystoliths present. Inflorescence a terminal, dense thyrse, 6.5–9 cm long; bracts linear-lanceolate, 3–5 × 0.3–1 cm, lanuginose, trichomes glandular, sessile to stalked, bracteoles subulate, 3–4 × 0.5–0.7 cm, lanuginose, trichomes glandular, subsessile to stalked. Flowers subsessile to pedicellate, pedicel 1.5 cm long; calyx 1–3 cm long, lobes lanceolate, lanuginose, trichomes glandular, stalked; corolla bilabiate, yellow, 3–6 cm long, upper lip 2–3.5 × 0.3–0.5 cm, lower lip 2–2.5 × 0.5–1 cm, gamopetalous portion 2–3 × 0.3–0.5 cm, externally villous, trichomes glandular, sessile, sparse; stamens 2, 2.5 cm long, glabrous, anthers muticous, thecae slightly superposed; ovary fusiform to sub-ovoid, 3 mm long, style glabrous, 5.2 cm long, stigma 0.5 mm long. Fruit a subcylindrical capsule, 1–1.5 × 0.1–0.3 cm, villous, retinacula present; seeds 4, discoid, glandular, trichomes glandular, sessile, sparse.

Specimens examined: Lima Duarte, Fazenda Serra Negra, trilha em direção à gruta da Bromélia, 9.V.2008, fl., *L. Menini Neto & N.L. Abreu 577* (CESJ); Fazenda Serra Negra, 20.XI.2009, fl., *A.C. Mezzonato et al. 50* (CESJ); Monte Verde de Cima, estrada para Santa Bárbara do Monte Verde, 15.X.2011, fl., *F.R.G. Salimena & P.H. Nobre 2842* (CESJ). Olaria, Sítio do Degredo, 1.XII.2012, fl., *F.R.G. Salimena & P.H. Nobre 3557* (CESJ); Rio Preto, Cânion do Funil, 29.IX.2012, fl., *L.L. Justino et al. 12* (CESJ); Fazenda da Tiririca, Serra da Caveira Danta, 3.XI.2003, fl., *F.R. Salimena & P.H. Nobre 1132* (CESJ); Mata da Dona Lúcia, 12.X.2007, fr., *S.A. Roman et al. 5* (CESJ); RPPN Mato Limpo, Mata da Cachoeira, 6.X.2007, fl., *F.R.G. Salimena 2498 & P.H. Nobre* (CESJ); Serra do Funil, 3.X.1987, fl., *F.R. Salimena & M.C. Brugger 168* (CESJ); trilha para Água Amarela, 29.IX.2012, fl., *G.A Souza et al. 12* (CESJ); trilha para Cachoeira do Marciano, 30.VIII.2008, fl., *C.N. Matozinhos et al. 408* (CESJ).

Justicia citrina is characterized by the terminal, dense inflorescence, with linear-lanceolate, lanuginose, green bracts, and flowers with a yellow to greenish-yellow corolla. *Justicia riparia* Kameyama, which also occurs in Minas Gerais, has flowers with a yellow corolla, but it differs from *J. citrina* by the red, oblong-lanceolate bracts and bracteoles. *Justicia citrina* is similar to *J. minensis* by the terminal inflorescence and shape of the bracts, bracteoles and calyx, but differs from the latter by the yellow corolla and muticous anthers with the two thecae separated by the connective. It is endemic to Brazil and known from the states of Rio de Janeiro and Minas Gerais. In the Serra Negra, it has been found on the edge and inside of humid and riverine forests; it has been collected with flowers in March, May, October, and November and with fruits in October.

6. *Justicia dasyclados* (Nees) Lindau, Nat. Pflanzenfam. 4: 350. 1895. Fig. 1e

Shrubs, about 1 m tall. Stems quadrangular, strigose at the extremities, glabrate below, trichomes glandular, sessile, sparse. Petiole 0.5–1 cm long, strigose, trichomes glandular, sessile, sparse; leaf blade 5–11 × 1–3 cm, lanceolate, apex cuneate, base decurrent, strigose on both surfaces, trichomes glandular, sessile, sparse, cystoliths present. Inflorescence an axillary spike, 4–7 cm long; bracts lanceolate, 3–8 × 1 mm, imbricate, strigose, trichomes glandular, sessile, sparse, bracteoles lanceolate, 3–5 × 0.5–1 mm long, imbricate, strigose, trichomes glandular, sparse. Flowers sessile to subsessile; calyx 0.7–1 cm long, lobes lanceolate, strigose, trichomes glandular, sessile, sparse; corolla bilabiate, purple with white macula on the throat, 2–2.5 cm long, upper lip 3–5 × 2–5 mm, lower lip 5–7 × 2–7 mm, gamopetalous portion 1–1.5 × 0.1–0.4 cm, externally with glandular, sessile to stalked trichomes; stamens 2, 1 cm long, anthers muticous, thecae unequal, larger theca 1 mm long, smaller theca 0.5 mm long; ovary cylindrical, 0.2 cm long, glabrous, style 2 cm long, glabrous, stigma 0.1 mm long. Fruit not seen.

Specimen examined: Lima Duarte, RPPN Fazenda Serra Negra, próximo à Cachoeira da Borboleta Azul, 5.IV.2009, fl, *J.A. Oliveira et al. 48* (CESJ).

Justicia dasyclados is characterized by having a purple corolla with white macula and anthers with unequal thecae. It occurs in Minas Gerais and São Paulo states, in the Atlantic Rainforest and Cerrado domains. In the Serra Negra, it has been found in riverine forests; it has been collected with flowers in April.

7. *Justicia minensis* Profice, Rodriguésia 61 (Supl.): S87. 2010. Fig. 1f

Herbs to subshrubs, about 50 cm tall. Stems cylindrical, constricted above the nodes, striate, tomentose at the extremities, glabrate below, trichomes glandular, sessile, sparse. Leaves opposite or 3 whorled; petiole 0.3–1 cm long, tomentose, trichomes glandular, sessile, sparse; leaf blades 3–19 × 0.5–2.5 cm, lanceolate, apex attenuate, base acute, adaxial surface reddish, strigose on both surfaces, trichomes glandular,

sessile, sparse on the adaxial surface, restricted to the veins on the abaxial surface. Inflorescence a terminal spike, rarely in the terminal axils, 8–10 cm long; bracts lanceolate, 1.5–3 × 0.1–0.4 cm, villous, trichomes glandular, sessile to stalked, bracteoles lanceolate, 1–2 × 0.1–0.3 cm, villous, trichomes glandular, sessile to stalked. Flowers sessile to subsessile; calyx 1–2 cm long, lobes lanceolate, hispidulous, trichomes glandular, sessile to stalked; corolla bilabiate, red, 4.5–5.5 cm long, gamopetalous portion 4–5 × 0.5–0.8 cm, upper lip 2–3 × 0.3–0.5 cm, lower lip 1–2 × 0.5–1 cm, externally villous, trichomes glandular, sessile; stamens 2, 5 cm long, filament villous, thecae inserted at different levels, villous, the lower theca basally spurred; ovary ovoid, 0.3 cm long, strigose, style 4.5 cm long, strigose, trichomes glandular, sessile, sparse, stigma 5 mm long. Fruit not seen. **Specimens examined**: Olaria, Serrinha, Sítio do Rinaldo Degredo, poços do Sr. Altair, 22.VIII.2009, fl., *J.H.C. Ribeiro et al. 203* (CESJ); Sítio do Degredo, 1.XII.2012, fl., *F.R.G. Salimena & P.H. Nobre 3552* (CESJ).

Justicia minensis is characterized by the lanceolate, commonly whorled leaves, red corolla, and anthers with a basally spurred lower theca. Its occurrence area overlaps with *J. citrina*, which is morphologically similar by the terminal inflorescence and bract, bracteole and calyx shape, but differs by the red corolla and basally spurred anthers, while *J. citrina* has a yellow corolla and muticous anthers. *Justicia minensis* is endemic to Brazil and restricted to the states of Rio de Janeiro (Rizzini 1954) and Minas Gerais. In the Serra Negra, it is known to occur in *campo rupestre* and hillside forest; it has been collected with flowers in August and December.

8. *Justicia serrana* Kameyama, Bol. Bot. Univ. São Paulo 14: 201. 1995.

Scandent shrubs. Stems cylindrical, lanuginose to glabrate, trichomes glandular, sessile, sparse. Petiole 5–8 cm long, lanuginose, trichomes glandular, sessile, sparse; leaf blade 2.5–5 × 1.8–3 cm, ovate, apex acute, base rounded, lanuginose to strigose on both surfaces, trichomes glandular, sessile, sparse on the adaxial surface, restricted to the veins on the abaxial surface, cystoliths present. Inflorescence an axillary spike, 2–4.5 cm long; bracts imbricate, linear-lanceolate, 3–5 × 0.7–2 mm, strigose, trichomes glandular, sessile, sparse, bracteoles linear, 3–4 × 0.5–1 mm, strigose, trichomes glandular, sessile, sparse. Flowers sessile to subsessile; calyx 0.5–1 cm long, lobes lanceolate, villous to hirsute, trichomes glandular, sessile, sparse; corolla bilabiate, red, 1.7–4 cm long, gamopetalous portion 0.7–1.5 × 0.3–0.5 cm, upper lip 0.5–2 × 0.2–0.4 cm, lower lip 0.5–1.5 × 0.1–0.2 cm, externally hispidulous to hirsute, trichomes glandular, sessile to stalked; stamens 2, 1.3–3.3 cm long, glabrous, anthers muticous, thecae inserted at different levels, superposed; ovary subcylindrical to ovoid, 2 mm long, glabrous, style 1.5–3 cm long, basally hispidulous, stigma 0.5 mm long. Fruit a stipitate capsule, 0.5–2 × 0.2–0.4 cm, strigose, trichomes glandular, sessile, sparse, retinacula present; seeds 4, discoid, orbicular, trichomes glandular, sessile, sparse.

Specimens examined: Lima Duarte, Fazenda Serra Negra, Cachoeira da Mamãe Oxum, 2.III.2008, fl. and fr., *F.R.G. Salimena et al. 2687* (CESJ); Monte Verde de Cima, em final de estrada para a Cachoeira da Garganta, 25.II.2012, fl., *F.R.G. Salimena & P.H. Nobre 3376* (CESJ). Rio Preto, Serra do Funil, 22.I.2006, fl., *F.S. Souza et al. 159* (CESJ); afloramento do Ninho da Égua, 1.IV.2012, fl., *L. Menini Neto et al. 1030* (CESJ).

Justicia serrana is morphologically similar to *J. brasiliana* but differs by its imbricate bracts and corolla without macule, with lips that are the same length. It has been recorded in rocky soils in Serra do Grão-Mogol and Serra do Cipó (Kameyama 1995, 2003). Until now, it was considered endemic to the Cerrado in Minas Gerais state. This is the first record for the Atlantic Rainforest domain. In the Serra Negra, it is known to occur in forest; it has been collected with flowers in January.

9. *Lepidagathis kameyamana* Gnanasek. & Arisdason, Telopea 18: 389. 2015.

Sub-prostrate herbs to subshrubs, 8–20 cm tall. Stems cylindrical, villous at the extremities, glabrate below. Petiole 0–15 mm long, pilose, trichomes eglandular, sparse; leaf blade 1.9–6.2 × 1.2–2.5 cm, elliptical to ovate, apex rounded-acute to subobtuse, base attenuate, both surfaces glabrate, trichomes eglandular, sparse on the adaxial surface, restricted to the veins on the abaxial surface, cystoliths present. Inflorescence a terminal spike, 0.8–2.2 cm long; bracts 4–7 × 2–3 mm, elliptical to obovate, ciliate, trichomes eglandular, sparse, bracteoles 2, 10–11 × 0.5–0.9 mm, lanceolate, ciliate, trichomes eglandular. Flowers sessile; calyx ciliate, 5 lobes highly differentiated, upper lobe elliptical, 6–10 × 1.5–2 mm, 2 lower lobes lanceolate to obovate-lanceolate, 5–9 × 1–2 mm, 2 lateral lobes subulate,

4–8 × 0.5 mm, all lobes apically acuminate; corolla bilabiate, lilac, 7–11 × 4–7 mm, pubescent, upper lip 2.5–4 × 2–4 mm, lower lip 3–5 × 2–4 mm, gamopetalous portion 2–4 × 3–6 mm; stamens 2, 4 mm long, anthers with unequal thecae, glabrous, filament glabrous; ovary elliptical, 1–2 mm long, apically hirsute, ovules 2 per locule, style 4–7 mm long, basally hirsute, stigma slightly bilobed, lobes subglobose, the posterior slightly larger. Fruit an elliptical capsule, 7–8 × 2 mm, apically hirsute, retinacula present; seeds 4, discoid, suborbicular, surface striated.

Specimen examined: Lima Duarte, Monte Verde de Cima, RPPN Serra Negra, 19.IX.2014, fl., *F.R.G. Salimena et al. 3757* (CESJ).

Additional specimen examined: BRAZIL. MINAS GERAIS: Descoberto, Reserva Ecológica Represa do Gama, 5.X.2001, fl. and fr., *A.V. Lopes & V.R. Scalon 8* (CESJ, RB).

Lepidagathis kameyamana [=*L. diffusa* (Nees) Lindau] is morphologically similar to *L. alopecuroidea* (Vahl) R. Br. *ex* Griseb by the herbaceous habit, but *L. kameyamana* is subprostrate and has elliptical to ovate leaves that are apically rounded, while *L. alopecuroidea* is erect and has lanceolate to elliptical leaves that are apically acute. It is endemic to the Atlantic Rainforest in the four Sates in the Southeast Region of Brazil. In the Serra Negra, it is known to occur in riverine forest; it has been collected with flowers in September.

10. ***Mendoncia puberula*** Mart., Nov. Gen. Sp. Pl. 3: 24. 1829.

Vines to scandent herbs. Stems sericeous, trichomes glandular, sessile. Petiole 0.5–1 cm long, tomentose; leaf blades 4.5–9.5 × 2–3 cm, oblong-elliptical, apex mucronate, base rounded, adaxial surface strigose, trichomes glandular, sessile, abaxial surface sericeous, trichomes glandular, sessile, cystoliths absent. Inflorescence an axillary fascicle with 2–4 flowers, 5.5–7 cm long; bracteoles elliptical, 2–3 × 1–1.5 cm, tomentose, trichomes glandular, sessile, sparse. Flowers pedicellate, pedicel 3.5–5 cm long, sericeous, trichomes glandular, sessile, sparse; calyx lobed, 2 mm long, glabrous; corolla tubular, yellow, 3–3.3 cm long, gamopetalous portion 2.5–3 × 0.5 cm, lobes 2–3 × 1 mm, externally strigose, trichomes glandular, sessile, sparse; stamens 4, didynamous, longer pair 3 cm long, shorter pair 2.5 cm long, thecae hispidulous, filament hirsute; ovary subglobose, 5 mm long, tomentose, style 2.7 cm long, lanulose, stigma with unequal lobes, the larger 0.5 mm, the smaller 0.1 mm long, fimbriate. Fruit drupaceous, subglobose to ellipsoid, 1–1.5 × 0.5–0.8 cm, glandular, trichomes glandular, sessile; seed subglobose.

Specimens examined: Rio Preto, Fazenda Tiririca, 21.I.2006, fl., *N.L. Abreu et al. 45* (CESJ); trilha para a Cachoeira do Marciano, 4.II.2009, fr., *D. Monteiro et al. 513* (CESJ).

Mendoncia puberula differs from *M. velloziana* by the yellow, internally glabrous corolla and stigma with unequal lobes. In Brazil, it has been recorded in the Atlantic Rainforest, Amazon Rainforest and Cerrado, in the states of Amazonas, Bahia, and all the states in the Central-west, Southeast and South Regions. In the Serra Negra, it is known to occur on edges of forests and trails; it has been collected with flowers in January and with fruits in February.

11. ***Mendoncia velloziana*** Mart., Nov. Gen. Sp. Pl. 3: 22-23. 1829. Fig. 1g

Vines. Stems tomentose at the extremities, glabrate below, trichomes glandular, sessile, sparse; leaf blade 5–9 × 2–4.5 cm, elliptical, apex acute, base obtuse, adaxial surface hispidulous, trichomes glandular, sessile, dense, adaxial surface tomentose, trichomes glandular, sessile, cystoliths absent. Inflorescence an axillary fascicle with 2–5 flowers, 4–6.5 cm long; bracteoles 2–2.5 × 0.5–1.5 cm, tomentose, trichomes glandular, sessile; calyx entire, 2 mm long, glabrous; corolla tubular, red, 2.5–3 × 0.3–0.5 cm, gamopetalous portion 2–2.5 × 0.3–0.5 cm, lobes 1–4 × 1–2 mm, externally hispidulous, trichomes glandular, sessile, internally glandular, trichomes glandular, sessile to stalked; stamens 4, didynamous, longer pair 2.1 cm long, shorter pair 1.9 cm long, thecae glandular, trichomes glandular, sessile to stalked, filament glabrous; ovary subglobose to fusiform, 3 mm long, tomentose, style 1.9 cm long, glabrous, stigma with equal lobes, 1 mm long, glabrous. Fruit drupaceous, ovoid, 1–1.5 × 0.5–1.5 cm, strigose, trichomes glandular, sessile; seeds fusiform to subglobose.

Specimens examined: Rio Preto, mata semidecídua perto do Cambuí, 18.III.2007, fr., *E.A. Feliciano et al. 41* (CESJ); Funil, Serra da Caveira D'Anta, 24.II.2004, fr., *A. Valente et al. 370* (CESJ); Vila do Funil, em subida para o Ninho da Égua, 27.XII.2011, fl, *F.R.G. Salimena et al. 3366* (CESJ); 10.VIII.2012, fr., *F.R.G. Salimena et al. 3493* (CESJ).

Mendoncia velloziana can be differentiated from *M. puberula* by the internally pubescent, red corolla and stigma with equal lobes. In Brazil, it

occurs in the Atlantic Rainforest in all states in the South and Southeast Regions, as well as in the states of Bahia, Distrito Federal, Goiás, and Mato Grosso. In the Serra Negra, it is known to occur on forest edges and in clearings; it has been collected with flowers in December and with fruits from February to March.

12. ***Odontonema barlerioides*** (Nees) Kuntze, Revis. Gen. Pl. 2: 494. 1891. Fig. 1h

Herbs, about 1 m tall. Stems subtetragonal, tomentose, trichomes glandular, sessile, sparse. Petiole 0.5–1 cm long, tomentose, trichomes glandular, sessile; leaf blade 14–25 × 3.5–7.5 cm, elliptical, apex acute, base decurrent, sericeous on both surfaces, trichomes glandular, sessile, sparse, cystoliths present. Inflorescence a terminal thyrse, 12.5–14 cm long; bracts lanceolate, 0.5–1 × 0.2–0.4 cm, tomentose, trichomes glandular, sessile, sparse, bracteoles lanceolate, 4–8 × 1–2 mm, tomentose, trichomes glandular, sessile, sparse. Flowers sessile to pedicellate, pedicel 1 mm long; calyx 4–7 mm long, lobes lanceolate, hirsute, trichomes glandular, sessile, sparse; corolla tubular, fuchsia, 3–4.5 cm long, gamopetalous portion 2.5–3.5 × 0.3–0.5 cm, lobes 2–4 × 1–2 cm, externally hirsute, trichomes glandular, sessile to stalked; stamens 2, 2.5 cm long, included, thecae parallel, glabrous, filament glabrous, staminodes 2; ovary 4 mm long, elliptical, glabrous, ovules 2 per locule, style 4.2 cm long, glabrous, stigma bilobed, lobes 0.5 mm long. Fruit a stipitate capsule, 2–3.5 × 0.2–0.5 cm, strigose, trichomes glandular, sessile, retinacula present; seeds 4, discoid, strigose, trichomes glandular, sessile, sparse.

Specimen examined: Lima Duarte, Fazenda Serra Negra, subida para Serra, trilha para a Cachoeira da Divisa B, 29.II.2008, fl., *F.R.G. Salimena et al. 2641* (CESJ).

Additional specimen examined: BRAZIL. MINAS GERAIS: Santa Rita do Jacutinga, 27.VII.1970, fr., *L. Krieger & Urbano* (CESJ 8924).

Odontonema barlerioides is characterized by the remarkable pilosity of the stems and leaves, terminal thyrse, tubular, fuchsia corolla, and androecium with two stamens and two staminodes. It is endemic to Brazil and known to occur in the Atlantic Rainforest and Cerrado domains, in Minas Gerais, Rio de Janeiro, and Espírito Santo states. In the Serra Negra, it occurs in riverine forests near watercourses; it has been collected with flowers in February.

13. ***Ruellia brevifolia*** (Pohl) C.Ezcurra, Darwiniana 29: 278. 1989.

Shrubs, about 40 cm tall. Stems hispidulous, trichomes glandular, sessile. Petiole 0.5–1 cm long, hispidulous, trichomes glandular, sessile, sparse; leaf blades 3–6.5 × 1–2 cm, ovate, apex attenuate, base cuneate, both surfaces hispidulous, trichomes glandular, sessile, sparse on the adaxial surface, restricted to the veins on the abaxial surface, cystoliths present. Inflorescence an axillary, multiflorous cyme, 6–8 cm long; bracts filiform, 8–10 × 0.3–0.5 mm, sparsely hirsutulous, bracteoles lanceolate, 2–4 × 1 mm, sparsely hirsutulous, trichomes glandular, sessile. Flowers pedicellate, pedicel 1–2 cm long, hispidulous, trichomes glandular, sessile; calyx 0.5–1.3 cm long, lobes linear, strigose, trichomes glandular, sessile, sparse; corolla gibbous, red, 2–4.5 cm long, gamopetalous portion 1.5–4 × 0.5–1 cm, lobes 5 × 2–4 mm, externally hispidulous, trichomes glandular, sessile, sparse; stamens 4, didynamous, the longer pair 2 cm long, the shorter pair 1.8 cm long, filament hispidulous, connective glandular, trichomes glandular, stalked, thecae basally spurred; ovary cylindrical, 4 mm long, hirsutulous, ovules 3 per locule, style 1.7 cm long, hispidulous, stigma bilobed, unequal, the larger lobe 1 mm long, the smaller lobe 0.1 mm long. Fruit a stipitate capsule, 1.5 × 0.2 cm, hispidulous, trichomes glandular, sessile, retinacula present; seeds 6, discoid, suborbicular, strigose, trichomes glandular, sessile, restricted to the margins.

Specimen examined: Rio Preto, estrada Rio Preto, Fazenda Sta. Clara, 29.IV.2012, fl. and fr., *F.R.G. Salimena 3480* (CESJ).

Ruellia brevifolia is characterized by the multiflorous cyme, and gibbous and red corolla. In Brazil, it occurs in Amazon Rainforest, Atlantic Rainforest, and Cerrado in the states of Amazonas, Acre, Rondônia, Mato Grosso, Mato Grosso do Sul, Goiás, and all the states in the South and Southeast Regions. In the Serra Negra, it is known to occur on forest edges; it has been collected with flowers and fruits in April.

14. ***Ruellia elegans*** Poir., Encycl. Suppl. 4. 727. 1816. Fig. 1j

Herbs to subshrubs, 0.1–1 m tall. Stems strigose, trichomes glandular, stalked. Petiole 0.5–4.9 cm long, strigose, trichomes glandular, sessile, sparse; leaf blade 7.5–14.4 × 2.5–4.8 cm, oblong-elliptical, apex acuminate, base cuneate, decurrent, strigose on both surfaces, trichomes

glandular, sessile, sparse on the adaxial surface and restricted to the veins on the abaxial surface, cystoliths present. Inflorescence an axillary paniculiform cyme, 4.5–8 cm long, lateral axes with 2–4 flowers; bracteoles elliptical, 2–4 × 1–3 mm, strigose, trichomes glandular, sessile to stalked. Flowers pedicellate, pedicel 1.3–4.5 cm long, villous, trichomes glandular, stalked, calyx 1–1.5 cm long, lobes linear-spatulate, strigose, trichomes glandular, stalked; corolla sub-hypocrateriform, reddish orange to red, 4.5–5.5 cm long, gamopetalous portion 3–4 × 0.5–1 cm, lobes 0.5–1.5 × 0.5–1 cm, externally villous, trichomes glandular, sessile to stalked; stamens 4, didynamous, longer pair 4.3 cm long, shorter pair 4 cm long, anthers muticous, villous, filament glabrous; ovary fusiform, 2 mm long, glabrous, ovules 4 per locule, style 1.9 cm long, villous, larger lobe 2 mm long, smaller lobe 0.5 mm long. Fruit a fusiform to subclavate capsule, 1–1.5 × 0.3–0.5 cm, retinacula present; seeds 8, discoid, suborbicular, strigose, trichomes glandular, sessile.

Specimens examined: Rio Preto, cânion do Funil, 19.IV.2009, fl., *J.H.C. Ribeiro et al. 94* (CESJ). Lima Duarte, Serra Negra, estrada Santa Bárbara do Monte Verde para Monte Verde de Cima, 8.VI.2012, fl., *V.R. Ferrari et al. 6* (CESJ). Rio Preto, Funil, estrada de acesso para Fazenda Tiririca, 25.IV.2004, fl., *K. Antunes et al. 111* (CESJ); mata do terreno da Dona Lúcia, VIII.2006, fl., *K. Antunes et al. 213* (CESJ). Lima Duarte, Fazenda da Serra Negra, 31.V.2009, fl., *F.S. Souza 699 & J.H.C. Ribeiro* (CESJ); 29.II.2008, fl., *F.RG. Salimena 2677, T.A. Costa & P.H. Nobre* (CESJ). Rio Preto, Sumidouro, 28.IV.2012, fr., *V.R. Ferrari 5* (CESJ); Vila do Funil, gruta do funil, 28.IV.2012, fl. and fr., *V.R. Ferrari 2* (CESJ); vilarejo do Funil, 21.V.2004, fl., *F.R.G. Salimena et al. 1282* (CESJ).

Ruellia elegans is characterized by the paniculiform cyme and red, sub-hypocrateriform corolla. It has ornamental value due to the showy color of its flowers that are very appreciated by hummingbirds (Lorenzi & Souza 2008). It is endemic to Brazil, in the Atlantic Rainforest and Cerrado, and occurs in the states of Minas Gerais, São Paulo, Paraná, and Goiás. In the Serra Negra, it has been found inside and on the edge of forests, in highly humid environments, and in ravine forests; it has been collected with flowers in February, April, May, June, and August and with fruits in April.

15. *Ruellia macrantha* Mart. *ex* Nees, *Fl. bras.* 9: 37. 1847. Fig. 1k

Shrubs, 0.5–1 m tall. Stems strigose, sericeous at the nodes, trichomes glandular, sessile, sparse. Petiole 0.5–2 cm long, strigose, trichomes glandular, sparse; leaf blade 4–14 × 1.5–4.5 cm, oblong-elliptical, apex acute, base attenuate, strigose on both surfaces, trichomes glandular, sessile, sparse on the adaxial surface and restricted to the veins on the abaxial surface, cystoliths present. Bracts linear-lanceolate, 1–3 × 0.3–0.4 cm, strigose, trichomes glandular, sessile, sparse, bracteoles linear, 1.5–2 × 0.1–0.2 cm, strigose, trichomes glandular, sessile and subsessile. Flowers solitary, axillary, subsessile; calyx 1.5–2.5 cm long, lobes linear-lanceolate, tomentose, trichomes glandular, sessile, sparse; corolla infundibuliform, pink to lilac or magenta, with vinaceous stripes in the throat, 4.5–8.5 cm long, gamopetalous portion 3.5–5.5 cm long, throat 2–3.5 cm wide, lobes 1–2 × 1.5–2 cm, externally lanuginose, trichomes glandular, sessile, sparse; stamens 4, didynamous, longer pair 5.2 cm long, shorter pair 4.8 cm long, anthers muticous, filament glabrous, anthers glandular, trichomes sessile and subsessile; ovary ovoid, 5 mm long, tomentose, ovules 4 per locule, style 4 cm long, villous, stigma glabrous, larger lobe 5 mm long, smaller lobe 3 mm long. Fruit an elliptical capsule, 1.5–3 × 0.3–0.5 cm, hirsute, retinacula present; seeds 8, discoid, strigose, trichomes glandular, sessile, restricted to the margins.

Specimens examined: Rio Preto, Cachoeira da Água Vermelha, 26.VI.2008, fl., *F.S. Souza & O.J. Bastos Neto 483* (CESJ). Lima Duarte, estrada para Monte Verde de Cima, 15.XI.2008, fl. and fr., *F.R. Salimena & P.H. Nobre 2756* (CESJ); 8.VI.2012, fl., *V.R. Ferrari et al. 8* (CESJ); estrada para Santa Bárbara do Monte Verde, II.2012, fl, *F.R.G. Salimena & P.H. Nobre 3384* (CESJ); Fazenda Serra Negra, 9.V.2008, fl. and fr., *L. Menini Neto & N.L. Abreu 592* (CESJ). Rio Preto, Funil, estrada de acesso para Fazenda Tiririca, 25.IV.2004, fl. and fr., *K. Antunes et al. 110* (CESJ); Funil, na trilha da ponte em direção ao Serrote de São Gabriel, 2.VI.2006, fl., *F. Salimena et al. 1369* (CESJ); Vila do Funil, Gruta do Funil, 28.IV.2012, fl., *V.R. Ferrari 1* (CESJ); trilha atrás da Gruta do Funil, 16.III.2007, *N.L. Abreu et al. 137* (CESJ); vilarejo do Funil, 21.V.2004, fl., *F.R.G. Salimena et al. 1281* (CESJ).

Ruellia macrantha is characterized by the large, showy flowers that are solitary in the leaf axils and infundibuliform, pink, lilac or magenta corolla with vinaceous stripes in the throat. It is endemic to Brazil and has been recorded in ombrophilous, riverine, and gallery forests in the Atlantic Rainforest and Cerrado, in Goiás, Mato Grosso, Minas Gerais, and São Paulo states. In the Serra Negra, it is known to occur inside forests, on the edge of riverine forests, and in transition

vegetation between forest and *campo rupestre*; it has been collected with flowers from February to June and in November and with fruits in April, May, and November.

16. *Staurogyne euryphylla* Hossain, Notes Roy. Bot. Gard. Edinburgh 31: 381. 1972. Fig. 1l

Herbs to subshrubs, up to 20 cm tall. Stems cylindrical, villous, trichomes glandular, sessile, sparse. Petiole 0.5–1 cm long, sericeous, trichomes glandular, sessile; leaf blade 2–6 × 1–3 cm, elliptical to ovate, apex acute, base attenuate, bullate, sericeous on both surfaces, trichomes on adaxial surface eglandular and glandular, sparse, trichomes on abaxial surface glandular, sessile, restricted to the veins, cystoliths absent. Inflorescence a terminal spike, 2–5 cm long, rarely 1 axillary pair 1.5 cm long; bracts elliptical-oblong, 5–8 × 3–4 mm, strigose, trichomes glandular, sessile, bracteoles 4–8 × 1–3 mm, linear, strigose, trichomes glandular, sessile. Flowers sessile to subsessile, pedicel up to 1 mm long; calyx 0.7–1 cm, lobes unequal, the posterior elliptical, 8–8.8 × 2–2.3 mm, the others linear to subulate, 6–8.2 × 0.5–1.2 mm, strigose, trichomes glandular, sessile; corolla infundibuliform, white, with vinaceous stripes in the throat, 0.5–1.4 cm long, gamopetalous portion 0.5–1 × 0.3–0.5 cm, lobes 2–4 × 1–4 mm, externally tomentose, trichomes glandular, sessile; stamens 4, didynamous, included, longer pair 1.3 cm long, shorter pair 1 cm long, thecae oblique, glabrous, filament glandular, trichomes glandular, subsessile to stalked, staminode 1; ovary elliptical, 2 mm long, glabrous, ovules 12 per locule, style 1.3 cm long, glabrous, stigma bilobed, lobes equal, 0.5 mm long. Fruit a subcylindrical capsule, 7–5 × 2–4 mm, hirsute, trichomes glandular, sessile to stalked, retinacula absent; seeds about 24, suborbicular, glabrous, minutely glandular.

Specimens examined: Lima Duarte, RPPN Serra Negra, 25.X.2008, fr., *J.H.C. Ribeiro et al. 40* (CESJ). Rio Preto, trilha para Cachoeira do Marciano, 30.VIII.2008, fl. and fr., *C.N. Matozinhos et al. 414* (CESJ).

Staurogyne euryphylla is characterized by the reduced habit, bullate leaves on live specimens, dense terminal spikes, white corolla with vinaceous stripes in the throat, unequal calyx lobes, and androecium with four stamens and one reduced staminode. Collections made during this study were the first record for Minas Gerais state. Negrão (2016) considered this species endangered (EN); however, the expanded distribution might change this classification. In the Serra Negra, it is known to occur inside forest near watercourses; it has been collected with flowers in August and with fruits from August to October.

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References

BFG - The Brazil Flora Group (2015) Growing knowledge: an overview of seed plant diversity in Brazil. Rodriguésia 66: 1085-1113.

Braz DM, Chagas ECO, Fernandes UG, Costa-Lima JL, Zanatta MRV, Kameyama C, Côrtes ALA, Indriunas A, Silva FA, Monteiro FKS, Zuntini AR, Azevedo IHF, Rodrigues MC, Paglia I, Souza VC, Pioner NC, Melo JIM, Gil ASB, Ezcurra C, Pessoa CS, Hirao YV & Fernando EMP (2020) *Acanthaceae in* Flora do Brasil 2020, continuously updated. Jardim Botânico do Rio de Janeiro. Available at <http://floradobrasil.jbrj.gov.br/reflora/floradobrasil/FB33>. Access on 16 March 2021.

Braz DM, Carvalho-Okano RM & Kameyama C (2002) Acanthaceae da Reserva Florestal Mata do Paraíso, Viçosa, Minas Gerais. Revista Brasileira de Botânica 25: 495-504.

Costa C & Herrmann G (2006) Plano de ação do Corredor Ecológico da Mantiqueira. Valor Natural, Belo Horizonte. 64p.

Daniel TF (2000) Additional chromosome numbers of American Acanthaceae. Systematic Botany 25: 15-25.

Daniel TF & McDade LA (2014) Nelsonioideae (Lamiales: Acanthaceae): revision of genera and catalog of species. Aliso 32: 1-45.

Drummond GM, Martins CS, Machado ABM, Sebaio FA & Antonini Y (2005) Biodiversidade em Minas Gerais: um atlas para sua conservação. 2nd ed. Fundação Biodiversitas, Belo Horizonte. 222p.

Ezcurra C (1989) *Ruellia sanguinea* (Acanthaceae) y especies relacionadas en Argentina, Uruguay y sur de Brasil. Darwiniana 29: 269-287.

Ezcurra C (1993) Systematics of *Ruellia* (Acanthaceae) in Southern South America. Annals of the Missouri Botanical Garden 80: 787-845.

Ezcurra C (2002) El género *Justicia* (Acanthaceae) em Sudamérica Austral. Annals of the Missouri Botanical Garden 89: 225-280.

Flora do Brasil 2020 (continuously updated) Jardim Botânico do Rio de Janeiro. Available at <http://floradobrasil.jbrj.gov.br/>. Access on 17 March 2021.

Gonçalves GE & Lorenzi H (2011) Morfologia vegetal organografia e dicionário ilustrado de morfologia das plantas vasculares. 2nd ed. Instituto Plantarum de Estudo da Flora, Nova Odessa. 512p.

Harris JG & Harris MW (2001) Plant identification terminology: an illustrated glossary. 2nd ed. Spring Lake Publishing, Spring Lake. 197p.

Kameyama C (1995) Flora da Serra do Cipó, Minas Gerais: Acanthaceae. Boletim de Botânica da Universidade de São Paulo 14: 181-206.

Kameyama C (2003) Flora de Grão-Mogol, Minas Gerais: Acanthaceae. Boletim de Botânica da Universidade de São Paulo 21: 51-53.

Lorenzi H & Souza HM (2008) Plantas ornamentais no Brasil arbustivas, herbáceas e trepadeiras. 4th ed. Instituto Plantarum de Estudo da Flora, Nova Odessa. 1088p.

Martinelli IG & Mello-Silva R (2015). Acanthaceae do Parque Estadual do Ibitipoca, Minas Gerais, Brasil. Boletim de Botânica da Universidade de São Paulo 33: 7-13.

McDade LA, Daniel TF & Kiel CA (2008) Toward a comprehensive understanding of phylogenetic relationships among lineages of Acanthaceae *s.l.* (Lamiales). American Journal of Botany 95: 1136-1152.

Menini Neto L, Matozinhos CN, Abreu NL, Valente ASM, Antunes K, Souza FS, Viana PL & Salimena FRG (2009) Flora não-arbórea de uma floresta de grota na Serra da Mantiqueira, Zona da Mata de Minas Gerais, Brasil. Biota Neotropica 9: 149-161.

Minas Gerais (2018) Decreto estadual nº 301, de 4 de julho de 2018. Cria o Parque Estadual Serra Negra da Mantiqueira e dá outras providências. Published in the DOEMG of 5 of July, 2018. DOEMG Diário Oficial do Estado de Minas Gerais, Belo Horizonte. 96p.

Negrão R (2016) *Staurogyne euryphylla*. The IUCN Red List of Threatened Species 2016: e.T107250288A107302617. Available at <https://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T107250288A107302617.pt>. Access on 18 November 2020.

Profice SR (1988) *Mendoncia* Vell. *ex* Vand. (Acanthaceae) Espécies ocorrentes no Brasil. Arquivos do Jardim Botânico do Rio de Janeiro 29: 201-279.

Profice SR & Andreata RHP (2011) Revisão taxonômica de *Aphelandra* R. BR. (Acanthaceae) de corola curto-bilabiada. Pesquisas Botânica 62: 7-70.

Rizzini CT (1954) Sobre 40 gêneros das Acanthaceae brasileiras. Rodriguésia 16/17: 9-54.

Salimena FRG, Matozinhos CN, Abreu NL, Ribeiro JHC, Souza FS & Menini Neto L (2013) Flora fanerogâmica da Serra Negra, Minas Gerais, Brasil. Rodriguésia 64: 311-320.

Souza FS, Salino A, Viana PL & Salimena FRG (2012) Pteridófitas na Serra Negra, Minas Gerais, Brasil. Acta Botanica Brasilica 26: 378-390.

Stearn WT (1998) Botanical Latin, 4th ed. Timber Press, Oregon. 546p.

Thiers B (continuously updated) Index Herbariorum: a global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available at <http://sweetgum.nybg.org/science/ih/>. Access on 19 November 2020.

Valente ASM, Garcia PO, Salimena FRG & Oliveira-Filho AT (2011) Composição, estrutura e similaridade florística da Floresta Atlântica, na Serra Negra, Rio Preto, MG. Rodriguésia 62: 321-340.

Vilar TS, Kameyama C & Cavalcanti TB (2010) Acanthaceae. *In*: Cavalcanti TB & Batista MF (orgs.) Flora do Distrito Federal, Brasil. Embrapa Recursos Genéticos e Biotecnologia, Brasília. Pp. 15-53.

Wasshausen DC (2006) Acanthaceae. *In*: Jansen-Jacobs MJ (ed.) Flora of the Guianas. Royal Botanical Gardens Kew, Richmond. Pp. 1-151.

Wasshausen DC & Wood JRI (2004) Acanthaceae of Bolivia. Smithsonian Institution. Contributions from the United States National Herbarium 49: 1-152.

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