Rodriguésia 74: e00612022. 2023
http://rodriguesia.jbrj.gov.br
DOI: http://dx.doi.org/10.1590/2175-7860202374013

Original Paper

Acanthaceae from Cuiabá lowlands, Mato Grosso, Brazil: a vegetational mosaic extending from Chapada dos Guimarães to Pantanal

Kelvin Henrique Zocal[1,4,5], *Camila Alcantara*[2] & *Edlley Pessoa*[1,3]

Abstract

This study presents a taxonomic survey of the species of Acanthaceae in the Cuiabá lowlands, an area encompassing several habitats, from rock outcrops in Chapada dos Guiamarães to the periodically flooded forest areas in the Pantanal. Herbarium collections were analyzed and 13 field expeditions were carried out to visit different phytophysiognomies and ecosystems. The family is represented by 31 species and 12 genera, the most diverse being *Justicia* (10 species) and *Ruellia* (eight species). Additionally, *Dicliptera squarrosa*, *Dyschoriste schottiana*, *Ruellia blechum*, *R. jussieuoides*, and *R. trachyphylla* are newly recorded in the state of Mato Grosso. The number of species is higher if compared with other taxonomic studies of Acanthaceae in Central-Western Brazil. Despite the area being overlooked by the botanical community, we expect our results will instigate further taxonomic studies in the area. This study provides an identification key, short descriptions, comments on taxonomy and distribution, and photographs.

Key words: Cerrado, flora, *Justicia*, Lamiales, *Ruellia,* taxonomy.

Resumo

O presente estudo apresenta um levantamento taxonômico das espécies de Acanthaceae na Baixada Cuiabana, uma área que inclui uma grande variação de habitats, desde afloramentos rochosos da Chapada dos Guimarães até florestas periodicamente inundadas do Pantanal. Coleções de herbários e 13 expedições de campo foram realizadas procurando visitar diferentes fitofisionomias e ecossistemas presentes na área. A família é representada por 31 espécies e 12 gêneros, sendo os mais diversos *Justicia* (10 espécies) e *Ruellia* (oito espécies). Entre as espécies *Dicliptera squarrosa*, *Dyschoriste schottiana*, *Ruellia blechum*, *R. jussieuoides* e *R. trachyphylla* são novos registros para o estado de Mato Grosso. O número de espécies é maior se comparado com outros estudos taxonômicos desenvolvidos para Acanthaceae no Centro-Oeste do Brasil. Apesar de a área ter sido negligenciada pela comunidade botânica, os nossos resultados instigam novos estudos taxonômicos semelhantes com outras famílias de angiospermas. Esse estudo apresenta uma chave de identificação, descrições curtas, comentários sobre taxonomia e distribuição, e fotografias.

Palavras-chave: Cerrado, flora, *Justicia*, Lamiales, *Ruellia,* taxonomia.

Introduction

Acanthaceae, a member of Lamiales (APG IV 2016), contains about 250 genera and 4,000 species (Wasshausen & Wood 2004; Tripp & McDade 2014; Manzitto-Tripp *et al.* 2022). The family is pantropically distributed, with centers of diversity in tropical and subtropical regions of Africa (including Madagascar), Indo-Malaysia and the Neotropical region. In the Neotropical region, Brazil, the Andes, and Central America are remarkably species rich (Grant 1955; Wasshausen & Wood 2004; Daniel 2009). In Brazil, 47 genera

[1] Universidade Federal do Mato Grosso, Depto. Botânica e Ecologia, Lab. Estudos Integrados de Plantas, Coxipó, Cuiabá, MG, Brazil.

[2] Universidad Nacional Autónoma de México, Instituto de Biología, Departamento de Botánica, Ciudad Universitaria, Coyoacán, Mexico City, Mexico. ORCID: <https://orcid.org/0000-0001-8625-2062>.

[3] Universidade Estadual do Maranhão, Depto. Química e Biologia, Prog. Pós-graduação em Biodiversidade, Ambiente e Saúde, Morro do Alecrim, Caxias, MA, Brazil. ORCID: <https://orcid.org/0000-0003-3800-8684>.

[4] Universidade Federal de Mato Grosso, Prog. Pós-graduação Biologia Vegetal, Cuiabá, MT, Brazil. ORCID: <https://orcid.org/0000-0002-6246-7816>.

[5] Author for correspondence: kelvinzocal@gmail.com

and 499 species are recorded, while 21 genera and 153 species occur in the Central-West region (Flora e Funga do Brasil 2020, continuously updated). For the state of Mato Grosso, where no taxonomic studies focusing on Acanthaceae have been conducted, 88 species distributed in 14 genera are recorded (Flora e Funga do Brasil 2020, continuously updated).

The family, as currently circumscribed, has no clear macro-morphological synapomorphies, but it is considered monophyletic based on molecular phylogenetic data (Schwarzbach & McDade 2002; McDade *et al.* 2008; 2012, Borg *et al.* 2008; Judd *et al.* 2009). Phylogenetic studies have advanced the systematics of the group and used as the basis to organize the group into four subfamilies: Acanthoideae, Avicenioideae, Nelsonioideae, and Thunbergioideae (Tripp & McDade 2014). The most diverse subfamily, Acanthoideae, is organized in four tribes: Acantheae, Barlerieae, Justiceae, and Ruellieae (McDade *et al.* 2000).

Members of Acanthaceae can grow as lianas, herbs, or rarely trees. Most species have simple and opposite leaves, and cystoliths are present in some groups, such as Ruellieae. The inflorescences are morphologically diverse and considered one of the more taxonomically useful features of the group. The flowers are hermaphroditic, generally colorful and showy, the corolla is sympetalous, the stamens are more frequently 2 or 4 and epipetalous, and the ovary is superior (Wasshausen & Wood 2004; McDade *et al.* 2008; Braz & Azevedo 2016).

Flora brasiliensis (Nees 1847a) is still the only family-wide study of Brazilian Acanthaceae but it lacks an identification key. Many changes in genus and species delimitation have occurred since the XIX century and a large number of new species were described in the past decade in South America and Brazil (Kameyama 2008; Braz & Monteiro 2006; Côrtes & Rapini 2011; Wood 2012; Indriunas & Kameyama 2012; Wasshausen 2013; Alcantara *et al.* 2020), which indicates the need for new taxonomic studies of Brazilian Acanthaceae. Compared to other large Angiosperm families, relatively few studies focused on local floras have been published for Acanthaceae in Brazil, among these, most were developed in areas of Atlantic forest (*e.g.*, Wasshausen & Smith 1969; Harvey & Wasshausen 1995; Braz *et al*. 2002; Kameyama 1995, 2003, 2006, 2009; Silva *et al*. 2010; Côrtes & Rapini 2013; Monteiro *et al*. 2018; Macedo *et al*. 2020; Hammes *et al.* 2021; Alcantara & Alves 2022), and despite presumedly presenting a high number of species and genera (Flora e Funga do Brasil 2020, continuously updated), studies on Acanthaceae in the Central-West region are even more scarce (Rodrigues 2017; Sartin 2015; Vilar 2009).

The present study is a taxonomic survey of the species of Acanthaceae in the Cuiabá lowlands, an area that includes a wide range of habitats where the diversity of the family has never been studied. This study contains an identification key, short descriptions, comments on taxonomy and distribution, and photographs. We hope our study will contribute to expand the knowledge about Acanthaceae in Mato Grosso, a neglected state for taxonomic studies, providing new information on the Pantanal and Cerrado floras.

Material and Methods

The study area encompasses 14 municipalities located in the Cuiabá lowlands: Acorizal, Barão de Melgaço, Campo Verde, Chapada dos Guimarães, Cuiabá, Jangada, Nobres, Nossa Senhora do Livramento, Nova Brasilândia, Planalto da Serra, Poconé, Rosário Oeste, Santo Antônio do Leverger, and Várzea Grande (Secretaria de Desenvolvimento Territorial de Mato Grosso 2015). This area is located in the Central portion of Southern Mato Grosso and has an extension of 85,369.70 km² (Ministério do Desenvolvimento Agrário - MDA 2020) (Fig. 1). The Cuiabá lowlands are characterized by a semi-humid tropical climate (Aw) (Köppen 1948), with two well-defined seasons: rainy summer, from October to April, and dry winter, from May to September, with an average rainfall of 1,268–1,496 mm (Pizzato *et al.* 2012; Chiaranda *et al.* 2012). The vegetation consists of a mosaic of phytophysiognomies, including wetlands in the south (Pantanal), while typical Cerrado *s.s.* vegetation dominates, with *campos rupestres* patches in the northern portion, especially in Chapada dos Guimarães (Dubs 1998).

A total of 13 field expeditions were carried out between April 2019–April 2021, seeking to visit different phytophysiognomies present in the area. Herbarium specimens were prepared from fertile individuals, following usual taxonomy practices (Mori *et al*. 1989), and flowers were preserved in ethanol for further analysis and description. The identification was based on specialized literature (Ezcurra 1993, 2002; Steyermark *et al.* 1995; Kameyama 1995; Pessôa 2012; Côrtes & Rapini 2013; Reis *et al*. 2017; Sartin 2015; Teixeira *et*

al. 2016; Vilar 2009; Wasshausen & Wood 2004; Oliveira & Andrade 2000; Schmidt-Lebuhn *et al*. 2007; Zanatta 2019; Alcantara & Alves 2022), and comparison with photographs of type specimens when available online (Tropics, JStorPlants, Reflora). The specimens were deposited in the UFMT herbarium, and duplicates were sent to RB and SP (acronyms follow Thiers, continuously updated). Acanthaceae specimens previously collected in the study area and deposited in herbarium collections were analyzed, identified, and included in the examined material.

The morphological terminology follows Harris & Harris (2001), the data on geographical distribution of the species follows Flora e Funga do Brasil (2020, continuously updated), Berendsohn & Araniva de González (1989), Carnevali *et al*. (2010), Correll & Johnston (1970), Costa-Lima & Chagas (2020), Daniel & McDade (2014), Daniel (1995), Daniel (2005, 2010), Daniel *et al*. (2012), Durkee (1986), D'Arcy (1987), Ezcurra (1993), Funk *et al*. (2007), Jørgensen & León-Yáne (1999), Jørgensen *et al*. (2014), McDade & Tripp (2007), Molina Rosito (1975), Rodríguez Delcid & Daniel (2014), Silva & Bonadeu (2019), Vilar (2009), Wasshausen & Wood (2004), Wasshausen (1995), Wiggins & Porter (1971), and Zuloaga *et al*. (2008). The identification key was produced based on newly collected specimens and those deposited in the UFMT herbarium.

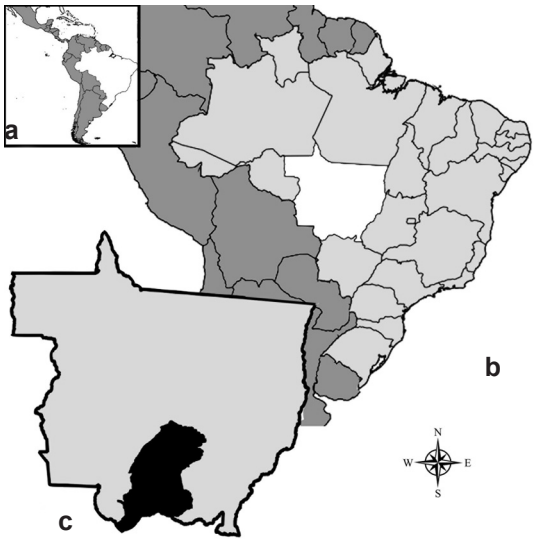

Figure 1 – a-c. Map showing the location of the study area – a. Latin America highlighting Brazil; b. Brazil highlighting Mato Grosso state; c. Mato Grosso state highlighting the Cuiabá Lowlands.

Results and Discussion

In this study we record 31 species of Acanthaceae in the Cuiabá lowlands. The species are distributed in 12 genera (*Aphelandra*, *Dicliptera*, *Dyschoriste*, *Elytraria*, *Hygrophila*, *Justicia*, *Lepidagathis*, *Mendoncia*, *Pseuderanthemum*, *Ruellia*, *Staurogyne*, and *Stenandrium*), the most diverse being *Justicia* (10 species) and *Ruellia* (eight species). Although the studied area represents only 9.4% of the area of the state of Mato Grosso, the number of species represents approximately 36% of the total of Acanthaceae species recorded in the state (Flora e Funga do Brasil 2020, continuously updated). This study also contributes with five new records for the flora of Mato Grosso: *Dicliptera squarrosa* Nees (1847a: 161), *Dyschoriste schottiana* (Nees) Kobuski (1928: 30), *Ruellia blechum* L. (1759: 1120), *R. jussieuoides* Schltdl. & Cham. (1831: 370) and *R. trachyphylla* Lindau (1898: 46). Most species in the area have their flowering and fruiting period in the dry season (June-October). Areas of shaded forest (mostly "*cerradão*" and gallery forests) are more diverse than open areas such as cerrado *s.s.* and *campos rupestres* (20 species *vs.* 11 species). Based on observation, the most frequent genera are *Justicia* and *Ruellia* in forest areas, and *Ruellia* and *Stenandrium* in Cerrado *s.s.*.

The municipalities with the largest number of species were Cuiabá (13 species) and Chapada dos Guimarães (11 species), showing a strongly biased historical collection effort in the vicinity of the Universidade Federal do Mato Grosso campus. Only a single species was recorded for Acorizal, Campo Verde, and Planalto da Serra. This indicates that, even with our own collection effort, field work is still needed in these areas, which is impaired by scarce funding, difficult access and the lack of research infrastructure. Similarly, biased results were reported by Siqueira *et al.* (2014) and Pessoa *et al.* (2022) for orchids.

Most of the species recorded in the area are endemic to South America (24 species, 75%), among these, seven (ca. 22%) are endemic to Brazil: *Dyschoriste schottiana*, *Justicia lavandulifolia* Pohl ex Nees (1847b: 348), *J. rectiflora* (Lindau) V.A. Graham (988: 614), *Ruellia neesiana* Lindau (1895: 310), *R. costata* Lindau (1900: 195), *R. trachyphylla*, and *Stenandrium hirsutum* Nees & Mart (1847a: 77). Only three species have their distribution restricted to the Central-West Region: *J. rectiflora* (Lindau) V.A.W. Graham (1988: 614), *R. neesiana* and *R. trachyphylla*. There are one

species, *Justicia polygaloides* (S. Moore) Lindau (1903: 633), that, although occurring in other countries, are recorded in Brazil only in the state of Mato Grosso (Flora e Funga do Brasil 2020, continuously updated). All species have collections records in the Cerrado, 12 species occur exclusively in the Cerrado, 11 species occur both in the Cerrado and Amazon and seven species have records in both the Cerrado and Pantanal (Flora e Funga do Brasil 2020, continuously updated). Based on the evidence for Acanthaceae, we can describe the Cuiabá lowlands as an ecotone zone, and although most recorded species have wide ranges, the presence of restricted species or only with confirmed records in Brazil in the state of Mato Grosso highlights the importance of the area for conservation.

The number of species found (31) is higher than that found in other taxonomic studies on Acanthaceae in surrounding areas. Vilar (2009) found 28 in Distrito Federal and Silva & Bonadeu (2019) found 11 species in Colorado do Oeste, in the state of Rondônia. It is important to highlight that a long-term plant taxonomy project has been conducted in Distrito Federal (Cavalcanti & Batista 2009, 2010; Cavalcanti & Silva 2011; Cavalcanti & Dias 2012). The situation for Mato Grosso and the Cuiabá lowlands is the opposite, the area has been neglected by the botanical community in the last century. Our results instigate new studies in the area and show potential unknown plant diversity in the state. We suggest further studies in the area to increase the knowledge of its interesting flora.

Key for the Acanthaceae from Cuiabá lowlands

1. Climbing plants ..... 19. *Mendoncia puberula*
1'. Herbs, subshrubs, or shrubs 2
2. Leaves clustered in a rosette 3
3. Corolla tube < 1.3 cm long; stamens 2 ..... 31. *Stenandrium pohlii*
3'. Corolla tube > 3 cm long; stamens 4 ..... 25. *Ruellia hygrophilla*
2'. Leaves distributed along an elongated stem 4
4. Corolla urceolate, hippocrateriform, or infundibuliform 5
5. Calyx 4-lobed ..... 30. *Stenandrium hirsutum*
5'. Calyx 5-lobed 6
6. Corolla urceolate, red, tube gibbous ..... 22. *Ruellia brevifolia*
6'. Corolla hippocrateriform or infundibuliform, lilac or purple, tube not gibbous 7
7. Stamens 2, staminodes 2 ..... 20. *Pseuderanthemum congestum*
7'. Stamens 4, staminodes absent 8
8. Corolla infundibuliform 9
9. Leaves narrow-lanceolate to narrow-elliptic; calyx ≤ 1.3 cm long ..... 28. *Ruellia trachyphylla*
9'. Leaves elliptical; calyx ≥ 1.4 cm long 10
10. Calyx ≤ 1.7 cm long, style ≥ 5 cm long ..... 26. *Ruellia jussieuoides*
10'. Calyx ≥ 2.2 cm long, style ≤ 2.5 cm long ..... 27. *Ruellia neesiana*
8'. Corolla hippocrateriform 11
11. Bracts ovate to wide-elliptical; corolla lobes ≤ 0.6 cm long ..... 21. *Ruellia blechum*
11'. Bracts lanceolate; corolla lobes > 0.6 cm long 12
12. Leaf apex acuminate; corolla tube > 3.3 cm long ..... 23. *Ruellia costata*
12'. Leaf apex acute to obtuse; corolla tube ≤ 1.2 cm long ..... 24. *Ruellia geminiflora*
4'. Corolla bilabiate 13
13. Calyx 4-lobed 14
14. Floral bract ovate or wide-elliptical, red, greenish-red, pinkish-red, or purplish 15

15. Leaf apex acuminate; bracts wide elliptic, red to greenish red.....17. *Lepidagathis floribunda*
15'. Leaf apex rounded, obtuse or acute; bracts ovate, pinkish red to purplish .... 18. *Lepidagathis sessilifolia*
14'. Floral bract linear-lanceolate, green..... 16
16. Branches quadrangular; calyx lobes ≤ 0.5 cm long ..... 11. *Justicia lavandulifolia*
16'. Branches cylindrical; calyx lobes ≥ 0.6 cm long 17
17. Leaf blade ≤ 0.6 cm wide, petiole ca. 0.1 cm long..... 13. *Justicia polygaloides*
17'. Leaf blade ≥ 0.9 cm wide, petiole ≥ 0.5 cm long..... 18
18. Leaf base cuneate; corolla white, tube ≤ 1 ..... 16. *Justicia warmingii*
18'. Leaf base obtuse; corolla violet, tube ≥ 1.5.....15. *Justicia tocantina*
13'. Calyx 5-lobed..... 19
19. Calyx lobes unequal..... 20
20. Lower lip unlobed..... 21
21. Inflorescence terminal ..... 2. *Dicliptera sexangularis*
21'. Inflorescence axillary .....3. *Dicliptera squarrosa*
20'. Lower lip distinctly 3-lobed..... 22
22. Stamens 4, staminode 1 ..... 29. *Staurogyne repens*
22. Stamens 2, staminode absent..... 23
23. Lower lip ≥ 0.8 mm long.....8. *Justicia chapadensis*
23'. Lower lip ≤ 0.5 cm long.....10. *Justicia laevilinguis*
19'. Calyx lobes equal..... 24
24. Stamens 4 25
25. Corolla dark orange to red, tube ≥ 1.8 cm long ..... 1. *Aphelandra longiflora*
25'. Corolla lilac or purplish-white, tube ≤ 1 cm long 26
26. Branches quadrangular; leaf blade ≥ 5 cm long..... 6. *Hygrophila costata*
26'. Branches cylindrical; leaf blade ≤ 4 cm long..... 4. *Dyschoriste schottiana*
24'. Stamens 2 27
27. Corolla tube ≤ 0.4 cm long..... 28
28. Branches quadrangular; corolla purplish-white; anther thecae asymmetrical ....9. *Justicia comata*
28'. Branches cylindrical; corolla blueish-purple; anther thecae symmetrical .... 5. *Elytratia imbricata*
27'. Corolla tube ≥ 1 cm long..... 29
29. Branches quadrangular; corolla yellow.....14. *Justicia rectiflora*
29'. Branches cylindrical; corolla white or pink 30
30. Floral bracts linear-lanceolate .....7. *Justicia asclepiadea*
30'. Floral bracts oblanceolate.....12. *Justicia nodicaulis*

1. ***Aphelandra longiflora*** (Lindl.) Profice, Bradea 10: 18. 2004. *Geissomeria longiflora* Lindl., Bot. Reg. 13: 1045. 1827. Fig. 2a

Shrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.4–1 cm long, blade 2.6–11.8 × 1.3–5 cm, elliptic to oblong, apex acuminate, base attenuate. Inflorescence terminal or axillary, bracts elliptical, green. Calyx 5-lobed, lobes equal, 0.4–0.6 cm long; corolla dark orange to red, tube 1.8–1.9 cm long, not gibbous, 2-labiate, upper lip 0.2–0.4 cm long, 2-lobed, lower lip 0.2–0.4 cm mm long, 3-lobed; stamens 4, anther thecae symmetrical; style 1.8–2.1 cm, ovary ca. 0.2 cm long, pyriform.

Examined material: Chapada dos Guimarães, Reserva do Manso, 18.V.1999, fl., *L. Amorim Neto 946* (UFMT); Trilha Histórica do Matão, 18.IV.2019, fl., *K. Zocal et al. 07* (UFMT). Cuiabá, Coxipó Jurumirim, 12.V.1996, fl., *Conceição & Arcênio* (UFMT). Nobres, 10.IV.2007, fl., *H. Lorenzi 6250* (HPL); 24.V.1997, fl., *V.C. Souza 17131* (SPF).

The species was recorded in Argentina, Bolivia and Brazil, but probably also occurs in Paraguay (BFG 2015, 2018; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is found in the states of Acre, Distrito Federal, Espírito Santo,

Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraná, Rio de Janeiro, Rondônia, Santa Catarina, and São Paulo (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Cuiabá.

Aphelandra longiflora is a morphologically variable species, as demonstrated by its 15 synonyms (BFG 2015, 2018). In the study area, it can be confused with two other species with red corolla, *Dicliptera sexangularis* and *D. squarrosa*,

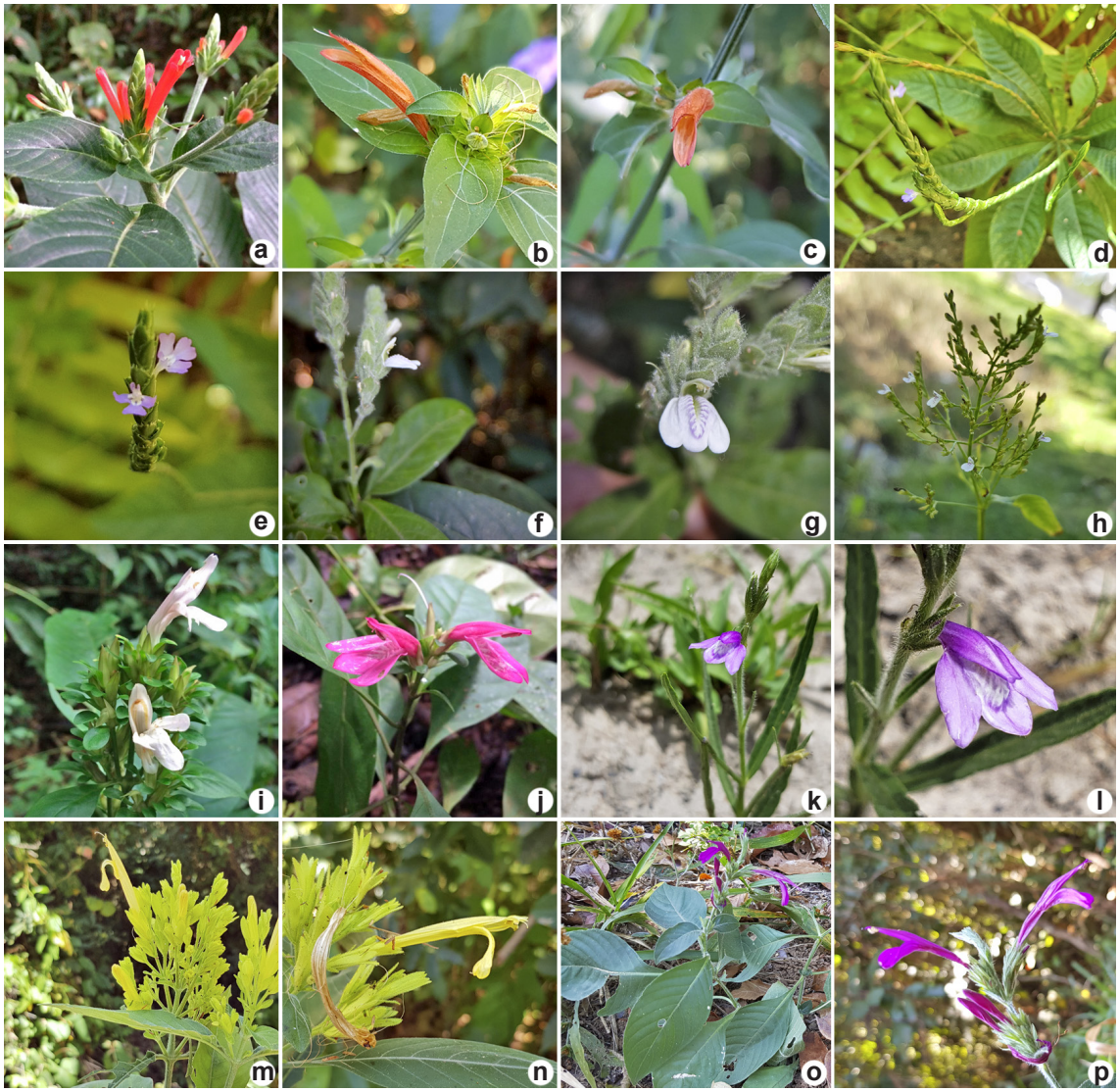

Figure 2 – a. *Aphelandra longiflora* – inflorescence with flowers. b-c. *Dicliptera squarrosa* – b. inflorescence, lateral view; c. inflorescence, front view. d-e. *Elytraria imbricata* – d. branch showing bracts and inflorescence, lateral view; e. branch showing bracts and inflorescence, frontal view. f-g. *Justicia chapadensis* – f. branch showing bracts and inflorescence, lateral view; g. branch showing bracts and inflorescence, frontal view. h. *Justicia comata* – branch with inflorescence, lateral view. i-j. *Justicia nodicaulis* – i. detail of flower, front view; j. detail of flower, front view. k-l. *Justicia polygaloides* – k. branch showing bracts and inflorescence, lateral view; l. detail of flower, lateral view. m-n. *Justicia rectiflora* – m. branch showing bracts and inflorescence, lateral view; n. detail of flower, lateral view. o-p. *Justicia tocantina* – o. branch showing leaves and flower, frontal view; p. detail of flower, lateral view. (a. *K. Zocal et al. 07*; b-c. *K. Zocal et al. 30*; d-e. *K. Zocal et al. 10*; f-g. *K. Zocal et al. 32*; h. *K. Zocal et al. 09*; i. *M. Ribeiro et al. 04*; j. *M. Ribeiro et al. 08*; k-l. *K. Zocal et al. 56*; m-n. *K. Zocal et al. 29*; o-p. *K. Zocal et al. 31*).

from which it differs by the shape of the stem branches (cylindrical *vs*. quadrangular) and number of stamens (four *vs*. two). It was found in forested areas.

2. *Dicliptera sexangularis* (L.) Juss., Ann. Mus. Natl. Hist. Nat. 9: 269. 1807. *Justicia sexangularis* L., Sp. pl. 1: 16. 1753. Figure in: Costa-Lima & Chagas (2020).

Herb, erect or ascending, branches quadrangular. Leaves sessile, distributed along the stem, petiole 0–0.1 cm long, blade 2.6–5.5 × 0.8–3 cm, elliptic to lanceolate, apex acute, base acute. Inflorescence terminal, bracts lanceolate, green. Calyx 5-lobed, lobes unequal, 0.2–0.6 cm long; corolla reddish to orangish or pinkish, tube 1.4–1.8 cm long, not gibbous, 2-labiate, upper lip 0.7–1.3 cm long, unlobed, lower lip 0.6–0.9 mm long, unlobed; stamens 2, anther thecae symmetrical; style 2.2–3.1 cm, ovary ca. 0.1 cm long, ovoid.
Examined material: Santo Antônio do Leverger, 2.VII.2019, fl., *K. Zocal et al*. *26* (UFMT, RB, SP); 20.IX.2019, fr., *K. Zocal & E. Pessoa 39* (UFMT, RB, SP).

The species was recorded in Belize, Bolivia, Brazil, the Caribbean, Colombia, El Salvador, French Guiana, Guatemala, Honduras, Mexico, Panama, Suriname, United States, and Venezuela (Berendsohn & Araniva de González 1989; BFG 2015, 2018; Costa-Lima & Chagas 2020; Daniel 1995; Jørgensen *et al*. 2014; Wasshausen 1995). In Brazil it is recorded in the states of Goiás, Mato Grosso, Pará, and Tocantins. The species probably also occurs in Amapá, Distrito Federal, Maranhão, and Rondônia (BFG 2015, 2018). In the study area we found it in Santo Antônio do Leverger.

Dicliptera sexangularis can be confused with *D. squarrosa*, differing by its terminal inflorescence (*vs*. axillary) and by its anthers with symmetrical thecae (*vs*. strongly asymmetrical). It was found in open areas along rivers.

3. *Dicliptera squarrosa* Nees in Mart., *Fl. bras.* 9: 161. 1847a. Fig. 2b-c

Subshrubs, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 1.1–1.3 cm long, blade 4.3–8.5 × 1.8–3.3 cm, elliptic, apex acuminate, base acute. Inflorescence axillary, bracts lanceolate, green. Calyx 5-lobed, lobes unequal, 0.3–0.7 cm long; corolla reddish to orangish, tube 1.2–1.7 cm long, not gibbous, 2-labiate, upper lip 0.5–0.7 cm long, unlobed, lower lip 0.7–0.9 mm long, unlobed; stamens 2, anther thecae asymmetrical; style 2.6–3 cm, ovary ca. 0.1 cm long, globular.
Examined material: Chapada dos Guimarães, Fazenda Buriti, 27.VII.2019, fl., *K. Zocal et al*. *30* (UFMT, RB, SP).

The species was recorded in Argentina, Bolivia, Brazil, Paraguay, Peru, and Uruguay (BFG 2015, 2018; Jørgensen *et al*. 2014; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is found in the states of Goiás, Mato Grosso do Sul, Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo, Paraná, Rio Grande do Sul, Santa Catarina, and likely in Distrito Federal (BFG 2015, 2018). We present here the first record of the species in Mato Grosso, where it was found in Chapada dos Guimarães.

Dicliptera squarrosa can easily be confused with *D. sexangularis*, differing from it by the axillary inflorescence (*vs*. terminal) and by its anthers with strongly asymmetrical thecae (*vs*. symmetrical). The species has eight synonyms (BFG 2015, 2018), reflecting wide morphological variation for this species. It was collected in a forested area in the study region.

4. *Dyschoriste schottiana* Kobuski, Ann. Missouri Bot. Gard. 15: 30. 1928.

Subshrubs, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.3–0.5 cm long, blade 1.5–4 × 0.4–1.5 cm, lanceolate to oblong, apex acute, base obtuse. Inflorescence axillary and terminal, bracts elliptical, green. Calyx 5-lobed, lobes equal, 1.3–1.6 cm long; corolla lilac, tube 0.8–1 cm long, not gibbous, 2-labiate, upper lip 0.3–0.5 cm long, 2-lobed, lower lip 0.3–0.5 mm long, 3-lobed; stamens 4, anther thecae symmetrical; style 0.9–1.3 cm, ovary ca. 0.2 cm long, pyriform.
Examined material: Nobres, 22.IV.1983, fl., *C.N. Cunha et al. 1016* (UFMT).

The species is endemic to Brazil and recorded in the states of Goiás and Rio de Janeiro (BFG 2015, 2018), being a new record for Mato Grosso. In the study area we found it in Nobres.

In the study area, *Dyschoriste schottiana* can be confused with *Hygrophila costata*, but it is easily distinguished by the stem branch shape (cylindrical *vs*. quadrangular). It was collected near river beds in open areas.

5. *Elytraria imbricata* (Vahl) Pers, Syn. Pl. 1: 23. 1805. *Justicia imbricata* Vahl, Eclog. Amer. 1: 1. 1796 [1797]. Fig. 2d-e

Herb, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 1.2–1.5 cm long, blade 6–10.2 × 1.7–2.8 cm, elliptic, apex acute, base acute. Inflorescence axillary, bracts elliptical, green. Calyx 5-lobed, lobes equal, 0.3–0.4 cm long; corolla blueish purple, tube 0.3–0.4 cm long, not gibbous, 2-labiate, upper lip 0.1–0.2 cm long, 2-lobed, lower lip 0.1–0.2 cm long, 3-lobed; stamens 2, anther thecae symmetrical; style 0.1–0.2 cm, ovary ca. 0.2 cm long, ellipsoid.
Examined material: Cuiabá, Universidade Federal de Mato Grosso, 18.VIII.1992, fl., *A. Lemes do Prado 5393* (UFMT). Universidade Federal de Mato Grosso, 9.V.2019, fl., *K. Zocal et al. 10* (UFMT); 26.VI.2019, fl., *K. Zocal & M. Ribeiro 25* (UFMT, RB).

The species is widely distributed in the Neotropical region (BFG 2015, 2018; Correll & Johnston 1970; Daniel & McDade 2014; Daniel 1995; Durkee 1986; Molina Rosito 1975; Wasshausen 1995; Wasshausen & Wood 2004; Wiggins & Porter 1971; Zuloaga *et al.* 2008). In Brazil, it is recorded in the states of Bahia, Ceará, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Pernambuco, Rio Grande do Norte, Rondônia, and Tocantins (BFG 2015, 2018). In the study area, we found it in Cuiabá.

Elytraria imbricata is very distinct among the species of Acanthaceae in the study area by the small flowers that are only comparable in size with *J. comata*, and from which it can be distinguished by the stem branch shape (cylindrical *vs.* quadrangular), and the blueish purple corolla (*vs.* white with purple dots). It was collected in open disturbed areas.

6. *Hygrophila costata* Nees & T. Nees, Pl. Hort. Bonn. Icon.: 7. 1824. Figure in: Monteiro *et al*. (2018).

Herbs, erect or ascending, branches quadrangular. Leaves sub-sessile, distributed along the stem, petiole 0.1–0.2 cm long, blade 10–20 × 3–6 cm, oblong to lanceolate, apex acute to acuminate, base decurrent. Inflorescence axillary, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 0.6–1 cm long; corolla purplish white, tube 0.5–0.6 cm long, not gibbous, 2-labiate, upper lip 0.4–0.5 cm long, 2-lobed, lower lip 0.1–0.2 mm long, 3-lobed; stamens 4, anther thecae symmetrical; style 0.8–1 cm, ovary ca. 0.1 cm long, cylindrical.
Examined material: Poconé, Rio Cuiabá, 13.II.1990, fl., *A. Pott 5512* (MBM).

The species is widely distributed in the Neotropics (BFG 2015, 2018; DAarcy 1987; Daniel 1995; Durkee 1986; Jørgensen & León-Yánez 1999; Rodríguez Delcid & Daniel 2014; Wasshausen & Wood 2004; Wasshausen 1995; Zuloaga *et al.* 2008). In Brazil, it is recorded in the states of Acre, Bahia, Ceará, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, and São Paulo (BFG 2015, 2018). In the study area we found it in Poconé.

In the study area, *Hygrophila costata* can be confused with *Dyschoriste schottiana*, but it is easily distinguished by the stem branch shape (quadrangular vs. cylindrical). It was collected near river beds in open areas, displaying variable leaf morphology due to its aquatic habit.

7. *Justicia asclepiadea* (Nees) Wassh. & C. Ezcurra, Candollea 52 (1): 172, 1997. *Simonisia asclepiadea* Nees in Mart. *Fl. bras*. 9: 145. 1847a. Figure in: Côrtes & Rapini (2013).

Subshrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.1–0.4 cm long, blade 2.2–11.8 × 0.5–3.8 cm, lanceolate, apex attenuate, base rounded. Inflorescence axillary and terminal, bracts linear-lanceolate, green. Calyx 5-lobed, lobes equal, 1.5–1.8 cm long; corolla pink with white stripes, tube 1–1.2 cm long, not gibbous, 2-labiate, upper lip 0.8–1.2 cm long, unlobed, lower lip 1.1–1.7 mm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 2.3–2.5 cm, ovary ca. 0.2 cm long, ellipsoid.
Examined material: Chapada dos Guimarães, Parque Nacional de Chapada dos Guimarães, 7.VII.2018, fl., *G.M. Antar et al. 2155* (UFMT); 29.IV.1978, fl., *M. Macedo & Duarte A. Assumpção 871* (UFMT). Cuiabá, Serra de São Vicente, 4.III.1983, fl., *E.C.C. Moraes et al. 133* (UFMT); Nobres, 19.V.1997, fl., *V.C. Souza et al. 16530* (UFMT).

The species was recorded to Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil it is recorded in the states of Bahia, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, and Piauí (BFG 2015, 2018). In the study area we found it in Chapada dos Guimarães and Cuiabá.

Justicia asclepiadea can be confused in the study area with *J. nodicaulis*, differing by the linear-lanceolate floral bracts (*vs*. oblanceolate). It was collected in open areas.

8. ***Justicia chapadensis*** S. Moore, Trans. Linn. Soc. London, Bot., 2nd series: Botany 4: 431. 1895. Fig. 2f-g

Subshrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.4–1.7 cm long, blade 3.3–10.5 × 1–2.6 cm, elliptic, apex acute to cuspidate, base attenuate. Inflorescence axillary and terminal, bracts elliptical, green. Calyx 5-lobed, lobes unequal, 0.3–0.5 cm long; corolla pink, white or pinkish white, tube 0.5–0.6 cm long, not gibbous, 2-labiate, upper lip 0.7–0.8 cm long, unlobed, lower lip 0.8–1 mm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 1–1.2 cm, ovary ca. 0.1 cm long, ellipsoid.

Examined material: Chapada dos Guimarães, Fazenda Buriti, 27.VII.2019, fl., *K. Zocal et al. 27* (UFMT, RB, SP); Fazenda Buriti, 27.VII.2019, fl., *K. Zocal et al. 32* (UFMT, RB). Poconé, Estrada de Poconé, 4.IX.1979, fl., *M. Macedo et al. 1296* (UFMT).

The species was recorded in Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil it is found in the states of Mato Grosso and Goiás (BFG 2015, 2018). In the study area we found it in Chapada dos Guimarães and Poconé.

Justicia chapadensis can be confused with *J. warmingii* in the study area but differs by the 5-lobed calyx (*vs*. 4-lobed). It was collected in forested areas.

9. ***Justicia comata*** (L.) Lam., Encyclopédie Méthodique, Botanique 1: 632. 1785. *Dianthera comata* L., Systema Naturae, Editio Decima 2: 850. 1759. Fig. 2h

Herb, erect or ascending, branches quadrangular. Leaves sessile, distributed along the stem, petiole 0–0.1 cm long, blade 1.5–7.7 × 0.4–2 cm, elliptic to lanceolate, apex acute to attenuate, base cuneate to decurrent. Inflorescence terminal, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 0.2–0.4 cm long; corolla white with purple dots, tube 0.1–0.3 cm long, not gibbous, 2-labiate, upper lip 0.2–0.3 cm long, unlobed, lower lip 0.3–0.4 cm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 0.4–0.6 cm, ovary ca. 0.1 cm long, ovoid.

Examined material: Cuiabá, Universidade Federal de Mato Grosso, 9.V.2019, fl., *K. Zocal et al. 09* (UFMT, RB, SP).

The species is widely distributed in the Neotropical region and in Brazil, where it is recorded for all regions (BFG 2015, 2018; Daniel 1995, 2005; Molina Rosito 1975; Wasshausen & Wood 2004; Wasshausen 1995; Zuloaga *et al.* 2008). In the study area we found it in Cuiabá.

Justicia comata is easily distinguished from other species of *Justicia* by its very small flowers and being associated with flooded environments. It was collected in a swampy area in Cuiabá.

10. ***Justicia laevilinguis*** (Nees) Lindau, Bot. Jahrb. Syst. 19 (Beibl. 48): 20. 1894. *Rhytiglossa laevilinguis* Nees in Mart. *Fl. bras.* 9(7): 120. 1847a. Figure in: Côrtes & Rapini (2013).

Herb, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.4–1.7 cm long, blade 2.1–10.5 × 0.4–1.6 cm, narrow-elliptic to oblong, apex rounded to acute or attenuate, base rounded to acute. Inflorescence axillary, bracts elliptical-lanceolate, green. Calyx 5-lobed, lobes unequal, 0.4–0.5 cm long; corolla purple to lilac, tube 0.4–0.5 cm long, not gibbous, 2-labiate, upper lip 0.4–0.5 cm long, unlobed, lower lip 0.4–0.5 cm long, 3-lobed; stamens 2, anther thecae symmetrical; style 0.4–0.7 cm, ovary ca. 0.1 cm long, ovoid.

Examined material: Barão de Melgaço, IX.2003, fl., *G. B. S. Pinto* (UPCB); Poconé, 8.V.1999, fl., *D.A.A. Vilhalva* (UFMT); Fazenda Nossa Senhora Aparecida, 30.III.2004, fl., *L. Rebellato 254* (UFMT); Fazenda Nova Berlim, 12.XII,1991, fl., *M. Schessl 48/3-16* (UFMT); Fazenda Nossa Senhora Aparecida, 15.XI.2003, fl., *L. Rebellato 265* (UFMT); Fazenda Nossa Senhora Aparecida, 7.V.2006, fr., *L. Rebellato & E.C. Arruda 138* (UFMT); 25.III.1993, fl., *M. Schessl 3268* (UFMT); Fazenda Nossa Senhora Aparecida, fr., *C.C. Arruda & L. Rebellato 138* (UFMT); Fazenda Nossa Senhora Aparecida, 2.VI.2004, fl., *L. Rebellato 304* (UFMT); Fazenda Ronco do Bugiu, 21.XI.1993, fl., *A. Lemes do Prado* 5947 (UFMT); Fazenda Uval, 12.IV.1982, fr., *C.N. Cunha 531* (UFMT).

The species was recorded in Argentina, Bolivia, Brazil, Colombia, French Guiana, Mexico, Paraguay, Peru, Suriname, Uruguay, and Venezuela (BFG 2015, 2018; Carnevali *et al.* 2010; Funk *et al.* 2007; Wasshausen & Wood 2004; Wasshausen 1995; Zuloaga *et al.* 2008). It is widely distributed in Brazil (BFG 2015, 2018) and in the study area we found it in Poconé.

In the study area, *Justicia laevilinguis* is similar to *J. lavandulifolia* but differs by the 5-lobed calyx (*vs.* 4-lobed). It was collected in open areas.

11. ***Justicia lavandulifolia*** Pohl ex Nees, Prodr. 11: 348. 1847b. Figure in: Sartin (2015)

Herb, erect or ascending, branches quadrangular. Leaves sub-sessile, distributed

along the stem, petiole ca. 0.1 cm long, blade 1.7–6.5 × 0.2–0.3 cm, linear-oblong, apex attenuate, base acute. Inflorescence terminal, bracts linear-lanceolate, green. Calyx 4-lobed, lobes equal, 0.4–0.5 cm long; corolla lilac with white stripes, tube 0.5–0.6 cm long, not gibbous, 2-labiate, upper lip 0.5–0.7 cm long, unlobed, lower lip 0.4–0.6 cm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 1–1.1 cm, ovary ca. 0.2 cm long, ovoid.

Examined material: Cuiabá, 6.IV.2016, fl., *M.F.S. Campos et al.* (UFMT). Poconé, 18.I.1992, fl., *M. Schessl 103/1-1* (UFMT); 21.II.1992, fl., *M. Schessl 10/0-2* (UFMT).

The species is endemic to Brazil (BFG 2015, 2018) and recorded in the states of Goiás, Mato Grosso, and Tocantins (BFG 2015, 2018). In the study area we found it in Cuiabá and Poconé.

Justicia lavandulifolia is similar to *J. laevilinguis* in the study area but differs by the 4-lobed calyx (*vs.* 5-lobed). It was collected in open areas.

12. *Justicia nodicaulis* (Nees) Leonard, Los Angeles County Mus. Contr. Sci. 32: 13. 1959. *Beloperone nodicaulis* Nees in Mart. *Fl. bras.* 9: 140. 1847a. Fig. 2i-j

Shrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 1.3–1.9 cm long, blade 5.2–13.8 × 1–4.2 cm, elliptic to rarely oblanceolate, apex attenuate to rarely acute, base cuneate. Inflorescence terminal or axillary, bracts oblanceolate, green. Calyx 5-lobed, lobes equal, 1.3–1.9 cm long; corolla pink or red, tube 1.5–1.8 cm long, not gibbous, 2-labiate, upper lip 2.1–2.3 cm long, unlobed, lower lip 1.9–2.1 cm long, 3-lobed; stamens 2, anther thecae symmetrical; style 2.5–2.7 cm, ovary ca. 0.3 cm long, ellipsoid.

Examined material: Chapada dos Guimarães, Parque Nacional de Chapada dos Guimarães, VIII.2000, fr., *J.R.R. Pinto* (UFMT). Santo Antônio de Leverger, 27.III.1996, fl., *Schwenk et al. 30* (UFMT); Trilha Histórica do Matão, 18.IV.2019, fl., *M. Ribeiro et al. 4* (UFMT, RB); Trilha Histórica do Matão, 18.IV.2019, fl., *M. Ribeiro et al. 8* (UFMT).

The species was recorded in Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil, it is found in the states of Distrito Federal, Goiás, Mato Grosso, and Minas Gerais (BFG 2015, 2018). In the study area we found it in Chapada dos Guimarães and Santo Antônio do Leverger.

Justicia nodicaulis can be confused with *J. asclepiadea* in the study area, differing by the oblanceolate floral bracts (*vs.* linear-lanceolate). It was collected in forested areas.

13. *Justicia polygaloides* (S. Moore) Lindau, Bull. Herb. Boissier, ser. 2, 3: 633. 1903. *Dianthera polygaloides* S. Moore, Trans. Linn. Soc. London, Bot. 4: 433. 1895. Fig. 2k-l

Herb, erect or ascending, branches cylindrical. Leaves sub-sessile, distributed along the stem, petiole ca. 0.1 cm long, blade 2.1–6 × 0.3–0.6 cm, narrow-elliptic to narrow-lanceolate, apex attenuate, base acute. Inflorescence terminal, bracts lanceolate, green. Calyx 4-lobed, lobes equal, 0.6–1 cm long; corolla purple to pink, palate with white stripes, tube 0.4–0.6 cm long, not gibbous, 2-labiate, upper lip 0.7–0.8 cm long, unlobed, lower lip 0.8–0.9 cm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 0.6–0.7 cm, ovary ca. 0.2 cm long, ellipsoid.

Examined material: Várzea Grande, 7.III.2020, fl., *K. Zocal et al. 56* (UFMT).

The species was recorded in Argentina, Brazil, and Paraguay (BFG 2015, 2018; Zuloaga *et al.* 2008). In Brazil it is found only in the state of Mato Grosso, but probably also occurs in Goiás, Mato Grosso do Sul and Tocantins (BFG 2015, 2018). In the study area we found it in Várzea Grande.

In the study area, *Justicia polygaloides* is similar to *J. lavandulifolia*, differing from it by the cylindrical stem branches (*vs.* quadrangular), and narrow-elliptic to narrow-lanceolate leaf blades (*vs.* linear-oblong). It was collected in an open area.

14. *Justicia rectiflora* (Lindau) V.A.W. Graham, Kew Bull. 43(4): 614. 1988. *Beloperone rectiflora Lindau*, Bull. Herb. Boissier 3: 489. 1895. Fig. 2m-n

Shrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 1.8–3 cm long, blade 7.5–13.3 × 2.9–5 cm, elliptic, apex acuminate, base acute. Inflorescence terminal or axillary, bracts elliptical, green. Calyx 5-lobed, lobes equal, 1.4–2 cm long; corolla yellow, tube 1.8–3.6 cm long, not gibbous, 2-labiate, upper lip 0.5–1 cm long, unlobed, lower lip 0.7–1.4 cm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 2.5–2.7 cm, ovary ca. 0.2 cm long, pyriform.

Examined material: Chapada dos Guimarães, 27.VII.2019, fl., *K. Zocal et al. 29* (UFMT, RB, SP).

The species is endemic to Brazil and recorded in the states of Mato Grosso and Mato Grosso do

Sul (BFG 2015, 2018). In the study area we found it in Chapada dos Guimarães.

Justicia rectiflora is easily distinguished from other *Justicia* in the study area by its long (1.8–3.6 cm long) and showy yellow corolla. It was collected in a forested area.

15. *Justicia tocantina* (Nees) V.A.W. Graham, Kew Bull. 43(4): 604. 1988. *Chaetothylax tocantinus* Nees in Mart., *Fl. bras.* 9: 153. 1847a. Fig. 2o-p

Subshrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.5–1.6 cm long, blade 2.4–15.1 × 1.3–5.3 cm, elliptic, apex acute to acuminate, base obtuse. Inflorescence axillary to terminal, bracts lanceolate, green. Calyx 4-lobed, lobes equal, 0.6–0.8 cm long; corolla violet, tube 1.5–1.8 cm long, not gibbous, 2-labiate, upper lip 0.8–1 cm long, unlobed, lower lip 0.9–1.1 mm long, 3-lobed; stamens 2, anther thecae symmetrical; style 3.1–3.2 cm, ovary ca. 0.2 cm long, fusiform.

Examined material: Chapada dos Guimarães, Fazenda Buriti, 27.VII.2019, fl., *K. Zocal et al. 31* (UFMT, RB, SP); Jangada, 20.VII.2011, fl., *A. Francener et al. 1084* (UFMT).

The species was recorded in Argentina, Bolivia, Brazil, and Paraguay (BFG 2015, 2018; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is found in the states of Distrito Federal, Goiás, Mato Grosso, Minas Gerais, and Tocantins (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Jangada.

In the study area, *Justicia tocantina* can be confused with species of *Dicliptera*, but it differs by the cylindrical stem branches (*vs.* quadrangular), and 4-lobed calyx (*vs.* 5-lobed). It was collected in a forested area.

16. *Justicia warmingii* Hiern, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn: 80. 1877. Fig. 3a-c

Subshrub, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.5–0.8 cm long, blade 2.9–10.4 × 0.9–2.3 cm, elliptic, apex attenuate to acute, base cuneate. Inflorescence terminal, bracts lanceolate, green. Calyx 4-lobed, lobes equal, 0.6–0.8 cm long; corolla white with purple stripes, tube 0.8–1 cm long, not gibbous, 2-labiate, upper lip 0.8–1 cm long, unlobed, lower lip 0.3–0.4 mm long, 3-lobed; stamens 2, anther thecae asymmetrical; style 1.3–1.6 cm, ovary ca. 0.1 cm long, ellipsoid.

Examined material: Cuiabá, Rio dos Peixes, 13.VIII.1997, fl., *S. Cruz & I. Lopes 10* (UFMT). Nobres, Parque Estadual Gruta da Lagoa Azul, 19.VI.2006, fl., *A.L. de Gasper 204* (FURB).

The species was recorded in Argentina, Bolivia, Brazil, Paraguay, and Peru (BFG 2015, 2018; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is found in the states of Goiás, Mato Grosso and São Paulo, and probably also in Distrito Federal, Mato Grosso do Sul, and Minas Gerais (BFG 2015, 2018). In the study area, we found it in Cuiabá.

In the study area, *Justicia warmingii* can be confused with *J. chapadensis* but differs by the 4-lobed calyx (*vs.* 5-lobed). It was collected in forested areas.

17. *Lepidagathis floribunda* (Pohl) Kameyama, Bol. Bot. Univ. São Paulo 14: 197. 1995. *Lophostachys floribunda* Pohl, Pl. Bras. Icon. Descr. 2: 95. 1831. Fig. 3d

Shrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.4–1.3 cm long, blade 3.4–13.3 × 0.9–6.4 cm, elliptic, apex acuminate, base attenuate. Inflorescence terminal or axillary, bracts wide-elliptical, red to greenish-red. Calyx 4-lobed, lobes unequal, major 1–1.1 cm long, minor 0.2–0.4 cm long; corolla red, not gibbous, tube 1.5–1.8 cm long, 2-labiate, upper lip 0.8–1.1 cm long, unlobed, lower lip 0.9–1 cm long, unlobed; stamens 4, anther thecae symmetrical; style 4–4.3 cm, ovary ca. 0.3 cm long, ellipsoid.

Examined material: Chapada dos Guimarães, Reserva do Manso, 9.III.2001, fl., *M. Macedo et al. 7512* (UFMT); Reserva do Manso, 18.IV.2001, fl., *M. Macedo et al. 7683* (UFMT); Reserva do Manso, 17.V.2000, fl., *N. Somavilla & E.C. Oliveira 26* (UFMT); Trilha Histórica do Matão, 18.IV.2019, fl., *K. Zocal et al. 04* (UFMT, RB, SP). Nobres, Estrada Velha, 23.V.1997, fl., *V.C. Souza et al. 17034* (UFMT); Lago Azul, 24.V.1997, fl. and fr., *V.C. Souza et al. 17156* (MBM); 24.VII.2018, fl., *J. Soares* (UB); Santo Antônio do Leverger, 27.III.1996, fl., *Schwenk et al. 07* (UFMT).

The species was recorded in Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil, it is found in the states of Bahia, Distrito Federal, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, São Paulo, and Tocantins (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Santo Antônio do Leverger.

Lepidagathis floribunda is characterized by the reddish bracts that distinguish it from *L. sessilifolia,* from which it also differs by the acuminate leaf apex (*vs.* rounded, obtuse, or acute). In the study area, it was collected in forested areas, contrasting with *L. sessilifolia,* which is found in open areas.

18. ***Lepidagathis sessilifolia*** (Pohl) Kameyama *ex* Wassh. & J.R.I. Wood, Contr. U.S. Natl. Herb. 49: 86. 2004. *Lophostachys sessilifolia* Pohl, Pl. Bras. Icon. Descr. 2: 96. 1831. Figure in: Silva & Nogueira (2012).

Shrub, erect or ascending, branches quadrangular. Leaves subsessile to petiolate, distributed along the stem, petiole 0.2–1.3 cm long, blade 3.5–11 × 0.9–4.6 cm, elliptic, apex rounded, obtuse or acute, base obtuse. Inflorescence terminal or axillary, bracts ovate, pinkish red to purplish. Calyx 4-lobed, lobes unequal, major 1.8–2.1 cm long, minor 0.8–1.3 cm long; corolla rose to reddish, tube 1.3–1.6 cm long, not gibbous, 2-labiate, upper lip 0.3–0.4 cm long, unlobed, lower lip 0.3–0.4 cm long, 3-lobed; stamens 4, anther

Figure 3 – a-c. *Justicia warmingii* – a. branch showing leaves, bracts and inflorescence, lateral view; b. detail of inflorescence and bracts, lateral view; c. individual, front view. d. *Lepidagathis floribunda* – inflorescence, lateral view. e-f. *Pseuderanthemum congestum* – e. branch, lateral view; f. individual, front view. g-h. *Ruellia blechum* – g. branch showing bracts and flowers; h. individual, front view. i-j. *Ruellia geminiflora* – i. branch, lateral view; j. individual, front view. k-m. *Ruellia hygrophila* – k. flower and leaves, front view; l. individual, front view; m. individual, lateral view. n-o. *Ruellia jussieuoides* – n. flower and leaves, front view; o. detail of flower, front view. p. *Stenandrium hirsutum* – branch showing leaves and flowers. (a-c. *K. Zocal et al. 28*; d. *K. Zocal et al. 04*; e-f. *M. Ribeiro et al. 27*; g-h. K. *Zocal & M. Ribeiro 23*; i-j. K. *Zocal et al. 13*; k-m. *K. Zocal & E. Pessoa 40*; n-o. *K. Zocal et al. 19*; p. *K. Zocal et al. 49*).

thecae symmetrical; style 2.3–2.6 cm, ovary ca. 0.2 cm long, ellipsoid.
Examined material: Acorizal, Sítio Boa Esperança, 27.V.1999, fl., *M. Macedo et al. 6907* (UFMT). Cuiabá, Universidade Federal de Mato Grosso, 20.II.2006, fl., *V.F.A. Rocha 06* (UFMT); 11.IV.2018, fl., *M.F.S. Campos & A.S. Lima* (UFMT); 9.III.1982, fl., *V. Borges 04* (UFMT); 8.V.2001, fl., *E.R. Wobeto & L.A. Neto 82* (UFMT); 9.III.1982, fl., *M.Q. da Silva 04* (UFMT); Universidade Federal de Mato Grosso, 10.IV.1996, fl., *C.N. Darvin* (UFMT); 22.III.1982, fl., *C.N. Cunha & Freitas Leitão 430* (UFMT); Rio dos Peixes, 14.V.1998, fl., *I. Lopes & S. Cruz 10* (UFMT); 4.III.1983, fl., *E.C.C. Moraes et al. 148* (UFMT). Jangada, 1.V.2004, fl., *C.N. do Amaral 21* (UFMT). Nobres, Fazenda Quebó, 24.V.1997, fl., *V.C. Souza et al. 17075* (ESA); 24.V.1997, fl., *V.C. Souza et al. 17218* (ESA). Nossa Senhora do Livramento, V.2008, fl., *R.M. Castro 1499* (CESJ); V.2008, fl., *R.M. Castro 1550* (CESJ); Poconé, 18.II.2001, fl., *S.C. Costa 107* (UFMT); 5.IV.1992, fl., *M. Schessl 2600* (UFMT); 3.III.1978, fl., *M. Macedo & S. Assumpção 1225* (UFMT). Rosário Oeste, Fazenda Nossa Senhora da Conceição, 22.III.2008, fl., *A.L. Prado et al. 8657* (UFMT). Santo Antônio do Leverger, 14.IV.1982, fl., *L.A. Neto 13* (UFMT); 20.V.1982, fl., *G. Guarim Neto et al. 593* (UFMT); 3.IV.1982, fl., *C.N. Cunha & A.L. Prado 465* (UFMT); 9.III.1982 fl., *D. Miranda 51* (UFMT); 8.III.1999, fl., *M. Macedo et al. 6911* (UFMT).

The species was recorded in Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil, it is found in the state of Goiás, Mato Grosso, Maranhão, and Tocantins. (BFG 2015, 2018). In the study area we found it in Acorizal, Cuiabá, Jangada, Poconé, Rosário Oeste, and Santo Antônio do Leverger.

Lepidagathis sessilifolia is characterized by the pink to purplish bracts that distinguish it from *L. floribunda,* from which it also differs by its rounded, obtuse, or acute leaf apex (*vs.* acuminate). In the study area it was collected in open environments, contrasting with *L. floribunda,* which is found in forested areas.

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

Climbing plant, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.5–1.8 cm long, blade 3.9–10 × 1.8–3.4 cm, elliptic, apex retuse to acuminate, base obtuse. Inflorescence axillary, bracts ovate, green. Calyx 5-lobed, lobes unequal, major 1.8–1.9 cm long, minor 1.2–1.4; corolla white, tube 0.5–0.6 cm long, not gibbous, infundibuliform, lobes 1.4–1.6 cm long, sub-orbicular; stamens 4, anther thecae symmetrical; style 1.2–1.6 cm, ovary ca. 0.3 cm long, ovoid.
Examined material: Barão de Melgaço, RPPN Sesc Pantanal, 19.III.2014, fl. and fr., *F.H.B. Silva 35* (UFMT).

The species was recorded in Brazil and Venezuela (BFG 2015, 2018; Jørgensen *et al*. 2014). In Brazil, it is found in the states of Amazonas, Bahia, Distrito Federal, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina, and São Paulo (BFG 2015, 2018). In the study area, we found it in Barão de Melgaço.

Mendoncia puberula is the only climbing species found in the study area, where it was collected in forested environment.

20. *Pseuderanthemum congestum* (S. Moore) Wassh., Prodr. Fl. Matogrossensis, Ser. B 1: 3. 1998. *Eranthemum congestum* S. Moore, Trans. Linn. Soc. London 4: 428. 1895. Fig. 3e-f

Herb, erect or ascending, branches cylindrical. Leaves petiolate, distributed along the stem, petiole 0.3–0.5 cm long, blade 2.8–8 × 1.2–2.7 cm, elliptic to lanceolate, apex acute to acuminate, base acute. Inflorescence terminal, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 0.5–0.9 cm long; corolla lilac, tube 1.5–1.7 cm long, not gibbous, hippocrateriform, lobes 0.5–0.7 cm long, elliptic; stamens 2, anther thecae symmetrical, staminode 2; style 2–2.1 cm, ovary ca. 0.2 cm long, fusiform.
Examined material: Chapada dos Guimarães, Reserva do Manso, 7.II.2001, fl., *M. Macedo et al. 7476* (UFMT); Fazenda Buriti, 27.VII.2019, fl., *M. Ribeiro et al. 27* (UFMT, RB, SP). Cuiabá, Coxipó Jurumirim, 12.V.1996, fl., *D. Conceição & A. Sulzbach* (UFMT).

The species was recorded in Bolivia and Brazil (BFG 2015, 2018; Wasshausen & Wood 2004). In Brazil, it is found in the states of Acre, Amazonas, Ceará, Goiás, Mato Grosso, Mato Grosso do Sul, Pará, and Rondônia (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Cuiabá.

In the area, *Pseuderanthemum congestum* can be confused with *Stenandrium hirsutum*, but it is easily distinguished by the shape of the stem branches (cylindrical *vs.* quadrangular) and the 5-lobed calyx (*vs.* 4-lobed). It was collected in forested areas.

21. *Ruellia blechum* L., Syst. Nat. (ed. 10) 2: 1120. 1759. Fig. 3g-h

Herb, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.5–0.9 cm long, blade 1.2–4.7

× 1–2.5 cm, ovate-lanceolate to elliptical, apex acute, base obtuse. Inflorescence terminal, bracts ovate to wide-elliptical, green. Calyx 5-lobed, lobes equal, 0.3–0.4 cm long; corolla lilac, tube 1–1.1 cm long, not gibbous, infundibuliform, lobes 0.4–0.6 cm long, orbicular; stamens 4, anther thecae symmetrical; style 1–1.1 cm, ovary ca. 0.2 cm long, fusiform.

Examined material: Cuiabá, 29.IX.2018, fl., *A. S. Lima & S.R.A. Gonçalves* (UFMT); 26.VI.2019, fl., *K. Zocal & M. Ribeiro 23* (UFMT, RB, SP).

The species is widely distributed in the Neotropical region (BFG 2015, 2018; Daniel 2010; Daniel *et al.* 2012; McDade & Tripp 2007; Wasshausen & Wood 2004; Wasshausen 1995). In Brazil, it is found in the states of Bahia, Espírito Santo, Minas Gerais, Pará, Pernambuco, Rio de Janeiro, and São Paulo (BFG 2015, 2018). We hereby present the first record of the species in Mato Grosso, where we found it in Cuiabá.

Ruellia blechum is easily distinguished from other species of *Ruellia* in the study area by the ovate to wide-elliptical bracts (*vs.* lanceolate or elliptical). It was collected in open and disturbed areas.

22. *Ruellia brevifolia* (Pohl) C. Ezcurra, Darwiniana 29: 278. 1989. *Stephanophysum brevifolium* Pohl, Pl. Bras. Icon. Descr. 2: 84. 1831. Figure in: Silva & Bonadeu (2019).

Subshrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 1–4 cm long, blade 5.2–18 × 1.6–9.9 cm, ovate to elliptic, apex acuminate, base cuneate. Inflorescence terminal or axillary, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 0.9–1.1 cm long; corolla red, tube 2.3–3 cm long, gibbous, urceolate, lobes 0.2–0.5 cm long, suborbicular; stamens 4, anther thecae symmetrical; style 1–1.2 cm, ovary ca. 0.3 cm long, cylindrical.

Examined material: Chapada dos Guimarães, Loteamento St. Elvira, 28.VIII.1996, fl. and fr., *M.R. Sigrist 19* (CGMS). Cuiabá, Mata da Jacobina, 7.XI.2017, fl., *M. Macedo 203* (INPA).

The species is widely distributed in South America (BFG 2015, 2018; Ezcurra 1993; Jørgensen & León-Yánez 1999; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is found in the states of Acre, Amazonas, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Paraná, Rio de Janeiro, Rio Grande do Sul, Rondônia, Santa Catarina, and São Paulo (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Cuiabá.

Ruellia brevifolia is easily distinguished from other species of *Ruellia* in the study area by its red flowers. Among the other red-flowered species in the area, it differs from two species of *Dicliptera* by the urceolate corolla (*vs.* 2-labiate), and from *Aphelandra longiflora* by the shape of the stem branches (quadrangular *vs.* cylindrical). It was collected in open and forested areas.

23. *Ruellia costata* Lindau, Symb. Antill. 2(2): 195. 1900.

Herbs to subshrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.8–1 cm long, blade 11.7–17.2 × 2.2–8 cm, linear to lanceolate, apex acuminate, base attenuate. Inflorescence axillary, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 0.5–2 cm long; corolla purple, tube 3.3–3.9 cm long, not gibbous, hippocrateriform, lobes 0.9–1.1 cm long, orbicular; stamens 4, anther thecae symmetrical; style 3.2–3.8 cm, ovary ca. 0.3 cm long, fusiform.

Examined material: Poconé, 3.IV.1982, fl., *C.N. Cunha & A.L. Prado 468* (UEC).

The species is endemic to Brazil and recorded in the states of Distrito Federal, Goiás, Maranhão, Mato Grosso, Minas Gerais and Pará (BFG 2015, 2018). In the study area, we found it in Poconé.

In the study area, *Ruellia costata* can be confused with *R. jussieuoides,* from which it differs by the shorter corolla tube (≤ 3.9 *vs.* ≥ 5.5 cm long). It was collected in a forested area.

24. *Ruellia geminiflora* Kunth, Nov. Gen. Sp. 2: 240. 1817. Fig. 3i-j

Subshrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.3–0.5 cm long, blade 1–5.6 × 0.3–1.3 cm, elliptic, oblanceolate or obovate, apex acute to obtuse, base attenuate to obtuse. Inflorescence terminal or axillary, bracts lanceolate long, green. Calyx 5-lobed, lobes equal, 0.5–0.9 cm long; corolla lilac, tube 1–1.2 cm long, not gibbous, hippocrateriform, lobes 0.6–0.9 cm long, orbicular; stamens 4, anther thecae symmetrical; style 1.5–1.7 cm, ovary ca. 0.4 cm long, fusiform.

Examined material: Campo Verde, Rio Casca, 11.VIII.1997, fr., *G. Hatschbach et al. 66651* (MBM); Chapada dos Guimarães, Reserva do Manso, 9.III.2001, fl., *M. Macedo et al. 7525* (UFMT); trilha histórica do Matão, 18.IV.2019, fl., *K. Zocal et al. 02* (UFMT); 8.VI.2019, fl., *K. Zocal et al. 13* (UFMT); Fazenda Buriti, 27.VII.2019, fl. and fr., *K. Zocal et al. 33* (UFMT); Fazenda Buriti, 25.IX.2019, fl., *K. Zocal et*

al. 42 (UFMT, RB, SP). Cuiabá, 13.II.1982, fl., *L.C. Frutoso 19* (UFMT); 7.III.1982, fr., *A.D. do Queiroz 02* (UFMT); 30.IX.1977, fl., *M. Macedo et al. 990* (UFMT); 7.III.1982, fl., *V. Borges 19* (UFMT); 26.IV.1996, fl., *Conceição e Arcênio* (UFMT); Serra de São Vicente, 26.X.1981, fl., *F. Sonoda & N. Menezes 21* (UFMT); 23.III.1982, fl., *C.N. Cunha & H.F.L. Filho 438* (UFMT); 7.III.1982, fl., *D.P. Miranda 07* (UFMT); Rio dos Peixes, 14.V.1998, fr., *I. Lopes & S. Cruz 69* (UFMT); Universidade Federal de Mato Grosso, 9.X.2019, fl., *K. Zocal & E. Pessoa 47* (UFMT, RB). Jangada, Fazenda Santa Elina, 14.VII.1999, fl., *G. Ceccantini et al. 1324* (MBM). Nossa Senhora do Livramento, 20.VIII.1989, fl., *M. Macêdo 2315* (INPA). Nova Brasilândia, 7.X.1997, fl., *V.C. de Souza et al. 20134* (ESA); 7.X.1997, fl., *V.C. de Souza et al. 27943* (UFMT); Planalto da Serra, 20.XI.2004, fl., *R. Tsuji et al. 722* (HPL). Poconé, 27.V.2001, fl., *S.C. Costa 185* (UFMT); Fazenda Nossa Senhora Aparecida, X.2011, fl., *L. Rebellato 45* (UFMT); Fazenda Nossa Senhora Aparecida, X.2011, fl., *L. Rebellato 46* (UFMT). Rosário Oeste, Fazenda Nossa Senhora da Conceição, 22.III.2008, fl., *A.L. Prado et al. 8661* (UFMT); 7.X.1997, fl., *V.C. Souza et al.* (UFMT). Santo Antônio de Leverger, 30.V.1985, fl., *G. Guarim Neto et al. 1076* (UFMT); 1.VII.1982, fl., *Marilda Q.S. et al. 04* (UFMT); Fazenda UFMT, 31.VIII.2019, fl., *K. Zocal et al. 34* (UFMT, RB). Várzea Grande, Loteamento Santa Cecília, 31.VIII.2019, fl., *K Zocal et al. 35* (UFMT, RB); Loteamento Santa Cecília, 31.VIII.2019, fl., *K Zocal et al. 36* (UFMT); Chácara Vilela, 20.X.2019, fl., *K Zocal & M. Vilela 48* (UFMT, RB).

The species is widely distributed in the Neotropical region and in Brazil, where it is recorded in all regions (Berendsohn & Araniva de González 1989; BFG 2015, 2018; Daniel 1995; Durkee 1986; Molina Rosito 1975; Wasshausen & Wood 2004; Wasshausen 1995; Zuloaga *et al.* 2008). In the study area, we found it in Chapada dos Guimarães, Cuiabá, Poconé, Rosário Oeste, Santo Antônio do Leverger, and Várzea Grande.

The species has 10 synonyms (BFG 2015, 2018), reflecting wide morphological variation. In the study area, it can be confused with *R. trachyphylla*, from which it differs by leaf shape (ovate-lanceolate, elliptical, oblanceolate or obovate *vs*. narrow-lanceolate to narrow-elliptic) and shorter calyx (≤ 0.9 *vs.* ≥ 1.2 cm long). It is the most common species of Acanthaceae in open areas, where we observed a wide variation in leaf shape.

25. *Ruellia hygrophila* Mart., Flora 24(Beibl.): 65. 1841. Fig. 3k-m

Herb, nearly acaulescent, branches quadrangular. Leaves petiolate, clustered in a rosette, petiole 1–1.5 cm long, blade 1.4–6.5 × 0.6–1.8 cm, oblanceolate to obovate, apex rounded, base decurrent. Inflorescence terminal, bracts lanceolate, green. Calyx 5-lobed, lobes unequal, 1–1.6 cm long; corolla lilac, tube 3–4.5 cm long, not gibbous, infundibuliform, lobes 1–1.3 cm long, orbicular; stamens 4, anther thecae symmetrical; style 2.1–2.2 cm, ovary ca. 0.3 cm long, fusiform.
Examined material: Cuiabá, Universidade Federal de Mato Grosso, 19.X.2018, fl., *A.K. Koch 1027* (UFMT); Universidade Federal de Mato Grosso, 9.I.1986, fr., *A.D. da Silva* (UFMT); Universidade Federal de Mato Grosso, 20.IX.2019, fl., *K. Zocal & E. Pessoa 40* (UFMT, RB, SP).

The species was recorded in Argentina, Bolivia, Brazil, Paraguay, and Uruguay (BFG 2015, 2018; Wasshausen & Wood 2004; Zuloaga *et al.* 2008). In Brazil, it is recorded in the states of Mato Grosso and Mato Grosso do Sul (BFG 2015, 2018). In the study area, we found it in Cuiabá.

Ruellia hygrophila is easily distinguished from other species of *Ruellia* in the study area by the leaves clustered in a rosette (*vs.* distributed along the stem). It was collected in open and disturbed areas.

26. *Ruellia jussieuoides* Schltdl. & Cham., Linnaea 6: 370. 1831. Fig. 3n-o

Subshrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.4–2.7 cm long, blade 2.5–14 × 1–6.3 cm, elliptic, apex acute to acuminate, base attenuate. Inflorescence terminal or axillary, bracts lanceolate to elliptical, green. Calyx 5-lobed, lobes equal, 1.4–1.7 cm long; corolla lilac, tube 5.5–5.8 cm long, not gibbous, infundibuliform, lobes 1.2–1.3 cm long, orbicular; stamens 4, anther thecae symmetrical; style 5–5.2 cm, ovary ca. 0.4 cm long, fusiform.
Examined material: Chapada dos Guimarães, Trilha Histórica do Matão, 8.VI.2019, fl., *K. Zocal et al. 19* (UFMT); Trilha Histórica do Matão, 8.VI.2019, fl., *K. Zocal et al. 20* (UFMT); Fazenda Buriti, 25.IX.2019, fl., *K. Zocal et al. 41* (UFMT, RB); Trilha Histórica do Matão, 18.IV.2019, fl., *M. Ribeiro et al. 3* (UFMT, RB). Cuiabá, Residencial Coxipó, 28.X.2019, fl., *K. Zocal et al. 50* (UFMT). Nobres, Lago Azul, 24.V.1997, fl., *V.C. Souza 17135* (ESA). Santo Antônio de Leverger, Fazenda Aguaçul, 12.IV.1996, fl., *M. Macedo* (UFMT).

The species was recorded in Bolivia, Brazil, Costa Rica, Ecuador, Guatemala, Mexico, Nicaragua, Panama, and Peru (BFG 2015, 2018; Gibson 1974; Jørgensen *et al*. 2014). In Brazil, it is found in the states of Distrito Federal, Goiás, Minas

Gerais, and São Paulo (BFG 2015, 2018). We present here a new record for Mato Grosso. In the study area, we found it in Chapada dos Guimarães, Cuiabá and Santo Antônio do Leverger.

In the study area, *Ruellia jussieuoides* can be confused with *R. costata,* from which it differs by the longer corolla tube (≥ 5.5 *vs.* ≤ 3.9). It was collected in a forested area.

27. *Ruellia neesiana* (Mart. *ex* Nees) Lindau, Nat. Pflanzenfam. 4: 310. 1895. *Dipteracanthus neesianus* Mart. *ex* Nees, *Fl. bras.* 9: 37. 1847a. Figure in: Pessôa (2012).

Subshrub, erect or ascending, branches quadrangular. Leaves petiolate, distributed along the stem, petiole 0.5–1.4 cm long, blade 7–14 × 3.9–6.4 cm, elliptic, apex acute to acuminate, base rounded. Inflorescence terminal, bracts lanceolate to elliptical, green. Calyx 5-lobed, lobes equal, 2.2–2.3 cm long; corolla lilac, tube 4.5–6 cm long, not gibbous, infundibuliform, lobes 1.6–2 cm long, orbicular; stamens 4, anther thecae symmetrical; style 2.5–2.6 cm, ovary ca. 0.4 cm long, ellipsoid. **Examined material**: Chapada dos Guimarães, Balneário da Martinha, 24.III.2013, fl., *A. Francener & C.F. Hall 1367* (UFMT); 8.IV.1979, fl., *G. Guarim Neto 108* (UFMT). Cuiabá, 29.VIII.1978, fl., *M. Macedo et al. 878* (UEC).

The species is endemic to Brazil and recorded in the states of Distrito Federal, Goiás, Mato Grosso and Mato Grosso do Sul (BFG 2015, 2018). In the study area, we found it in Chapada dos Guimarães and Cuiabá.

Ruellia neesiana has the longest corolla tube among the species in the study area, but *R. jussieuoides* can sometimes overlap in length, from which *R. neesiana* can be distinguished by its longer calyx (≥ 2.2 *vs.* ≤ 2 cm long). It was collected in open areas.

28. *Ruellia trachyphylla* Lindau, Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 25: 46. 1898.

Subshrub, erect or ascending, branches quadrangular. Leaves sub-sessile, distributed along the stem, petiole 0.1–0.2 cm long, blade 2.2–4.8 × 0.3–1 cm, narrow-lanceolate to narrow-elliptic, apex acute, base cuneate. Inflorescence axillary, bracts lanceolate, green. Calyx 5-lobed, lobes equal, 1.2–1.3 cm long; corolla lilac, tube 1.4–1.7 cm long, not gibbous, infundibuliform, lobes 1–1.3 cm long, orbicular; stamens 4, anther thecae symmetrical; style 1.3–1.6 cm, ovary ca. 0.3 cm long, ellipsoid.
Examined material: Poconé, Fazenda Berro do Bugiu, 23.IX.1992, fl., *A.L. Prado 1711* (UEC); Fazenda Berro do Bugiu, 22.XI.1992, fl., *A.L. Prado et al. 2745* (UEC).

The species is endemic to Brazil and recorded in the state of Goiás (BFG 2015, 2018). We present the first record of the species in Mato Grosso, where it is found in Poconé.

Ruellia trachyphylla can be confused in the study area with *R. geminiflora*, from which it differs by the leaf shape (narrow-lanceolate to narrow-elliptic *vs.* ovate-lanceolate, elliptical, oblanceolate or obovate) and longer calyx (≥ 1.2 *vs.* ≤ 0.9 cm long). It was collected in open areas.

29. *Staurogyne repens* (Nees) Kuntze, Rev. Gen. Pl. 2: 497. 1891. *Ebermaiera repens* Nees, in Mart. *Fl. bras.* 9: 20. 1847a. Figure in: Braz & Monteiro (2017).

Herb, erect or ascending, hydrophilic, branches cylindrical. Leaves subsessile, distributed along the stem, petiole 0.1–0.2 cm long, blade 1.1–2.2 × 0.5–1.2 cm, elliptic to oblong, apex acute, base obtuse to rounded. Inflorescence terminal, bracts ovate, green. Calyx 5-lobed, lobes unequal, posterior lobe 0.5–0.6 cm long, anterior pair 0.4–0.5 cm long, lateral pair 0.3–0.4 cm long; corolla white with purple stripes, tube 2–2.5 mm long, not gibbous, 2-labiate, upper lip 1–1.7 cm long, 2-lobed, lower lip 1–1.4 cm long, 3-lobed; stamens 4, anther thecae symmetrical, staminode 2; style 3–3.3 mm, ovary ca. 0.2 cm long, ovoid.
Examined material: Poconé, 6.VIII.1991, fl. and fr., *M. Schessl 060891-2-9* (UFMT); Fazenda Nossa Senhora Aparecida, fl., *E.C. Arruda & L. Rebellato 137* (UFMT); Fazenda Nossa Senhora Aparecida, X.2011, fl., *L. Rebellato 26* (UFMT). Santo Antônio de Leverger, 6.X.1982, fl., *M.I. Marques et al. 35* (UFMT).

The species is endemic to Brazil and recorded in the state of Amazonas, Mato Grosso and Pará (BFG 2015, 2018). In the study area we found it in Poconé and Santo Antônio do Leverger.

Staurogyne repens can be confused in the study area with *Hygrophila costata*, but it is easily distinguished by the shape of the stem branches (cylindrical *vs.* quadrangular). It was collected near river courses in open areas.

30. *Stenandrium hirsutum* Nees in Mart., *Fl. bras.* 9: 77. 1847a. Fig. 3p

Herb, erect or ascending, branches quadrangular. Leaves subsessile, distributed along the stem, petiole 1.4–2.2 mm long, blade 7.7–14.5 × 1.9–3 cm, lanceolate, apex acute, base attenuate.

Inflorescence terminal, bracts lanceolate, green. Calyx 4-lobed, lobes equal, 6–8 mm long; corolla light pink, tube 0.3–0.5 cm long, not gibbous, bilabiate, upper lip 0.5–0.6 cm long, 2-lobed, lower lip 0.5–0.6 cm long, 3-lobed; stamens 2, anther thecae asymmetrical, staminode 2; style 0.6–0.8 cm, ovary ca. 0.2 cm long, fusiform.

Examined material: Cuiabá, Residencial Coxipó, 28.X.2019, fl., *K. Zocal et al. 49* (UFMT). Nova Brasilândia, 7.X.1997, fl., *V.C. Souza et al.* (UFMT). Várzea Grande, 7.III.2020, fl., *K. Zocal et al. 55* (UFMT).

The species is endemic to Brazil and recorded in the state of Goiás, Mato Grosso, Minas Gerais, and São Paulo (BFG 2015, 2018). In the study area, we found it in Nova Brasilândia and Várzea Grande.

In the study area, *Stenandrium hirsutum* can be confused with *Pseuderanthemum congestum*, from which it can be distinguished by the shape of the stem branches (quadrangular *vs.* cylindrical) and the 4-lobed calyx (*vs.* 5-lobed). It was collected in open areas.

31. *Stenandrium pohlii* Nees, *Fl. bras.* 9: 75. 1847a.

Herb, low, nearly acaulescent, branches quadrangular. Leaves subsessile, clustered in a rosette, petiole 1.4–2.2 mm long, blade 4.3–7.5 × 1.2–2.5 cm, obovate to obelliptic, apex obtuse to rounded, base attenuate. Inflorescence terminal, bracts ovate to elliptical, green. Calyx 5-lobed, lobes equal, 1–1.5 mm long; corolla white to light pink, lilac or magenta, tube 1.1–1.3 cm long, not gibbous, upper lip 1.3–1.5 cm long, 2-lobed, lower 1.3–1.5 cm long, 3-lobed; stamens 2, anther thecae symmetrical; style 0.2–0.8 cm, ovary ca. 0.2 cm long, ovoid.

Examined material: Residencial Coxipó, 28.X.2019, fl., *K. Zocal et al. 51* (UFMT, RB). Várzea Grande, 26.IX.1979, fl., *M. Macedo et al. 1400* (UFMT).

The species is recorded in Bolivia and Brazil (BFG 2015, 2018; Jørgensen *et al*. 2014). In Brazil, it is found in the states of Distrito Federal, Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais, and Paraná (BFG 2015, 2018). In the study area, we found it in Várzea Grande.

Stenandrium pohlii can be easily distinguished from other *Stenandrium* species in the area by the rosette leaves (*vs.* distributed along the elongated stem). It was collected in open areas.

Acknowledgements

The authors thank Adarilda Petini Benelli, for granting access to her property and fieldwork support during our expeditions; and CNPq, for the fellowship granted to the first author.

References

Alcantara C, Soares G, Santos FAR & Alves M (2020) A new species of *Justicia* (Acanthaceae: Acanthoideae: Justicieae) from Northeastern Brazil. Systematic Botany 45: 328-333.

Alcantara C & Alves M (2022) La Tribu Justicieae (Acanthaceae) en la región oriental del Nordeste de Brasil. Caldasia 44: 274-316.

APG IV - Angiosperm Phylogeny Group (2016) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. Botanical Journal of the Linnean Society 181: 1-20.

Berendsohn WG & Araniva de González AE (1989) Listado básico de la Flora Salvadorensis: Dicotyledonae, Sympetalae (pro parte): Labiatae, Bignoniaceae, Acanthaceae, Pedaliaceae, Martyniaceae, Gesneriaceae, Compositae. Cuscatlania 1: 1-13.

Borg AJ, McDade, LA & Schönenberger J (2008) Molecular phylogenetics and morphological evolution of Thunbergioideae (Acanthaceae). Taxon 57: 811-822.

Braz DM & Azevedo IHF (2016) Acanthaceae da Marambaia, estado do Rio de Janeiro, Brasil. Hoehnea 43: 497-516.

Braz DM & Monteiro R (2006) Novas espécies de *Staurogyne* Wall. (Acanthaceae) para o Brasil. Revista Brasileira de Botânica 29: 579-586.

Braz DM & Monteiro R (2017) Taxonomic revision of *Staurogyne* (Nelsonioideae, Acanthaceae) in the Neotropics. Phytotaxa 296: 001-040.

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

Carnevali G, Tapia-Muñoz JL, Duno de Stefano R & Ramírez Morillo IM (2010) Flora ilustrada de la Península de Yucatán. Centro de Investigación Científica de Yucatán, Mérida. 326p.

Cavalcanti TB & Batista MF (2009) Flora do Distrito Federal. Vol. 7. Embrapa Recursos Genéticos e Biotecnologia, Brasília. 328p.

Cavalcanti TB & Batista MF (2010) Flora do Distrito Federal. Vol. 8. Embrapa Recursos Genéticos e Biotecnologia, Brasília. 182p.

Cavalcanti TB & Dias EBA (2012) Flora do Distrito Federal. Vol. 9. Embrapa Recursos Genéticos e Biotecnologia, Brasília. 340p.

Cavalcanti TB & Silva AP (2011) Flora do Distrito Federal. Vol. 9. Embrapa Recursos Genéticos e Biotecnologia, Brasília. 224p.

Chiaranda R, Rizzi NE, Colpini C, Soares TS & Silva VSM (2012) Análise da precipitação e da vazão da bacia do Rio Cuiabá. Revista Brasileira de Ciências Agrárias 7: 117-122.

Correll DS & Johnston MC (1970) Manual of the vascular plants of Texas. Texas Research Foundation, Renner. 1881p.

Côrtes ALA & Rapini A (2011) Four new species of *Justicia* (Acanthaceae) from the Caatinga biome of Bahia, Brazil. Kew Bulletin 66: 453-461.

Côrtes ALA & Rapini A (2013) Justicieae (Acanthaceae) do semiárido do estado da Bahia, Brasil. Hoehnea 40: 253-292.

Costa-Lima JL & Chagas ECO (2020) A synopsis of *Dicliptera* (Acanthaceae) in Brazil, with the description of two new species. Systematic Botany 45: 340-348.

Daniel TF (1995) Acanthaceae. *In*: Breedlove DE (ed.) Flora of Chiapas. Vol. 4. California Academy of Sciences, San Francisco. Pp. 1-158.

Daniel TF (2005) Catalog of Honduran Acanthaceae with taxonomic and phytogeographic notes. Contributions from the University of Michigan Herbarium 24: 51-108.

Daniel TF (2009) Synopsis of *Dicliptera* (Acanthaceae) in the Nueva Galicia region of western Mexico with a new species, *D. novogaliciana*. Proceedings of the California Academy of Sciences 60: 17-18.

Daniel TF (2010) Catalog of Guatemalan Acanthaceae: taxonomy, ecology, and conservation. Proceedings of the California Academy of Sciences 61: 291-379.

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

Daniel TF, Véliz MEP & Kriebel R (2012) New distribution records of Acanthaceae in Guatemala. Phytoneuron 79: 1-5.

Dubs B (1998) Prodromus Florae Matogrossensis. Betrona Verlag, Küsnacht.

Durkee LH (1986) Flora costaricensis: Acanthaceae. Fieldiana Botany 18: 1-87.

D'Arcy WG (1987) Flora of Panama. Checklist and Index. Part 1: the introduction and checklist. Monographs in Systematic Botany from the Missouri Botanical Garden 17: 1-328.

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) en Sudamérica Austral. Annals of the Missouri Botanical Garden 89: 225-280.

Flora e Funga do Brasil 2020 (continuously updated) Acanthaceae. *In*: Jardim Botânico do Rio de Janeiro. Available at <http://floradobrasil.jbrj.gov.br/reflora/floradobrasil/FB33>. Access on 9 November 2020.

Funk VA, Hollowell TH, Berry PE, Kelloff CL & Alexander SN (2007) Checklist of the plants of the Guiana Shield (Venezuela: Amazonas, Bolívar, Delta Amacuro; Guyana, Surinam, French Guiana). Contributions from the United States National Herbarium 55: 1-584.

Grant WF (1955) A cytogenetic study in the Acanthaceae. Brittonia 8: 121-150.

Graham VAW (1988) Delimitation and infra-generic classification of *Justicia* (Acanthaceae). Kew Bulletin 43: 551-624.

Hammes JK, Silva MG, Kameyama C & Temponi LG (2021) Flora of Acanthaceae of Iguaçu National Park, Paraná, Brazil. Rodriguésia 72: e00762019.

Harris JG & Harris MW (2001) Plant identification terminology: an illustrated glossary. 2nd ed. Spring Lake Publishing, Utah. 216p.

Harvey YB & Wasshausen DC (1995) Acanthaceae. *In*: Standard BL (ed.) Flora of the Pico das Almas: Chapada Diamantina, Bahia, Brazil. Royal Botanical Garden, London. Pp. 112-114.

Hiern WP (1877) *Symbolae ad floram Brasiliae centralis cognoscedam*. Particula XXIII. Solanaceae, Acanthaceae, Acanthaceae, Gesneriaceae, Verbenaceae. Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn, Kjøbenhavn. 80p.

Indriunas A & Kameyama C (2012) New species of *Herpetacanthus* (Acanthaceae) from the Atlantic Forest and Neighboring Areas (Brazil). Systematic Botany 37: 1006-1022.

Judd WS, Campbell CS, Kellogg EA, Stevens PF & Donoghue MJ (2009) Sistemática vegetal: um enfoque filogenético. Artmed, Porto Alegre. 632p.

Jørgensen PM & León-Yánez S (1999) Catalogue of the vascular plants of Ecuador. Monographs in Systematic Botany from the Missouri Botanical Garden 75: 1-1182.

Jørgensen PM, Nee MH & Beck SG (2014) Catálogo de las plantas vasculares de Bolivia. Missouri Botanical Garden Press, St. Louis 127: 1-1744.

Jussieu AL (1807) Sur le *Dicliptera* et le *Blechum*, genres nouveaux de plantes, composés de plusieurs espèces auparavant réunies au *Justicia*. *In*: Les Professeurs de cet Établissement (orgs.) Annales du Muséum D'Histoire Naturelle, Paris, Saint-Germain 1: 251-271.

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.

Kameyama C (2006) Flora da Reserva Ducke, Amazonas, Brasil: Acanthaceae. Rodriguésia 57: 149-154.

Kameyama C (2008) New species, nomenclatural changes and lectotypifications in Neotropical *Lepidagathis* Willd. (Acanthaceae). Kew Bulletin 63: 565-581.

Kameyama C (2009) Acanthaceae. *In*: Alves M, Araújo MF, Maciel JR & Martins S (eds.) Flora de Mirandiba. Associação de Plantas do Nordeste, Recife. Pp. 45-48.

Köppen W (1948) Climatologia: con un estudio de los climas de la tierra. Fondo de Cultura Econômica, México City. 479p.

Kobuski CE (1928) A Monograph of the American Species of the Genus *Dsychoriste*. Annals of the Missouri Botanical Garden 15: 9-90.

Kunth KCS (1817) Acanthaceae. Nova Genera et Species Plantarum. 4th ed. Vol. 2. La Librairie Grecque-Latine-Allemande, Paris. 240p.

Kuntze O (1891) Acanthaceae. *In*: Revisio Generum Plantarum 2. A. Felix, Leipzig Pp. 482-500.

Lamarck JBAPM (1785) Encyclopédie méthodique. Botanique 1. Panckoucke, Paris, Liège. 752p.

Leonard EC (1959) The Machris Brazilian Expedition. Botany: Phanerogamae, Acanthaceae. Los Angeles County Museum Contributions in Science 32: 3-19.

Lindau G (1894) Acanthaceae Papuanae. *In*: Engler A (ed.) Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie 19 (Beibl. 48). Wilhelm Engelmann, Leipzig. Pp. 3-7.

Lindau G (1895) Acanthaceae. *In*: Engler H.G.A. & Prantl, KAE (ed.) Die Natürlichen Pflanzenfamilien 4(3b). Wilhelm Engelmann, Leipzig. Pp. 4-354.

Lindau G (1898) Plantae novae americanae imprimis Glaziovianae II. Acanthaceae. *In*: Engler A (ed.) Botanische Jahrbücher für Systematik, Pflanzengeschichte herausgegeben von A. Engler. Leipzig 25: 44-51.

Lindau G (1900) Symbolae Antillanae seu Fundamenta Florae Indiae Occidentalis. Vol. 2. Fratres Borntraeger, Leipzig. 195p.

Lindau G (1903) Acanthaceae. Bulletin de l'Herbier Boissier, sér. 2, 3: 633.

Macedo A, Alcantara C, Pessoa E & Alves M (2020) Flora da Usina São José, Igarassu, estado de Pernambuco, Brasil: Acanthaceae, Gesneriaceae e Loganiaceae. Hoehnea 47: 1-13.

Manzitto-Tripp EA, Darbyshire I, Daniel TF, Kiel CA & McDade LA (2022) Revised classification of Acanthaceae and worldwide dichotomous keys. Taxon 71: 103-153.

Martius CFP (1829) Nova genera et species plantarum: quas in itinere per Brasiliam MDCCCXVII-MDCCCXX jussu et auspiciis Maximiliani Josephi I., Bavariae regis augustissimi instituto. Vol. 3. Caroli Wolf, Munich. 300p.

Martius CFP (1840-1906) *Flora brasiliensis*; enumeratio plantarum in Brasilia hactenus detectarum quas suis aliorumque botanicorum studiis descriptas et methodo naturali digestas partim icone illustratas. *apud* R. Oldenbourg in comm., Munich, Leipzig. 32p.

McDade LA & Tripp EA (2007) Synopsis of Costa Rican *Ruellia* L. (Acanthaceae), with descriptions of four new species. Brittonia 59: 199-216.

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.

McDade LA, Daniel TF, Kiel CA & Borg AJ (2012) Phylogenetic placement, delimitation, and relationships among genera of the enigmatic Nelsonioideae (Lamiales: Acanthaceae). Taxon 61: 637-651.

McDade LA, Masta SE, Moody ML & Waters E (2000) Phylogenetic relationships among Acanthaceae: evidence from two genomes. Systematic Botany 25: 106-121.

MDA - Ministério do Desenvolvimento Agrário (2020) Perfil Territorial Baixada Cuiabana-MT. Available at <http://sit.mda.gov.br/download/caderno/caderno_territorial_016_Baixada%20Cuiabana%20-%20MT.pdf>. Access on 9 November 2020.

Molina Rosito A (1975) Enumeración de las plantas de Honduras. Ceiba 19: 1-118.

Monteiro FKS, Pinto AS, Costa FCP & Melo JIM (2018) A taxonomic synopsis of Acanthaceae Juss. native to Paraíba state, Brazil. Harvard Papers in Botany 23: 189-204.

Moore SLM (1895) The plants of Milanji, Nyasa-Land. Vol. 4. 2nd series: Botany. Transadctions of The Linnean Society of London, London. 431p.

Mori SA, Mattos-Silva LA, Lisboa G & Coradin L (1989) Manual de manejo do herbário fanerogâmico. 2a ed. Centro de Pesquisas do Cacau, Ilhéus. 104p.

Nees von Esenbeck CGD (1847a) Acanthaceae. *In*: Martius CFP (ed.) *Flora brasiliensis* 9. F. Fleischer, Leipzig. Pp. 1-164.

Nees Von Esenbeck CG (1847b) Acanthaceae. *In*: De Candolle AP (ed.) Prodromus Systematis Naturalis Regni Vegetabilis. Vol. 11. Masson, Paris. Pp. 46-519.

Oliveira AFM & Andrade LHC (2000) Caracterização morfológica de *Justicia pectoralis* Jacq. E *Justicia gendarussa* Burm. F. (Acanthaceae). Acta Amazonica 30: 569-578.

Persoon CH (1805) Enumerationem Systematcam Specierum Hucusque Cognitarum. Synopsis Plantarum. C.F. Cramerum, Parisiis. 23p.

Pessoa E, Silva MDC, Oliveira MS, Silva Junior WR & Ferreira AWC (2022) An updated checklist reveals strong incongruences with previous studies: insights after revisiting a regional orchid list. Acta Botanica Brasilica 36: e2020abb0487.

Pessôa CS (2012) *Ruellia* L. (Acanthaceae) no estado de Minas Gerais, Brasil. Tese de Mestrado. Universidade Federal de Viçosa, Viçosa. 86p.

Pizzato JA, Dallacort R, Tieppo RC, Modolo AJ, Cremon C & Moreira PSP (2012) Distribuição e probabilidade de ocorrência de precipitação em Cáceres (MT). Pesquisa Agropecuária Tropical 42: 137-142.

Pohl JBE (1831) Plantarum Brasiliae Icones et Descriptiones 2. Charta Antonii Strauss, Wien. 135p.

Profice SR (2004) *Aphelandra* R.Br.(Acanthaceae) novas combinações e novos sinônimos. Bradea 10: 17-23.

Reis AS, Gil ASB & Kameyama C (2017) Flora das cangas da Serra dos Carajás, Pará, Brasil: Acanthaceae. Rodriguésia 68: 887-903.

Rodríguez Delcid D & Daniel TF (2014) *Hygrophila costata* (Acanthaceae), nuevo registro para la flora de El Salvador. Phytoneuron 30: 1-3.

Rodrigues MG (2017) Flora do cerrado goiano: estudo morfo-anatômico, prospecção fitoquímica, composição química e avaliação da atividade antibacteriana de partes constituintes de *Justicia pectoralis* Jacq. (ACANTHACEAE). Tese de Mestrado. Centro Universitário de Anápolis UniEvangélica, Anápolis. 127p.

Sartin DR (2015) O gênero *Justicia* L. (Acanthaceae) no estado de Goiás. Tese de Mestrado. Universidade de São Paulo, São Paulo. 132p.

Schlechtendal DFL & Chamisso LKA (1831) Acanthaceae. Linnaea 6: 370-371.

Schmidt-Lebuhn AN, Schwerdtfeger M, Kessler M & Lohaus G (2007) Phylogenetic constraints vs. ecology in the nectar composition of Acanthaceae. Flora 202: 62-69.

Schwarzbach AE & McDade LA (2002) Phylogenetic relationship of the mangrove family Avicenniaceae based on chloroplast and nuclear ribosomal DNA sequences. Systematic Botany 27: 84-98.

Silva CA & Nogueira GA (2012) Sistema reprodutivo e polinização de *Lepidagathis sessifolia* (Pohl) Kameyama *ex* Wassh. & J.R.I. Wood (Acanthaceae), em remanescente florestal da região sudoeste de Mato Grosso, Brasil. Acta Amazonica 42: 315-320.

Silva FA & Bonadeu F (2019) Acanthaceae em Colorado do Oeste, Rondônia, Brasil. Rodriguésia 70: e00212018.

Silva MJ, Melo JIM & Sales MF (2010) Flora da região do Xingó, Alagoas e Sergipe: Acanthaceae A. Juss. Revista Caatinga 23: 59-67.

Siqueira CE, Zanin A & Menini-Neto L (2014) Orchidaceae in Santa Catarina: update, geographic distribution and conservation. Check List 10: 1452-1478.

Steyermark JA, Berry PE & Holst BK (1995) Flora of the Venezuelan Guayana. Missouri Botanical Garden, St Louis. Pp. 335-373.

Teixeira FC, Ribeiro RS, Spletozer AG, Almeida AASD, Rodrigues L, Silva DR, Da Silva DF & Lopes CRAS (2016) Checklist e distribuição geográfica das Acanthaceae Juss. (Lamiales) da Amazônia Norte Mato-Grossense. Scientific Electronic Archives 9: 490-492.

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 5 May 2022.

Tripp EA & McDade LA (2014) A rich fossil record yields calibrated phylogeny for Acanthaceae (Lamiales) and evidence for marked biases in timing and directionality of intercontinental disjunctions. Systematic Biology 63: 660-684.

Vilar TS (2009) Acanthaceae Juss. no Distrito Federal, Brasil. Dissertation of the Master's degree. Universidade de Brasília, Brasília. 105p.

Wasshausen DC (1995) Acanthaceae. *In*: Steyermark JA, Berry PE & Holst BK (eds.) Flora of the Venezuelan Guayana. Missouri Botanical Garden, St. Louis. Pp. 335-373.

Wasshausen DC (2013) New species of Aphelandra (Acanthaceae) from Peru and Ecuador. Journal of the Botanical Research Institute of Texas 7: 109-120.

Wasshausen DC & Smith LB (1969) Acantáceaes. *In*: Reitz R (ed.) Flora ilustrada catarinense. Acan. Vol. 1. Herbário Barbosa Rodrigues, Itajaí. Pp. 1-134.

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

Wiggins IL & Porter DM (1971) Flora of the Galapagos Islands. Stanford University Press, Stanford. 998p.

Wood JRI (2012) Two new species of Acanthaceae from Bolivia. Kew Bulletin 67: 257-262.

Zanatta MRV (2019) Global biogeography of Acantheae and taxonomic revision of *Stenandrium* Nees (Acanthaceae) in Brazil. Tese de Doutorado. Universidade de Brasília, Brasília. 211p.

Zuloaga FO, Morrone O & Belgrano MJ (2008) Catálogo de las plantas vasculares del Cono Sur (Argentina, Sur de Brasil, Chile, Paraguay y Uruguay). Monographs in Systematic Botany, Missouri Botanical Garden 107: 102-114.

Area Editor: Dr. Marcelo Trovó
Received in May 14, 2022. Accepted in September 26, 2022.