UNIVERSIDADE FEDERAL DE UBERLÂNDIA

INSTITUTO DE BIOLOGIA

PROGRAMA DE PÓS-GRADUAÇÃO EM BIOLOGIA VEGETAL

MICROLICIA D.DON (MICROLICIEAE, MELASTOMATACEAE) DO ESTADO DE GOIÁS, BRASIL, COM CINCO NOVIDADES TAXONÔMICAS

Jean Corrêa Fontelas

Orientadora: Profa. Dra. Rosana Romero

Uberlândia – MG

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Dissertação de mestrado apresentada à Universidade Federal de Uberlândia como pré-requisito para obtenção do título de Mestre em Biologia Vegetal.

Uberlândia – MG

Agosto – 2021

UNIVERSIDADE FEDERAL DE UBERLÂNDIA

Coordenação do Programa de Pós-Graduação em Biologia Vegetal

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ATA DE DEFESA - PÓS-GRADUAÇÃO

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Nome do Discente:	JEAN CORRÊA FONTELAS				
Título do Trabalho:	O gênero *Microlicia* D. Don (Melastomataceae) no estado de Goiás e Distrito Federal, Brasil				
Área de concentração:	Biologia Vegetal				
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/j/86253768438?pwd=bzBpS2NpbVBoYlljekllT1N5UFB5QT09, a Banca Examinadora, designada pelo Colegiado do Programa de Pós-graduação em Biologia Vegetal, assim composta: Professores Doutores: Ana Flávia Alves Versiane (Pesquisadora independente); Vanessa Terra dos Santos (ICIAG/UFU) e Rosana Romero (INBIO/UFU) orientador(a) do(a) candidato(a).

Ressalta-se que a Dra. Vanessa Terra dos Santos (ICIAG/UFU) estava em Monte Carmelo (MG), os demais membros da banca e o discente participaram da cidade de Uberlândia (MG).

Iniciando os trabalhos o(a) presidente da mesa, Dr(a). Rosana Romero, apresentou a Comissão Examinadora e o candidato(a), agradeceu a presença do público, e concedeu

ao Discente a palavra para a exposição do seu trabalho. A duração da apresentação do Discente e o tempo de arguição e resposta foram conforme as normas do Programa.

A seguir o senhor(a) presidente concedeu a palavra, pela ordem sucessivamente, aos(às) examinadores(as), que passaram a arguir o(a) candidato(a). Ultimada a arguição, que se desenvolveu dentro dos termos regimentais, a Banca, em sessão secreta, atribuiu o resultado final, considerando o(a) candidato(a):

Aprovado.

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Nada mais havendo a tratar foram encerrados os trabalhos. Foi lavrada a presente ata que após lida eachada conforme foi assinada pela Banca Examinadora.

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SUMÁRIO

Microlicia D.Don (Microlicieae, Melastomataceae) of the Goiás state and Distrito Federal, Brazil

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* Manuscrito elaborado de acordo com as normas da Revista Phytotaxa

Abstract

With 247 species occurring in Brazil, *Microlicia* is the largest genera of Microlicieae, reaching high levels of diversity in the *campos rupestres* of Bahia, Minas Gerais, and Goiás. The current inventory cataloged the occurrence of 48 species of *Microlicia* in the state of Goiás, 20 of them also occurring in the Distrito Federal. Thirty-two species are endemic to Goiás, and 16 are widely distributed in other Brazilian states. Fifteen species are preliminarily assigned as Critically Endangered (CR) and seven as Endangered (EN). The Chapada dos Veadeiros National Park has the highest diversity of *Microlicia* in Goiás with 21 species, of which 13 are endemic to this region. Here we provide an identification key for the species, morphological descriptions, taxonomic comments, flowering and fruiting data, habitat, distribution, and conservation status. Additionally, a new endemic species from the municipality of Teresina de Goiás, is described here.

Keywords: Conservation, endemism, taxonomic treatment, new species.

Resumo

Com 247 espécies no Brasil, *Microlicia* é o maior gênero de Microlicieae, atingindo altos índices de diversidade nos campos rupestres da Bahia, Minas Gerais e Goiás. O presente inventário catalogou a ocorrência de 48 espécies de *Microlicia* no estado de Goiás, 20 delas ocorrendo também para o Distrito Federal. Um total de 32 espécies são endêmicas de Goiás e 16 apresentam distribuição ampla, ocorrendo também em outros estados brasileiros. Quinze espécies são aqui preliminarmente avaliadas como Criticamente em

Perigo (CR) e sete como Em Perigo (EN). A Chapada dos Veadeiros é a área com maior concentração de espécies do gênero em Goiás com 21 espécies, das quais 13 são endêmicas da região. Chave de identificação para as espécies, bem como descrições morfológicas, comentários taxonômicos, dados de floração e frutificação, habitat, distribuição e status de conservação são fornecidos. Adicionalmente, uma nova espécie endêmica do município de Teresina de Goiás é aqui descrita.

Palavras-chave: Conservação, endemismo, tratamento taxonômico, espécie nova.

Introduction

Melastomataceae, one of the most diverse plant groups on the planet, comprises approximately 177 genera and 5,750 species (Michelangeli *et al.* 2020; Reginato *et al.* 2020) distributed in the tropical zone (Renner 1993; Clausing & Renner 2001). It is also one of the highest diversified groups in Brazil, occurring in all biomes, and currently represented by 69 genera and 1,436 species (Goldenberg *et al.* 2020). Among the eighteen tribes of Melastomataceae, Microlicieae Naudin has its monophyly based on morphological and molecular data and, until recently, was represented by the genera *Chaetostoma* DC., *Lavoisiera* DC., *Microlicia* D.Don, *Poteranthera* Bongard, *Rhynchanthera* DC., *Stenodon* Naudin, and *Trembleya* DC.(Renner 1993; Clausing & Renner 2001; Fritsch *et al.* 2004; Michelangeli *et al.* 2013; Rocha *et al.* 2016). However, a recent molecular study proposes including *Chaetostoma*, *Lavoisiera*, *Stenodon*, and *Trembleya* in *Microlicia* (Versiane *et al.* 2021). Therefore, *Microlicia* is now characterised in having a 5-6(-9)-merous, solitary or dichasial flower, reduced to a single flower, superior or semi-inferior ovary, 3-6 locular, and a capsule with dehiscence from apex to base or from base to apex (Versiane *et al.* 2021).

Microlicia is a nearly endemic Brazilian genus with 247 species occurring exclusively in Brazil (Romero *et al.* 2020) and 11 species in Bolivia, Colombia, Peru, and Venezuela (Renner 1993; Rull 2003; Romero 2003a; Michelangeli & Cotton 2008; Romero & Woodgyer 2015; Mendoza-Cifuentes *et al.* 2019; Pacifico *et al.* 2020a; Versiane *et al.* 2020). The genus has high diversity rates, in the campos rupestres mainly in the Bahia, Minas Gerais and Goiás (Romero 2003a, b).

The state of Goiás, located in the central area of Cerrado, displays several phytophysiognomies (Klink & Machado 2005; Ribeiro & Walter 2008) and stands out

with four regions considered as "areas of endemism" of the genus *Microlicia* and the tribe (Pacifico *et al.* 2020b). Furthermore, the genus exhibits an expressive number of endemic species to the state (Cogniaux 1883; Naudin 1845; Pilger 1903; L.B. Smith & Wurdack 1955; Wurdack 1959; Almeda & Martins 2001).

Information about *Microlicia* species from Goiás has been provided in a fragmented way in some studies of regional floras, Serra dos Pireneus (Versiane *et al.* 2016), Chapada dos Veadeiros National Park (Diniz & Silva 2020), and Serra Dourada (Machado & Romero 2020) and through description of new species (Diniz & Silva 2017a, 2017b; Romero *et al.* 2017, 2019; Diniz *et al.* 2018; Silva *et al.* 2018; Pacífico *et al.* 2019; Fontelas & Romero 2020). Thus, in a more comprehensive approach, the present study aims to fill the gaps in the *Microlicia* species in the Goias state. Therefore, an identification key for the species from Goiás and Distrito Federal, morphological descriptions, taxonomic comments, flowering and fruiting data, habitat, geographic distribution, and conservation status data for all species are provided.

Material and methods

The state of Goiás is located in the central-west region of the country (Fig. 1), in the Central Plateau, with a total area of ca. 340.103 km² (IBGE 2020). Approximately 90% of the state area is located in the Cerrado domain with different vegetation types, such as *campo rupestre* (rupestrian grassland), *cerrado rupestre* (rupestrian cerrado), *cerrado sensu stricto, campo limpo* (open savanna grassland), *campo sujo* (scrubby savanna grassland), and *vereda* (Klink & Machado 2008) (Fig. 2). However, the land use in Goiás is concentrated in raising cattle activities (see the map in Romero *et al.* 2013). According

to Köppen climate classification , there are three active climates in the state: tropical with a dry winter season (Aw), wet temperate with dry winter and hot summer (Cwa), and wet temperate with dry winter and temperate summer (Cwb) (Romero *et al.* 2013).

This study was carried out based on the morphological analysis of *Microlicia* collections from Goiás and Distrito Federal deposited at BHCB, BM, BR, CAS, CEN, ESA, F, FLOR, FURB, G, HBG, HEPH, HJ, HPL, HUEFS, HUEG, HUFU, IBGE, K, MBM, MO, NY, OXF, P, R, RB, S, SP, SPF, SPSC, UB, UEC, UFG, US, and W herbaria (acronyms according to Thiers 2021, continuously updated). Specimens observed on the online platforms Virtual Herbarium Reflora (http://reflora.jbrj.gov.br/reflora/herbarioVirtual/) and speciesLink (http://www.splink.org.br/) were included in the material examined and indicated as "online image". Furthermore, collections from the Distrito Federal were incorporated into the taxonomic treatment since it is a geopolitically delimited area and inserted in Goiás.

The basionym was provided for those species with recent taxonomic alterations (see Versiane *et al.* 2021). The terminology of vegetative and reproductive structures followed Radford *et al.* (1986), and the indumentum followed Wurdack (1986). We observed the color of the leaves, petals, stamens, and styles only in dry material. Concolorous stamens have both whorls with yellow color , and bicolorous show distinct anthers color between the antessepalous and antepetalous stamens whorls . Descriptions were built using the MonographaR package (Reginato 2016) performed in R (R Core Team, 2020). For thos species with no conservation status in the literature, we provided it based on the georeferenced information from the collections labels. Then, the the area of occupancy (AOO) and extent of occurrence (EOO) were calculated using GEOCAT (Bachman *et al.* 2011) and preliminary conservation status were assessed based on IUCN guidelines

and categories (2019).

We provided vegetative and reproductive structures images of *Microlicia denudata* Cogniaux (1883: 51), *M. macedoi* L.B. Smith & Wurdack (1955:200), and *M. melanostagma* Pilger (1903:18), as they are endemic and have few collections. Additionally, field images of species are provided.

Results and Discussion

The state of Goiás has 48 species of *Microlicia*, of which 20 also occur in Distrito Federal (Tab. 1). Thirty-two species are endemic to the state, and only 16 are widely distributed, occurring in other Brazilian states. At least 15 species can be preliminarily assigned as Critically Endangered (CR) and seven as Endangered (EN), according to IUCN categories and criteria (2019). The species apparently are threatened mainly because the elevate number of microendemism, apparently reduced populations, and the occurrence of these species outside the limits of protected areas by conservation units.

Table 1. Geographic distribution, conservation status, and physiognomies of the species of *Microlicia* in Goiás (CR: Critically endangered; DD: Deficient Data; EN: Endangered; LC: Least concern; VU: Vulnerable).

Species	Distribution	Conservation status	Physiognomies
M. acicularis	Goiás	CR	*Cerrado rupestre*
M. acuminata	Goiás, Mato Grosso, Tocantins, Distrito Federal	LC	*Campo limpo, campo rupestre, campo sujo, cerradão*
M. altoparaisensis	Goiás	EN	*Campo rupestre, cerrado*
M. arachnoidea	Goiás	CR	*Cerrado*

M. armata	Bahia, Goiás, Minas Gerais, Paraná, São Paulo	LC	*Campo limpo, campo rupestre*
M. attenuata	Goiás	CR	*Campo úmido*
M. campanulata	Goiás	CR	Disturbed vegetation
M. cataphracta	Bahia, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, São Paulo, Distrito Federal	LC	*Campo limpo, campo rupestre, cerradão*
M. chrysoglandulosa	Goiás	EN	*Campo limpo, campo úmido, cerrado rupestre*
M. clavillosa	Goiás	CR	*Campo limpo, campo rupestre*
M. consimilis	Goiás, Distrito Federal	EN	*Campo limpo, campo rupestre, cerrado*
M. crebropunctata	Goiás	CR	*Campo rupestre*
M. cryptandra	Goiás	VU	*Campo limpo, campo rupestre, cerrado*
M. denudata	Goiás	CR	*Campo sujo*
M. euphorbioides	Goiás, Mato Grosso, Minas Gerais, São Paulo, Distrito Federal	LC	*Campo rupestre, campo sujo*
M. fasciculata	Bahia, Goiás, Mato Grosso, Minas Gerais, São Paulo, Distrito Federal	LC	*Campo limpo, campo rupestre, campo sujo, cerrado*
M. flavipetala	Goiás	EN	*Campo limpo, campo rupestre, campo sujo, cerrado rupestre, cerrado*
M. gracilis	Goiás	CR	*Campo úmido, cerrado rupestre*
M. helvola	Goiás, Minas Gerais, Mato Grosso, Mato Grosso do Sul, Distrito Federal	LC	*Campo limpo, campo rupestre, campo sujo, cerrado*
M. hexapetala	Goiás	EN	*Campo rupestre, cerrado*
M. insignis	Amazonas, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Pará, Rondônia	LC	*Campo úmido, cerrado rupestre, cerrado*
M. latifolia	Goiás	CR	*Campo limpo*
M. longirostrata	Goiás	EN	*Cerrado*
M. macedoi	Goiás	CR	*Campo sujo, cerrado*

M. macrantha	Goiás, Minas Gerais, Distrito Federal	LC	*Vereda, campo rupestre, cerrado*
M. melanostagma	Goiás, Distrito Federal	CR	*Campo limpo, campo sujo, cerrado rupestre*
M. neopyrenaica	Goiás	LC	*Campo rupestre, campo sujo, campo úmido, cerrado rupestre, cerrado*
M. ordinata	Goiás	VU	*Campo rupestre, cerrado*
M. parviflora	Bahia, Espírito Santo, Goiás, Minas Gerais, Rio de Janeiro, Paraná, Distrito Federal	LC	*Vereda, campo limpo, campo rupestre, campo sujo*
M. phlogiformis	Bahia, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Rio de Janeiro, São Paulo, Distrito Federal	LC	*Campo úmido, campo sujo, cerrado rupestre, cerrado*
M. pohliana	Goiás, Minas Gerais	EN	*Cerrado rupestre*
M. polystemma	Goiás, Minas Gerais, São Paulo, Distrito Federal	LC	*Campo limpo, campo rupestre, cerrado*
M. psammophila	Goiás	CR	*Campo limpo, campo rupestre*
M. quinquenervis	Goiás, Distrito Federal	CR	*Campo rupestre, cerrado*
M. ramosa	Goiás, Distrito Federal	VU	*Campo rupestre, campo sujo, cerrado*
M. rubra	Goiás	CR	*Campo sujo, cerrado*
M. selaginea	Goiás	EN	*Campo limpo, campo rupestre, campo sujo, cerrado*
M. serpyllifolia	Bahia, Goiás, Minas Gerais, Distrito Federal	LC	*Campo sujo, cerrado rupestre*
M. setifolia	Goiás	CR	*Cerrado*
M. speciosa	Goiás, Minas Gerais, Distrito Federal	LC	*Campo úmido*
M. stenocladon	Goiás, Distrito Federal	EN	*Campo limpo, campo rupestre, campo sujo, cerrado rupestre*
M. stenodonoides	Goiás	CR	*Campo limpo, campo rupestre*

M. suberosa	Goiás, Distrito Federal	LC	*Campo limpo, campo rupestre, campo sujo, cerrado rupestre, cerrado*
M. veadeirana	Goiás	DD	*Campo rupestre, cerrado*
M. vestita	Goiás, Mato Grosso do Sul, Minas Gerais, Pará, Distrito Federal	LC	*Campo rupestre, campo sujo, campo úmido*
M. viminalis	Bahia, Goiás, Minas Gerais, Distrito Federal	LC	*Campo limpo, campo rupestre, campo sujo, cerrado*
M. xylopodifera	Goiás	EN	*Campo limpo, cerrado rupestre*
Microlicia sp.	Goiás, Distrito Federal		*Campo limpo, campo sujo, cerrado*

The Chapada dos Veadeiros National Park is located in the municipalities of Alto Paraíso de Goiás, Cavalcante, Teresina de Goiás, Nova Roma, and São João d'Aliança, northern Goias (ICMBIO 2021). With 21 species, this area has the highest number of species of *Microlicia* in the state, of which 13 are endemic (*M. acicularis*, *M. altoparaisensis*, *M. clavillosa*, *M. chrysoglandulosa*, *M. crebropunctata*, *M. flavipetala*, *M. gracilis*, *M. hexapetala*, *M. latifolia*, *M. psammophila*, *M. stenodonoides*, *M. veadeirana*, and *M. xylopodifera*).

Among the species that occur in a single locality, *M. attenuata* is restricted to Teresina de Goiás (Appx. 1), *M. macedoi* and *M. setifolia* to Niquelândia (see Wurdack 1955; Martins & Almeda 2017), and *M. rubra* known until now only from Serra do Tombador (Ferreira-Alves & Romero 2020).Populations of *M. longirostrata* occur in Cavalcante, Minaçu, and Niquelândia (Romero et al. 2019). *Microlicia selaginea*, up to now, were known only from the Serra dos Cristais (Koschnitzke 1997), and this study it has its distribution expanded to Ipameri and Chapada dos Veadeiros. *Microlicia armata* occurs

in the states of Bahia, Minas Gerais, Paraná and São Paulo (Silva *et al.* 2020), and it is cited here for the first time to Goiás. *Microlicia denudata* is known only by type-collection from Monte Alegre de Goiás (1883: 51), and a recent collection made at Serra do Tombador was identified in this study.

Systematic treatment

Microlicia D.Don, Mem. Wern. Nat. Hist. Soc. 4: 283, 301–303. 1823.

Subshrub, shrub or dwarf tree, erect, few or much-branched, branch slender or thick. Branch, leaf blade, hypanthium and sepal glabrous or covered with spherical glands, setose or glandular trichomes, with one or more trichomes types, dense or sparsely distributed. Leaf sessile or petiolate, frequently ascending, sometimes horizontal, imbricate or not; leaf blade frequently with the same size in the main and lateral branch, rarely variable or larger in the main branch, concolorous or discolorous, chartaceous or coriaceous, margin frequently serrate, sometimes entire, frequently flat, sometimes revolute, calose or not. Flower 5–6(–9)-merous, solitary or in dichasia, reduced to a single flower, terminal or lateral; sessile or pedicellate, bract absent or present; bristle crown at the hypanthium apex or absent; petal with margin frequently glabrous, sometimes ciliate; stamen 10(–14–18), dimorphic or subisomorphic, anther oblong, ovate or ovate-oblong, tetrasporangiate or polysporangiate; ovary superior or semi-inferior, 3–6 locular; magenta or white, curved at the apex. Capsule brown, globose or oblong, dehiscence from the apex to the base or from the base to the apex, columella deciduous or persistent; seed cream or brownish, foveolate.

Key to the species of *Microlicia* from Goias state and Distrito Federal

1. Presence of bristle on the hypanthium apex……2

- Lacking bristle on the hypanthium apex ……7

2. Leaf blade and sepal glandular-ciliate at the margin; glandular bristle on the hypanthium apex 3

- Leaf blade and sepal glabrous or setose-ciliate at the margin, non-glandular; bristle on the hypanthium apex 4

3. Main branch thick, lateral branch slender; flower 5-merous; stamen with bicolorous anthers ..... 9. *M. clavillosa*

- Main and lateral branches slender; flower 6-merous; stamen with concolorous anthers ..... 19. *M. hexapetala*

4. Leaf blade margin calose..... 5

- Leaf blade margin not calose ..... 36. *M. selaginea*

5. Leaf blade acuminate or acute at the apex; hypanthium striate; petal white or pinkish 6

- Leaf blade apiculate at the apex;, not striate; petal yellow..... 16. *M. flavipetala*

6. Hypanthium cream, purple at the apex, without trichomes; occurrence also in Bahia, Minas Gerais, Paraná, and São Paulo..... 5. *M. armata*

- Hypanthium entirely yellow, covered with setose trichomes; endemic to Serra dos Pireneus and Distrito Federal…. .....40. *M. stenocladon*

7. Leaf blade membranaceous 8

- Leaf blade coriaceous or chartaceous 9

8. Leaf blade 3–5 mm long; magenta petal with greenish abaxial surface at the apex, glandular-ciliate at the margin..... .....25. *M. melanostagma*

- Leaf blade 30–75 mm long; petal entirely white or pinkish, glabrous at the margin ..... 26. *M. neopyrenaica*

9. Branch, leaf blade, hypanthium and sepal covered with arachnoid-puberulent trichomes, or spherical reddish glands. 10

- Branch, leaf blade, hypanthium and sepal without arachnoid-puberulent trichomes or spherical reddish glands 11

10. Branch, leaf blade, hypanthium and sepal covered with arachnoid-puberulent trichomes; sepal ovate or ovate-oblong; endemic to Água Fria and Distrito Federal .....4. *M. arachnoidea*

- Branch, leaf blade, hypanthium and sepal covered with glandular trichomes and spherical reddish glands; sepal triangular; endemic to Niquelândia…….. .....38. *M. setifolia*

11. Capsule acropetal dehiscence 12

- Capsule basipetal dehiscence 13

12. Leaf blade coriaceous; branch, leaf blade, hypanthium, and sepal without spherical glands; hypanthium oblong ..... 7. *M. cataphracta*

- Leaf blade chartaceous; branch, leaf blade, hypanthium, and sepal with spherical glands; hypanthium campanulate ..... 33. *M. quinquenervis*

13. Leaf petiolate 14

13'. Leaf sessile..... 22

14. Branch, leaf blade, hypanthium, and sepal covered with glandular trichomes ... 15

- Branch, leaf blade, hypanthium, and sepal covered with spherical glands and setose trichomes 16

15. Petiole 0.1–0.3 mm long; leaf blade elliptic; bract absent; hypanthium campanulate ..... 47. *Microlicia sp.*

- Petiole 3–5 mm long; leaf blade lanceolate or ovate-lanceolate; bract present; hypanthium urceolate ..... 29. *M. phlogiformis*

16. Branch, leaf blade, hypanthium, and sepal covered only with spherical glands… 17

- Branch, leaf blade, hypanthium, and sepal covered with setose trichomes and spherical glands 18

17. Leaf margin flat; hypanthium oblong; stamen with concolorous anther; occurs in Alto Paraíso de Goiás ..... 3. *M. altoparaisensis*

- Leaf margin revolute; hypanthium campanulate; stamen with bicolorous anther…. ..... 28. *M. parviflora*

18. Anther polysporangiate 19

- Anther tetrasporangiate 20

19. Leaf blade with the same size in main and lateral branch, discolorous; petal white, margin glabrous..... ....14. *M. euphorbioides*

- Leaf blade larger in the main branch, concolorous; petal pinkish, margin glandular-ciliate ..... 18. *M. helvola*

20. Sepal subulate, apiculate at the apex; petal with ciliate margin ..... 39. *M. speciosa*

- Sepal triangular, acute at the apex; petal with glabrous margin 21

21. Leaf blade elliptic, covered with setose trichomes and spherical glands, ciliate at the margin; stamen with bicolorous anthers; ..... 37. *M. serpyllifolia*

- Leaf blade ovate or ovate-lanceolate, covered only with spherical glands, glabrous at the margin; stamen with concolorous anthers ..... 43. *M. veadeirana*

22. Stamen subisomorphic 23

- Stamen dimorphic 29

23. Branch, leaf blade, hypanthium, and sepal covered only with spherical glands; petal reddish ..... 35. *M. rubra*

- Branch, leaf blade, hypanthium, and sepal covered with spherical glands and glandular or setose trichomes; petal magenta, pink or pinkish 24

24. Branch, leaf blade, hypanthium, and sepal covered with spherical glands, glandular and setose trichomes ..... 42. *M. suberosa*

- Branch, leaf blade, hypanthium and sepal covered with spherical glands and setose trichomes 25

25. Branch thick; leaf blade amplexicaul; sepal subulate... ..... 21. *M. latifolia*

- Branch slender; leaf blade not amplexicaul; sepal triangular, lanceolate or triangular-lanceolate 26

26. Leaf blade flat, not imbricate; capsule oblong or ovate..... 27

- Leaf blade conduplicate, imbricate; capsule urceolate or globose..... 28

27. Leaf blade lanceolate or ovate-lanceolate, serrate margin; anther polysporangiate ..... 2. *M. acuminata*

- Leaf blade linear-oblong, entire margin; anther tetrasporangiate..... 10. *M. consimilis*

28. Leaf blade discolorous, covered with setose trichomes and spherical glands, with a setose trichome at the apex, margin ciliate; petal setose at the apex, ciliate at the margin ..... 12. *M. cryptandra*

- Leaf blade concolorous, covered with spherical glands, apex and margin glabrous; petal glabrous at the margin and apex…….....43. *M. veadeirana*

29. Stamen with bicolorous anthers, antesepalous stamen with reddish, vinaceous, pinkish anther, or yellow with orange-colored or vinaceous stains, antepetalous stamen with yellow anther 30

- Stamen with concolorous anther, , stains absent..……38

30. Antesepalous stamen with yellow anther, with orange-colored or vinaceous stains .....44. *M. vestita*

- Antesepalous stamen with vinaceous, magenta or reddish anther 31

31. Leaf blade coriaceous, entire at the margin; parallel veins; margin and veins calose.....45. *M. viminalis*

- Leaf blade chartaceous or membranaceous, serrate at the margin, basal acrodromous veins; margin and veins not calose..... 32

32. Branch, leaf blade, hypanthium and sepal covered with glandular trichomes; a dense crown of glandular trichomes at the apex of flower bud, and concentrated at the apex of the petal during anthesis.....46. *M. xylopodifera*

- Branch, leaf blade, hypanthium and sepal covered with setose trichomes; flower bud without a crown of glandular trichomes at the apex 33

33. Anther tetrasporangiate 34

- Anther polysporangiate..... 35

34. Branch, leaf blade, hypanthium and sepal covered with short setose trichomes (0.05–0.1 mm long); sepal triangular..... .....37. *M. serpyllifolia*

- Branch, leaf blade, hypanthium and sepal covered with long setose trichomes (ca. 0.5 mm long); sepal subulate .....39. *M. speciosa*

35. Leaf blade with variable size in main and lateral branches, or larger in main branch 36

- Leaf blade with the same size in the main and lateral branches 37

36. Lateral branch elongate; leaf blade larger in the main branch, concolorous; petal glandular-ciliate at the margin ..... 18. *M. helvola*

- Lateral branch short; leaf blade with variable size in the main and lateral branches, discolorous; petal glabrous at the margin... ..... 34. *M. ramosa*

37. Leaf imbricate; hypanthium campanulate; with glaucous trichomes..... ..... 15. *M. fasciculata*

- Leaf not imbricate; hypanthium urceolate, with cream trichomes..... 17. *M. gracilis*

38. Branch thick..... 39

- Branch slender..... 42

39. Leaf blade obovate-oblong; petal magenta; anther polysporangiate……..…. ..... 41. *M. stenodonoides*

- Leaf blade elliptic, ovate-oblong, oblong-lanceolate, ovate or ovate-oblong; petal white or pinkish; anther tetrasporangiate..... 40

40. Leaf blade elliptic; sepal subulate; petal entirely white..... 11. *M. crebropunctata*

- Leaf blade ovate, ovate-oblong or oblong-lanceolate; sepal ovate-oblong or triangular; petal white or pinkish, yellow at the base..... 41

41. Leaf blade with abaxial surface covered with spherical glands; hypanthium 12–20 × 10–15 mm, oblong; sepal triangular.....24. *M. macrantha*

- Leaf blade with abaxial and adaxial surfaces covered with spherical glands; hypanthium 4–5 × 4 mm, campanulate; sepal ovate-oblong..... .....30. *M. pohliana*

42. Anther of the antesepalous stamen with a very long beak (1–2.5 mm long).……43

- Anther of the antesepalous stamen with a short beak (up to 1 mm long)…….....44

43. Branch, leaf blade, hypanthium and sepal covered with glandular trichomes and spherical glands; anther polysporangiate; occurrence in Cavalcante, Minaçu, and Niquelândia..... .....22. *M. longirostrata*

- Branch, leaf blade, hypanthium and sepal glabrous, except by the spherical glands at the sepal margin; anther tetrasporangiate; occurrence in Chapada dos Veadeiros… ..... 32. *M. psammophila*

44. Tetrasporangiate anther 45

- Polysporangiate anther..... 46

45. Hypanthium and sepal covered only with golden spherical glands; sepal triangular-lanceolate; anther oblong; endemic to Chapada dos Veadeiros..... .....8. *M. chrysoglandulosa*

- Hypanthium and sepal covered with glandular trichomes and translucid spherical glands; sepal triangular; anther ovate-oblong; occurrence in Monte Alegre de Goiás and Posse.....13. *M. denudata*

46. Branch, leaf blade, hypanthium and sepal covered only with spherical glands...47

- Branch, leaf blade, hypanthium and sepal covered with spherical glands, glandular……...48

47. Leaf blade acicular, imbricate; petal white; endemic to Chapada dos Veadeiros……1. *M. acicularis*

- Leaf blade triangular-lanceolate or ovate-lanceolate, not imbricate; petal yellow; endemic to Niquelândia ..... 23. *M. macedoi*

48. Branch, leaf blade, hypanthium and sepal covered with glandular trichomes and spherical glands……...……49

- Branch, leaf blade, hypanthium and sepal covered with setose trichomes and spherical glands……50

49. Leaf not imbricate; petal white; anther oblong ..... 6. *M. attenuata*

- Leaf imbricate; petal magenta; anther ovate or ovate-oblong .....27. *M. ordinata*

50. Leaf blade semi-amplexicaul at the base; petal pinkish or white; anther ovate or ovate-oblong; occurrence also in Amazonas, Pará, Rondônia, Maranhão, Mato Grosso do Sul, Mato Grosso, and Bolívia ..... 20. *M. insignis*

50'. Leaf blade not semi-amplexicaul at the base; petal magenta; anther oblong; occurrence also in Minas Gerais, São Paulo, and Distrito Federal……. .....31. *M. polystemma*

1. *Microlicia acicularis* Fontelas, D.O.Diniz & R.Romero (submitted and accepted to Brittonia) (Appx. 1).

Subshrub, ca. 0.6 m tall, few-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium, and sepal densely covered with spherical glands, frequently deciduous. Leaf sessile, ascending, imbricate; blade 3−4 × 0.3−1 mm, with the same size in the main and lateral branch, discolorous, darker on the adaxial surface, greenish, sometimes apex reddish, chartaceous, acicular, apex apiculate, apiculum ca. 0.2 mm long, frequently deciduous, base attenuate, margin entire, glabrous, revolute, not calose, main vein conspicuous on both surfaces, not calose, lateral veins inconspicuous, secondary and tertiary nerves absent . Flower 5-merous, solitary, terminal or lateral; pedicel 0.5−2 mm long, bract absent; hypanthium 2−3.5 × 1.5−2.5 mm, cream-greenish, campanulate, bristle at the apex absent; sepal 2.5−4 × 1−2 mm, greenish, triangular, apex

apiculate, apiculum ca. 0.2 mm long, frequently deciduous, sometimes reddish; petal 8−11 × 4−6 mm, white, elliptic-obovate, apex acute or acuminate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, polysporangiate; antesepalous stamen with filament 3.5−4.5 mm long, pedoconnective 3.2−5 mm long, ventral appendage 0.8−1.2 mm long, apex truncate, anther 1.8−2.2 mm long, beak ca. 0.3 mm long; antepetalous stamen with filament 3.5−4.5 mm long, pedoconnective 1.5−2 mm long, ventral appendage 0.2−0.3 mm long, apex truncate, anther 1−2 mm long, beak ca. 0.2 mm long; ovary 1.5−2 × 1−1.5 mm, 3-locular, superior, glabrous; style 5−8.5 mm long, yellow. Capsule 4−7 × 2.5−3.5 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed ca. 0.4−0.8 × 0.2−0.3 mm, golden.

Specimens examined:—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, cachoeira do São Bento, 14°07'S, 47°31'W, 30 May 1994, bot., fl., *S. Bridgewater et al. S226* (US, online image). 24 June 1994, fl., *Gomes-Klein et al. 2455* (UFG); 31 July 1994, bot., fl., fr., *C. Munhoz et al. 185* (HUFU, UB, UFG); 1181 m, 19 August 2015, fr., *D.O. Diniz-Neres et al. 545* (UFG); Morro do Japonês, 25 June 2016, fl., fr., *M.J. Silva et al. 7490* (UFG).

Microlicia acicularis is endemic to Chapada dos Veadeiros, with few collections from *cerrado rupestre* close to streams, growing on rock cracks or ravines (Diniz & Silva 2020 as *M. scoparia*, see appendix 1). *Microlicia acicularis* is assigned as Critically Endangered (CR) category (see appendix 1). Collected with flowers and fruits in May, June and July, and only with fruits in August.

Microlicia acicularis can be recognised by having slender branch, spherical glands covering branch, leaf blade, hypanthium, and sepal, imbricate, discolorous (darker on the adaxial surface), acicular leaf blade, and revolute at the margin. In addition, it has cream-

greenish hypanthium, dimorphic, concolorous stamen with polysporangiate anther (see Appx. 1). *Microlicia acicularis* resembles *M. scoparia* (A.St.-Hil.) DC., Pilger and *M. chrysoglandulosa* R.Romero, Versiane, Fontelas & D.O.Diniz-Neres, and their similarities and differences were presented by Fontelas, Diniz & Romero (see Appx. 1).

See illustrations and images in Diniz & Silva (2020), figures 19 a−k, 20 a−d, as *Microlicia scoparia.*

2. *Microlicia acuminata* Naudin (1845: 179).

Subshrub, 0.2–1 m tall, few-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparse or densely covered with spherical glands and setose trichomes, 0.1−3.5 mm long, cream or white, sometimes purple-reddish. Leaf sessile, ascending, not imbricate; blade 5−18 × 2−7 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate or ovate-lanceolate, apex acuminate, with a terminal setose trichome, base rounded or attenuate, margin entire or serrate, flat, ciliate, not calose, 1 (-2) pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose, secondary and tertiary veins absent. Flower 5-merous, solitary, terminal or lateral; pedicel 0.5−1 mm long, bract absent; hypanthium 3−6 × 2−3 mm, greenish, oblong, bristle at the apex absent; sepal 2.5−5 × 1−2.5 mm, greenish, apex frequently reddish, lanceolate, apex aristate, arista 0.5−1 mm long, reddish; petal 8−13 × 5−9 mm, magenta, pinkish, or sometimes white, obovate, apex acuminate, margin entire, glabrous; stamen 10, subisomorphic, anther concolorous, oblong, polysporangiate; filament 3−4 mm long, white or yellow, rarely pinkish, pedoconnective 1.5−3 mm long, white or yellow, ventral appendage 0.1−0.5 mm

long, yellow, apex rounded or retuse, anther 3−5 mm long, beak ca. 0.5 mm long, white ou yellow; ovary ca. 3 × 2 mm, 3-locular, superior, glabrous; style 6−9 mm long, magenta. Capsule 4.5−6 × 3−3.5 mm, brown, oblong, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, cream.

Specimens examined:—BRAZIL. Distrito Federal: Cabeceiras do Rio Gama, 2 May 1895, fl., *A.F.M. Glaziou 21249* (BHCB, K, P); 3 May 1898, fl., *A.F.M. Glaziou 21256* (P, online image). Brasília, Fazenda Água Limpa 15°58'11.5"S, 47°55'58.4"W, 4 May 2007, bot., *W.J. Silva et al. s.n.* (HUFU 53723, UB); Fazenda Sucupira, 15°52'00"S, 48°00'00"W, 1100 m, 18 April 2000, fl., *E.S.G. Guarino et al. 111* (CEN); ARIE da Granja do Ipê, 15°54'58"S, 48°00'00"W, 2 June 2015, bot., fl., *P.O. Rosa et al. 1548* (HUFU, HEPH). Goiás: *s.l.,* 1841, fl., *G. Gardner 3732* (SP); ca. de 35 km ao norte da Chapada dos Veadeiros, 1000 m, 15 March 1969, bot., fl., *H.S. Irwin et al. 24401* (NY); 2-4 km da estrada norte do Funil e Rio Paraná, 16°35'22.5"S, 48°24'00"W, 600 m, 14 March 1973, fl., *W.R. Anderson 7114* (NY, UB). Alto Paraíso de Goiás, Chapada dos Veadeiros, 14°09'68.5"S, 47°36'37.0"W, 1115 m, 16 June 1998, bot., fl., fr., *R. Romero et al. 5544* (HUFU, UEC); Fazenda Água Fria, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 17 June 2000, fl., *C. Munhoz et al. 1602* (HUEG, HUFU); idem, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 20 December 2000, bot., fl., fr., *C. Munhoz et al. 1411* (HUEG, HUFU); idem, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 20 February 2001, fl., *C. Munhoz et al. 2576* (HUEG, HUFU). Caldas Novas, estrada de acesso a UHE-Corumbá, 18°00'S, 48°34'W, 12 February 1993, bot., fl., *T.A.B. Dias et al. 408* (CEN); Parque Estadual da Serra de Caldas Novas, 6 January 2001, fl., fr., *M.L. Santos 140* (HUEG, HUFU); idem, 14 December 2001, bot., fl., *R. Romero et al.* 6168 (HUFU); idem, 13 April 2008, fl., *T.M. Moura et al. 59* (CEN, HUEG); idem, 13 April 2008, fl., *T.M. Moura et al. 61* (CEN,

HUEG); idem, 17°47'23"S, 48°39'48"W, 910 m, 31 July 2008, fr., *T.M. Moura et al. 390* (HUEG, HUFU); idem, 17°46'36"S, 48°40'02"W, 903 m, 12 November 2008, fl., fr., *P.O. Rosa 1286* (HUFU); idem, 17°46'36"S, 48°40'02"W, 903 m, 13 November 2008, fl., fr., *P.O. Rosa 1299* (HUFU); idem, 24 January 2010, bot., fl., *D.I. Junqueira 669* (CEN, UB); idem, 21 March 2008, fr., *D.I. Junqueira 89* (HUFU, UEG). Cavalcante, Chapada dos Veadeiros, 25 May 1975, bot., fl., *G. Hatschbach 36856* (MBM, SP); km 3 da estrada vila Veneno-Rio São Félix, 13°32'26"S, 48°03'33"W, 330 m, 22 February 2001, bot., fl., *G. Pereira-Silva et al. 4793* (CEN); balsa do rio Tocantins, km 4, 13°35'15"S, 48°05'07"W, 450 m, 23 May 2001, bot., fl., *G. Pereira-Silva et al. 5093* (CEN); estrada para Teresina de Goiás, 13°46'16.1"S, 47°24'40.1"W, 761 m, 15 April 2004, bot., fl., *M.L. Fonseca et al. 5182* (HUFU, IBGE); Serra do Tombador, 26 July 2014, fl., *M.N. Rissi et al. 713* (UEC, online image). Cocalzinho de Goiás, Serra dos Pireneus, 15°47'21.5"S, 48°52'51.6"W, 1107 m, 24 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5032* (HUFU, K, MBM, RB, UEC); idem, 15°47'10"S, 48°46'19"W, 1220 m, 26 April 2012, bot., fl., *J.N. Nakajima et al. 5078* (HUEG, HUFU); idem, 15°47'10"S, 48°46'19"W, 1220 m, 9 May 2012, bot., fl., fr., *J.N. Nakajima et al. 5073* (HUFU, UB); idem, 15°50'48"S, 48°46'15.6"W, 1066 m, 3 October 2012, fr., *A.F.A. Versiane et al. 295* (HUFU); idem, 15°49'30"S, 48°41'36"W, 13 December 2012, fr., *A.F.A. Versiane et al. 463* (HUFU, MBM); idem, 15°49'30.9"S, 48°41'36.4"W, 13 December 2012, 1108 m, bot., fr., *A.F.A. Versiane et al. 464* (HUFU); idem, 15°50'47"S, 48°46'16.9"W, 20 February 2013, bot., fl., fr., *R.A. Pacheco et al. 978* (HUFU, RB); idem, 15°50'47.6"S, 48°46'16.9"W, 20 February 2013, bot., fl., *R.A. Pacheco et al. 980* (HUFU, K, MBM, UB); idem, 15°48'22.5"S, 48°46'53"W, 21 February 2013, fl., *R.A. Pacheco et al. 1011* (HUFU, UB); idem, 15°48'22.5"S, 48°46'53"W, 21 February 2013, fl., *R.A. Pacheco et al. 1012*

(HUEG, HUFU); idem, 15°49'59.5"S, 48°40'25"W, 23 May 2013, bot., fl., *R.A. Pacheco et al. 1072* (HUFU, UEC); idem, 15°50'48"S, 48°46'17"W, 23 May 2013, bot., fl., fr., *R.A. Pacheco et al. 1087* (HUFU, UB). Cristalina, estrada para Unaí, 16°45'S, 47°36'W, 15 June 1998, fr., *R. Romero et al. 5506* (UEC, HUFU); Cachoeira do Arrojado, 17 July 2013, bot., fl., *A.L.F. Oliveira et al. 28* (HUFU). Ipameri, estrada Caldas Novas-Ipameri, 17°45'53"S, 48°27'60"W, 720 m, 12 March 1997, bot., fl., *T.B. Cavalcanti et al. 2145* (CEN). Jataí, rodovia Jataí-Caiapônia, 750 m, 20 April 1978, bot., fl., *G.J. Shepherd et al. 7461* (HUFU, UEC). Mossâmedes, Serra Dourada, Fazenda Estância Quinta da Serra, 16°02'S, 50°03'W, 4 February 2009, bot., fl., *J.E.Q. Faria et al. 412* (HUEG, HUFU, UB); idem, 16°02'S, 50°03'W, 4 February 2009, fl., *J.E.Q. Faria et al. 413* (CEN, HUEG, HUFU, UB); Parque Estadual da Serra Dourada, 18 March 2012, bot., fl., *A.I.M.R. Machado et al. 144* (HUFU, UB, UFG); Fazenda Estância Quinta da Serra, 16°04'53.5"S, 50°11'29.8"W, 750 m, 28 September 2012, bot., fl., fr., *A.I.M.R. Machado et al. 182* (CEN, HUFU, MBM, RB, UEC). Niquelândia, estrada de terra vicinal GO-237, Niquelândia-Colinas, 14°12'S, 48°13'W, 450 m, 13 April 1992, bot., fl., *B.M.T. Walter et al. 1262* (CEN); Serra Negra, Fazenda de Níquel Tocantins, 14°02'S, 48°19'W, 470 m, 15 April 1992, bot., fl., *B.M.T. Walter et al. 1404* (CEN); 6,7 km ao sul da GO-237, 14°37'S, 48°58'W, 450 m, 8 July 1992, fl., *G.P. Silva et al. 1199* (CEN). Pirenópolis, Serra dos Pireneus, rodovia Pirenópolis-Cocalzinho de Goiás, 19 February 2000, bot., fl., *G. Hatschbach 70184* (HUFU, MBM); Serra dos Pireneus, base da serra, 30 May 2004, bot., *V.L.G. Klein et al. 3831* (HUFU, UFG); 15 July 2015, fl., *F. Almeda et al. 9500* (UEC, online image); Mosteiro, 10 April 2018, fl., *P.O. Rosa et al. 2177* (UEC, online image).

Microlicia acuminata occurs in Goiás, Mato Grosso, Tocantins, and Distrito Federal

(Romero & Woodgyer 2015; Romero *et al.* 2020), in *campo limpo*, *campo rupestre*, *campo sujo*, and *cerradão*, in dry or wet areas, between 330 and 1440 m elevation. Due to its wide distribution, *M. acuminata* is assigned as Least Concern (LC) category. Collected with flowers from January to May, except March, and fruits from January to July, in October and December.

Microlicia acuminata shows expressive polymorphism regarding the distribution of trichomes in the branch, leaf blade, hypanthium, and sepal, leaf blade size, and its arrangement in the branches, as well as petal and stamen color. *Microlicia acuminata* resembles *M. insignis* Schldtl. (Versiane *et al.* 2016) in having setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, ascending and sessile leaf, concolorous, lanceolate or ovate-lanceolate blade, rounded at the base. Furthermore, it is similar in having lanceolate sepal, aristate at the apex, concolorous (yellow) stamen with polysporangiate anther. However, *M. insignis* differs by the campanulate or oblong-urceolate hypanthium, longer pedicel (1−2 mm long), dimorphic stamen with a larger ventral appendage (0.5–1.5 mm long) in the antesepalous stamen, and ovate or ovate-oblong anther. *Microlicia acuminata* also bears some resemblance to *M. fasciculata* Mart. ex Naudin in having setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, ascending, sessile leaf, concolorous, lanceolate or ovate-lanceolate blade, obovate petal and polysporangiate anther. However, *M. fasciculata* differs in having glaucous trichomes (Romero 2000), campanulate hypanthium, triangular sepal, petal setose at the apex, dimorphic stamen with larger ventral appendage (0.7–1.2 mm long) in the antesepalous stamen and bicolorous anthers, i.e, vinaceous or pinkish in the antesepalous stamen and yellow in the antepetalous.

Illustrations in Cogniaux (1883), figure 8, noted as *Chaetostoma castratum*; Diniz-

Neres & Silva (2017a), figures 2 a–l; 3 a–f.

3. *Microlicia altoparaisensis* (Pacifico *et al.* 2020: 291) Versiane & R.Romero (2021: 18)

= *Trembleya altoparaisensis*

Shrub, 0.5–2 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical glands. Leaf with petiole 2–4 mm long, horizontal or slightly ascending, not imbricate; blade 10–45 × 3–8 mm, with variable size in main and lateral branch, concolorous, greenish, chartaceous, elliptic-lanceolate, apex acute, base attenuate, margin flat, entire, glabrous, not calose, 1–2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower (4–)5-merous, thyrsus in dichasia or reduced to one flower, pedicel ca. 1 mm long; bract 8–40 ×1–7 mm; bracteole ca. 6 × 1.5 mm; hypanthium 2.5–5.5 × ca. 3 mm, yellow-greenish, oblong, bristle crown at the apex absent; sepal 2.5–3.5 × 0.5–1 mm, with the same color of the hypanthium, subulate or triangular, apex acute, glabrous; petal 7–10 × 3–4.5 mm, white, obovate-oblong, apex acuminate, margin entire, glabrous; stamen 10, subisomorphic, anther concolorous, yellow, oblong, tetrasporangiate; filament 2.5–3.5 mm long, white, pedoconnective 0.8–1.5 mm long, white, ventral appendage inconspicuous, ca. 0.1 mm long, white, apex retuse, anther 2.5–3 mm long, beak ca. 0.5 mm long; ovary ca. 2.5 × 1.5 mm, 3(–4)-locular, superior, glabrous; style ca. 10 mm long, yellow. Capsule 4–5 × 2.5–3 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed not observed.

Specimens examined:—BRAZIL. Goiás: 16 January 1895, fl., *A.F.M. Glaziou 21300* (P-online image, S-online image). Alto Paraíso de Goiás, Chapada dos Veadeiros, 20

March 2012, fl., fr., *R.A.R. Drummond et al. 321* (MBM, online image); 25 June 1994, bot., fl., *V.L.G. Klein et al. 2465* (HUFU); 20 March 2012, bot., fl., *A.I.M.R. Machado et al. 153* (HUFU); 20 March 2012, fl., fr., *F.S. Meyer et al. 1171* (UEC, online image); 6 February 1987, bot., fl., fr., *J.R. Pirani et al. 1694* (K, online image, UEC, online image).

Microlicia altoparaisensis is probably endemic to Chapada dos Veadeiros, occurring in cerrado and *campo rupestre*, at 1043─1086 m elevation (Pacifico *et al.* 2019). *Microlicia altoparaisensis* is assigned as Endangered (EN) category (see Pacifico *et al.* 2019). Collected with flowers and fruits from January to March and in June.

Microlicia altoparaisensis can be recognised in having spherical glands covering branch, leaf blade, hypanthium and sepal, petiolate leaf, elliptic-lanceolate blade, oblong hypanthium, white petal, and subisomorphic, and concolorous, (yellow) stamen. *Microlicia altoparaisensis* resembles *M. parviflora* (Cogn.) Versiane & R.Romero in having spherical glands covering branch, leaf blade, hypanthium and sepal, petiolate leaf, blade with a variable size in the main and lateral branches, acute at the apex, attenuate at the base, entire, glabrous, and not calose at the margin, pedicellate flower and antepetalous stamen with yellow anther. *Microlicia parviflora* differs in having discolorous (darker on the adaxial surface) and lanceolate leaf blade, revolute at the margin, main vein covered with setose trichomes, campanulate hypanthium, ovate anther, 5-locular ovary, and pinkish style.

Illustrations and images in Pacífico *et al.* (2019), figures 1 a–h, 5 b–c, as *Trembleya altoparaisensis.*

4. *Microlicia arachnoidea* (Almeda & Martins 2017: 51) Versiane & Romero (2021: 18) = *Lavoisiera arachnoidea.*

Subshrub, 0.3–0.7 m tall, few-branched, branch thick, xylopodium present. Branch, abaxial surface of the leaf blade, hypanthium and sepal densely arachnoid-puberulent, with inconspicuous small branched trichomes, sometimes branch with setose trichomes, ca. 2 mm long, cream, inconspicuous glandular trichomes in the node. Leaf sessile, ascending or slightly horizontal, imbricate or not; blade 6–9 × 4–7 mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, coriaceous, ovate or ovate-oblong, apex acute, recurved, with a terminal setose trichome, base rounded, amplexicaul, margin entire, ciliate, sometimes only in the top half, flat, sometimes slightly revolute, calose, adaxial surface glabrous, 2–3 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein covered with setose trichomes, calose. Flower 5–6-merous, solitary, terminal or lateral, sessile; bract 6–7 × ca. 8 mm, petiole ca. 1 mm; hypanthium ca. 4 × 3–4 mm, greenish, campanulate, bristle crown at the apex absent; sepal ca. 6 × 3.5 mm, greenish, with reddish stains, ovate or ovate-oblong, apex acute, with a terminal setose trichome; petal 20–25 × 8 mm, pink or purple, base yellow, oblong or narrow-spatulate, apex asymmetrically truncate, margin entire, glabrous; stamen 10–12; dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament ca. 1.5 mm long, yellow, pedoconnective ca. 10 mm long, yellow, ventral appendage 1.5–2 mm long, apex slightly bilobed, yellow, anther ca. 5 mm long, yellow, with reddish stains, beak ca. 0.5 mm long; antepetalous stamen with filament 0.7–0.9 mm long, yellow, pedoconnective 2–3 mm long, ventral appendage ca. 1 mm long, yellow, apex truncate or bilobed, anther 3.5–4 mm long, yellow, beak ca. 0.5 mm long; ovary 5–6-locular, semi-inferior, glabrous; style ca. 15 mm long. Capsule ca. 9 × 9 mm, brown or reddish, globose, dehiscence not observed, columella persistent; seed

ca. 1 × 0.5 mm, orange-colored.

Specimens examined:—BRAZIL. Distrito Federal: "Encosta do Morro da Canastra à base da escarpa", 16 December 1981, fl., *J.H. Kirkbride Jr. 4588* (INPA, online image, RB, online image). Goiás: Água Fria, Estação Repetidora da Telebrasília de Roncador, fl., *G. Hatschbach et al. 59317* (FURB, online image, UEC, online image).

Microlicia arachnoidea is endemic to Água Fria de Goiás and Distrito Federal, occurring in cerrado, between 975−1200 m elevation (Martins & Almeda 2017). It is accessed as Critically Endangered (CR) category (see Martins & Almeda 2017). Collected with flowers in April, June, November and December, and fruits in April, November and December (Martins & Almeda 2017).

Microlicia arachnoidea can be recognised by the thick branch, arachnoid-puberulent indumentum consisting of small and inconspicuous trichomes (Martins & Almeda 2017), node with inconspicuous glandular trichomes, leaf blade recurved at the apex, with amplexicaul base and ciliate margin, sometimes only in the upper half, and main vein covered with setose trichomes. Furthermore, it has sessile flower, petiolate bract, pink or purple petal, yellow at the base, and yellow anthers, with reddish stains only in the antesepalous stamen. *Microlicia arachnoidea* resembles *M. setifolia* Versiane & R.Romero (as *Lavoisiera setosa* in Martins & Almeda 2017) in having thick branch, node covered with glandular and inconspicuous trichomes, discolorous (darker on the adaxial surface), ovate or ovate-oblong, glabrous leaf blade, acute at the apex, with a terminal setose trichome, rounded and amplexicaul at the base, and ciliate at the margin. In addition, both species have sessile flower, campanulate hypanthium and yellow anthers, with reddish stains in the antesepalous stamen. *Microlicia setifolia* can be distinguished by the conspicuous, glandular trichomes and spherical, reddish glands covering branch,

abaxial surface of the leaf blade, hypanthium and sepal, leaf blade not recurved at the apex, subsessile bract, triangular sepal, lilac and obovate petal, rounded or truncate at the apex and semi-inferior ovary.

Illustrations in Martins & Almeda (2017), figure 61 a–i, as *Lavoisiera arachnoidea.*

5. *Microlicia armata* (Sprengel 1825: 308) Versiane & Romero (2021: 18). = *Chaestostoma armatum.*

Subshrub, 0.2–1 m tall, much-branched, branch slender, xylopodium sometimes present. Branch, leaf blade, hypanthium and sepal glabrous. Leaf sessile, ascending, imbricate; blade 0.8–4 × 0.5–1 mm, with the same size in main and lateral branch, concolorous, greenish, coriaceous, triangular-lanceolate, narrow, apex acuminate or acute, base attenuate, amplexicaul, margin entire, glabrous, flat, calose, cream, 2–3 pairs of parallel veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, cream, calose. Flower 5-merous, solitary, terminal or lateral, sessile; bract absent; hypanthium 3.5–7 × 2–5 mm, cream-greenish, apex purple, oblong-campanulate, striate, rigid bristle crown at the apex up to 0.5 mm long; sepal 3–4 × 1–2 mm, with the same color of the hypanthium, base purple, triangular or triangular-lanceolate, apex apiculate, apiculum ca. 1 mm long, veins calose; petal 7–11 × 3.5–7 mm, pinkish, obovate or obovate-oblong, apex acuminate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, tetrasporangiate; antesepalous stamen with filament 3–5 mm long, pedoconnective 0.8–1.2 mm long, ventral appendage ca. 0.2 mm long, apex retuse, anther 4–5.5 mm long, beak ca. 0.1 mm long; antepetalous stamen with filament ca. 4.5–7 mm long, pedoconnective 0.6–1 mm long, innapendiculate, anther 2.5–5 mm long, beak ca.

0.1 mm long; ovary 2–4 × 1–2 mm, 3-locular, superior, glabrous; style 7–10 mm long, yellow or purple. Capsule 5.5–7 × 2–3 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.4 mm, cream.

Specimens examined:—BRAZIL. Goiás: Cristalina, Serra dos Cristais, 23 June 1983, fl., fr., *G. Hatschbach et al. 46624* (MBM, online image); RPPN Linda Serra dos Topázios, 19 March 2013, fl., *P.O. Rosa 999* (HUFU); 14 May 2015, fl., fr., *P.O. Rosa 1478, 1489, 1493* (HEPH, HUFU).

Microlicia armata occurs from Bahia to northern Paraná (Koschnitzke &Martins 2006; Silva *et al.* 2020), and here we extend its occurrence to Goiás. It occurs in *campo rupestre* and *campo limpo*, occasionally in sandy and wet soil. Due to its wide distribution, *M. armata* is assigned as Least Concern (LC) category. Collected with flowers in March, May, and June, and fruits in May and June.

Microlicia armata can be recognised in having glabrous branch, leaf blade and sepal, leaf blade and sepal with calose veins, leaf blade with 2−3 pairs of parallel veins, striate and glabrous hypanthium, except at the apex, and with a rigid bristles crown. Furthermore, it has sessile and coriaceous leaf, triangular-lanceolate blade, semi-amplexicaul at the base. *Microlicia armata* resembles *M. psammophila* Wurdack in having glabrous branch, leaf, hypanthium, and sepal, and sessile, ascending, concolorous, triangular-lanceolate leaf blade, pinkish and obovate petal, and dimorphic, concolorous (yellow) stamen with tetrasporangiate anther. However, the margin of the sepal with spherical glands, not imbricate leaf, blade aristate (arista 0.1–0.7 mm long), revolute and not calose at the margin, and not striate hypanthium without a bristle crown distinguishes *M. psammophila* from *M. armata*.

Illustrations in Koschnitzke & Martins (2006), figures 2 b, l–n, 5 a–e; Silva & Romero (2020), figure 2 d, as *Chaetostoma armatum*.

6. Microlicia attenuata Fontelas & R.Romero (submitted to Brittonia) (Appx. 1)

Subshrub few-branched, branch slender, xylopodium not observed. Branch, hypanthium and sepal sparsely covered with spherical golden glands and glandular trichomes, ca. 0.3 mm long, densely distributed on the abaxial surface of the leaf blade, adaxial surface glabrous. Leaf sessile, ascending or slightly horizontal, not imbricate; blade 3.5−4.5 × 1.5−2 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate or obovate-lanceolate, apex acute, with a terminal setose trichome, ca. 0.3 mm long, base attenuate, semi-amplexicaul, margin serrate, glandular-ciliate, flat or slightly revolute, not calose, 1 pair of suprabasal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, or sometimes inconspicuous. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 0.5 mm long, bract absent; hypanthium 2−2.5 × 1.5−2 mm, cream, campanulate, bristle crown at the apex absent; sepal ca. 2.5 × 1−1.5 mm, greenish, lanceolate, apex acute, with a terminal setose trichome; petal ca. 7 × 3.5 mm, white, obovate, apex acute, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, polysporangiate; antesepalous stamen with filament ca. 3.5 mm long, pedoconnective ca. 4 mm long, ventral appendage ca. 1.5 mm long, apex truncate or obtuse, anther ca. 2.5 mm long, beak ca. 0.3 mm long; antepetalous stamen with filament ca. 4 mm long, pedoconnective ca. 0.5 mm long, ventral appendage inconspicuous, anther ca. 2 mm long, beak ca. 0.2 mm long; ovary ca. 1.5 × 1 mm, 3-locular, superior, glabrous; style ca. 5 mm long, white. Capsule 4−5 ×

3−3.5 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, brown.

Specimens examined:—BRAZIL. Goiás: Cavalcante, trilha para Cachoeira Santa Bárbara, 20 April 2003, bot., fl., fr., *J.F.B. Pastore et al. 511* (CEN, HUFU).

Microlicia attenuata is endemic to Cavalcante, and so far, it was collected only near the Santa Bárbara waterfall (see Appx. 1) in *campo úmido*, ca. 1050 m elevation. This species is known only by a collection from an unprotected area, and it is assessed as Critically Endangered (CR) category (see Appx. 1). Collected with flowers and fruits in April.

Microlicia attenuata can be easily recognised by the glandular trichomes and spherical golden glands densely distributed on the abaxial surface of the leaf blade, and glabrous adaxial surface. The hypanthium and sepal also have sparse glandular trichomes. *Microlicia attenuata* has lanceolate or obovate-lanceolate leaf blade, semi-amplexicaul at the base, white petal, and concolorous (yellow) stamen (see Appx. 1). *Microlicia attenuata* resembles *M. longirostrata* R.Romero, Fontelas & Versiane and *M. ramosa* Pilger, and their similarities and differences were presented by Fontelas & Romero (Appx. 1).

Illustrations in Fontelas *et al.* (submitted, see Appx. 1), figures 3 a–i.

7. *Microlicia campanulata* Fontelas & R.Romero, *sp. nov.* (Fig. 3 a–i)

The new species is recognised in having branch, leaf blade, hypanthium and sepal covered only with spherical glands, leaf and sepal acute at the apex, glabrous, leaf blade sessile, linear-oblong, short-pedicellate flower (ca. 0.5 mm long), campanulate

hypanthium, triangular, nigrescent sepal, petal acuminate at the apex, and bicolorous anther, pinkish in the antesepalous stamen, yellow in the antepetalous.

Type:—BRAZIL. Goiás: Teresina de Goiás, GO-118, 913 m, 20 April 2009, fl., fr., *F. Almeda et al. 9454* (holotype HUFU!, isotype UEC!).

Subshrub ca. 0.2 m tall, much-branched, branch slender, xylopodium not observed. Stem terete, decorticating. Young branch brownish, quadrangular, becoming terete, darker, and without leaf with the age. Branch, both surfaces of the leaf blade, hypanthium and sepal densely covered with spherical glands. Leaf sessile, ascending, imbricate; internode 1.7–3 mm long, blade 3–5 × 0.4–1 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, linear-oblong, apex acute, glabrous, base attenuate, margin entire, flat, not calose, lateral veins inconspicuous, main vein conspicuous on both surfaces. Flower 5-merous, solitary, terminal or lateral, perianth actinomorphic; pedicel ca. 0.5 mm long, bract absent; hypanthium 1.5–2 × 1.3–1.8 mm, greenish, campanulate, bristle crown at the apex absent, calyx tube ca. 2 mm long; sepal 1.4–2.1 × 0.4–0.6 mm, blackish, triangular, apex acute, glabrous, similar in size to the hypanthium; petal 3.5–4 × 2.2–2.5 mm, pinkish, obovate-oblong, apex acuminate, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament 1–1.3 mm long, magenta, pedoconnective 1.5−1.8 mm long, magenta, ventral appendage ca. 1 mm long, yellow, apex bilobed, anther 1.5−1.8 mm long, pinkish, beak ca. 0.4 mm long; antepetalous stamen with filament 3–3.5 mm long, magenta, pedoconnective ca. 0.4 mm long, yellow, ventral appendage ca. 0.2 mm long, yellow, apex retuse, anther 1−1.3 mm long, beak ca. 0.3 mm long; ovary ca. 1.7 × 1.5 mm, 3-locular, oblong, superior, glabrous; style 4–5 mm long, magenta, terete,

slightly apex curved, stigma punctiform. Capsule ca. 2.5 × 1.8 mm, brown, globose, dehiscent in 3 valves from the apex to the base, columella deciduous; seed ca. 0.4 × 0.2 mm, cream, oblong, testa foveolate.

Etymology—The epithet "campanulata" refers to the distinctly campanulate hypanthium.

Distribution, Habitat, and Conservation—Until now, *M. campanulata* is known from a single collection made on the margins of the GO 118 highway that links the municipalities of Alto Paraíso de Goiás to Teresina de Goiás, in a disturbed area, according to the label. Thus, *M. campanulata* is preliminarily assessed as Critically Endangered [CR, D].

Phenology—Collected with flowers and fruits in April.

Notes—*Microlicia campanulata* resembles *M. consimilis* in having spherical glands covering branch, leaf blade, hypanthium and sepal, sessile leaf, linear-oblong blade, entire and flat at the margin, and oblong and tetrasporangiate anther. *Microlicia consimilis* differs in having setose trichomes covering branch, leaf blade, hypanthium and sepal (*vs.* absent in *M. campanulata*), not imbricate, horizontal or slightly ascending leaf (*vs.* imbricate, ascending), oblong hypanthium (*vs.* campanulate), triangular-lanceolate sepal (*vs.* triangular), subisomorphic stamen (*vs.* dimorphic) with concolorous (yellow) anther (*vs.* bicolorous, vinaceous and yellow). *Microlicia campanulata* also bears some resemblance to *M. denudata* Cogn. in having spherical glands covering branch, leaf blade, hypanthium and sepal, sessile and ascending leaf, concolorous, glabrous and linear-oblong blade, acute at the apex, attenuate at the base, entire, flat and glabrous at the margin. In addition, it has flowers with a pedicel ca. 0.5 mm long and campanulate hypanthium. However, *M. denudata* has sparse glandular trichomes covering hypanthium

and sepal (*vs.* absent in *M. campanulata*), triangular-lanceolate sepal (*vs.* triangular), and concolorous (yellow), and ovate-oblong anther (*vs.* bicolorous, vinaceous and yellow, oblong).

8. *Microlicia cataphracta* (Martius & Schrank ex De Candolle 1828: 103) Versiane & Romero (2021: 18). = *Lavoisiera imbricata* (Fig. 4 a).

Subshrub or shrub, 0.3–2 m tall, few-branched, branch thick, xylopodium present. Branch and leaf blade glabrous, apical portion of hypanthium and abaxial surface of sepal sparse to densely covered with glandular or setose trichomes, 0.1–2 mm long, cream, inconspicuous glandular trichomes in the node. Leaf sessile, ascending, strongly imbricate; blade 5–8 × 3–7.5 mm, with the same size in main and lateral branch, concolorous, green-yellowish, coriaceous, ovate or oblong, apex acute, with a terminal setose trichome, calose, base attenuate or slightly rounded, semi-amplexicaul, margin cream, serrate-ciliate, trichome 0.5–1 mm long, sometimes glandular, flat, calose, lateral veins inconspicuous, main vein, conspicuous on both surfaces, covered with setose trichomes. Flower 6–(7)-merous, solitary, terminal or lateral; sessile; bract ca. 6 × 4 mm, subsessile; hypanthium 3–5 × 2.5 mm, greenish, oblong, bristle crown at the apex absent; sepal 2.5–9 × 2–4 mm, green, green-yellowish, cream, brown-reddish or vinaceous, sometimes with reddish or nigrescent stains, ovate-oblong, oblong or oblong-triangular, apex short-apiculate, apiculum ca. 0.5 mm long; petal 8–27 × 4–10 mm, pink or pinkish, rarely white, frequently yellowish or cream at the base, obovate or espatulate, apex rounded, sometimes asymmetrically apiculate, margin entire, glabrous, sometimes glandular-ciliate; stamen 12, dimorphic, anther bicolorous, oblong, tetrasporangiate;

antesepalous stamen with filament ca. 7 mm long, white, pedoconnective 3–5 mm long, white, yellow or purple, ventral appendage ca. 1 mm long, yellow, apex bilobed, anther ca. 3 mm long, yellow, purple-brownish after the pollinization, beak ca. 0.3 mm long; antepetalous stamen with filament 5.5–6 mm long, white or yellow, pedoconnective 2–3 mm long, white or yellow, ventral appendage ca. 0.5 mm long, yellow, apex rounded, anther 2.5 mm long, yellow, beak ca. 0.3 mm long; ovary 2.5–3 × 2–2.5 mm, 6-locular, semi-inferior, glabrous; style 5–6.5 mm long, pink or yellow. Capsule 3–7 × ca. 5 mm, brown or brown-reddish, globose, dehiscent from the base, columella persistent; seed 0.6–0.8 × 0.2–0.5 mm, orange-colored or brown-grayish.

Specimens examined:—BRAZIL. Distrito Federal: Brasília, Reseva Biológica de Águas Emendadas, 16 Aug 1983, fl., *B.A.S. Pereira et al. 689* (P, online image); Parque Nacional de Brasília, 18 March 2006, fl., *C.A. Faria et al. 244* (HUFU); 20 March 2016, fl., *C.R. Martins et al. 2083* (HUFU). Goiás: 23 September 1894, fl., *A.F.M. Glaziou s.n.* (P, online image); 24 June 1895, fl., *A.F.M. Glaziou 21315, 21316* (P, online image). Cocalzinho de Goiás, Serra dos Pireneus 1029 m, 21 May 2013, fl., *R.A. Pacheco et al. 1044* (HUFU); 21 May 2013, fl., *A.F.A. Versiane et al. 1044* (HUFU, UEC, online image); Parque Estadual dos Pireneus, 4 March 2002, fl., *M.L. Santos 116* (HUFU); 8 Aug 2002, fl., fr., *M.L. Santos 155* (HUFU). Cristalina, RPPN Linda Serra dos Topázios, fl., *R.S. Oliveira 134* (HUEFS, online image). Indianópolis, Fazenda Duratex, 23 April 2014, fl., *I.L.M. Resende 2516* (HUFU). Pirenópolis, Parque Estadual dos Pireneus, 2 November 2012, fl., fr., *M.L. Santos 180* (HUFU).

Microlicia cataphracta occurs in Bahia, Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Paraná, Rio de Janeiro, São Paulo, and Distrito Federal (Martins & Almeda 2017 as Lavoisiera imbricata), in *campo limpo*, *campo rupestre*, *cerradão* and close to rain

forest, in wet areas or not, between 600 to 1850 m elevation. Due to its wide distribution, *M. cataphracta* is assigned as Least Concern (LC) category. Collected with flowers from November to May, in July and in August, and fruits from November to March, in July and in August.

Microlicia cataphracta is marked by an expressive polymorphism, mainly regarding the leaf blade and sepal size, texture and color, and the indumentum distribution (Martins & Almeda 2017). The species can be recognised by the ascending leaf, strongly imbricate, semi-amplexicaul at the base, callose and serrate-ciliate at the margin, sessile and 6–(7)-merous flower, glandular or setose trichomes covering upper portion of the hypanthium, margin of the sepal and on the main vein, oblong hypanthium, and yellow anther, becoming purple-brownish post pollination in the antesepalous cycle (Martins & Almeda 2017). *Microlicia cataphracta* resembles *M. macrantha* Versiane & R.Romero in having thick branch, inconspicuous, glandular trichomes at the node, leaf blade callose at the margin, oblong hypanthium, oblong anther, and 6-locular and semi-inferior ovary. *Microlicia macrantha* is distinguished by the discolorous and larger size of its leaf blade (20–45(–80) × 10–20(–40) mm), 3–4 pairs of basal acrodromous veins, and subsessile, glabrous, and large bract (28–40 × 18–20 mm). Furthermore, it has a flower with a long pedicel (3–4 mm long), triangular sepal, obovate-oblong petal, and ventral appendage yellow, turning brown post pollination.

Illustrations and images in Martins *et al.* (2009), figures p–r; Martins & Almeda (2017), figures 3 g–h, 43 a–k, 44 a–e, as *Lavoisiera imbricata.*

9. *Microlicia chrysoglandulosa* Romero *et al.* (2017: 562) (Fig 4 b).

Subshrub or shrub, 0.3–2 m tall, much-branched, xylopodium present. Branch, leaf blade, hypanthium and sepal densely covered with spherical golden glands. Leaf sessile, ascending, not imbricate; blade 2.5–5.5 × 0.5–1.3 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, linear, apex acute, glabrous, base truncate, margin entire or slightly crenulate, glabrous or spherical glands sparsely distributed, flat, not calose, 1 pair of basal acrodromous veins, frequently inconspicuous, main vein conspicuous on the adaxial surface, covered with spherical golden glands on the abaxial surface. Flower (4–)5-merous, solitary, terminal or lateral; pedicel 0.8–1.5 mm long, bract absent; hypanthium 2–4 × 2.5–4 mm, greenish, campanulate, bristle crown at the apex absent; sepal 2–5 × 1–2 mm, greenish, apex reddish, triangular, apex acute, glabrous; petal 8–11 × 3.5–6 mm, white or pinkish, yellow at the base, oblong or obovate, apex acute or asymmetrically retuse, margin entire, glabrous; stamen (8–)10, dimorphic, concolorous, yellow, filament and pedoconnective rarely white or pinkish in flowers with petal pinkish, anther oblong, tetrasporangiate; antesepalous stamen with filament 3.5–5 mm long, pedoconnective 5–7 mm long, ventral appendage 0.8–2.3 mm long, apex retuse, anther 2–2.5 mm long, beak 0.5–1 mm long; antepetalous stamen with filament 3–4 mm long, pedoconnective 1–2 mm long, ventral appendage 0.3–0.4 mm long, apex rounded, anther 1.8–2.5 mm long, beak 0.5–1 mm long; ovary 1.5–2 × 1–1.5 mm, 3-locular, superior, glabrous; style 8–10 mm long, yellow in flowers with petal white, pinkish in flowers with petal pinkish. Capsule 3–5 × 2–3.5 mm, brown, globose, dehiscent from the apex, columella deciduous; seed 0.3–1 × 0.1–0.5 mm, cream.

Specimens examined:—BRAZIL. Goiás: Alto Paraíso de Goiás, Rodovia GO-012, km 5, 24 May 1975, fl., *G. Hatschbach 36821* (MBM); Chapada dos Veadeiros, 18 May 1976. fl., fr., *J. Semir 4256* (UEC); idem, 28 July 1987, fl., fr., *S. Romaniuc Neto & M.G.*

Sajo 381 (SP, UEC); idem, 14°09'68.5"S, 47°36'37"W, 1115 m, 16 June 1998, bot., *R. Romero et al. 5526* (UEC, HUFU); idem, ca. 10 km em direção à Teresina de Goiás, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 8 May 2000, bot., *C. Munhoz et al. 1275, 1277* (HUEG, HUFU); idem, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 21 April 2000, bot., fl., *C. Munhoz et al. 1094* (HUEG, HUFU); idem, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 21 April 2000, bot., *C. Munhoz et al. 1106* (HUEG, HUFU); Cachoeira dos Cristais, 22 May 2008, bot., fl., *J.M. Silva et al. 6626* (HUFU, MBM); idem, trilha para os saltos, 22 March 2012, bot., fl., *A.I.M.R. Machado et al. 166* (HUFU, K, P, RB, UB, UFG). São João da Aliança, Chapada dos Veadeiros, 21 July 1964, fl., *G. T. Prance & N. T. Silva 58285* (UB); idem, 19 March 1969, fl., fr., *H.S. Irwin et al. 24638* (UB). São Jorge, Parque Nacional da Chapada dos Veadeiros, 14°09'53"S, 47°49'28"W, 22 March 2012, fl., *F. S. Meyer 1202* (UEC); Chapada dos Veadeiros, 14°09'36"S, 47°50'53"W, 22 March 2012, fl., *R. A. Rutter-Drummond et al. 345* (MBM); Parque Nacional da Chapada dos Veadeiros, 14º09'50.8"S, 47º50'4.6"W, 899 m, 13 March 2015, fl., *D. O. Diniz-Neres et al. 89* (UFG); idem, 14º09'53"S, 47º50'20.3"W, 878 m, 2 May 2015, fl., fr., *D. O. Diniz-Neres et al. 243* (UFG); idem, 14°09'39"S, 47°49'34"W, 1032 m, 26 February 2016, fl., *J. C. Fontelas et al. 131* (BHCB, CEN, HUFU, K, P, RB, UB, UEC, UFG); 14º09′54.5″S, 47º50′20.7″W, 834 m, 30 April 2016 fl., fr., *D. O. Diniz-Neres et al. 874* (UFG); idem, 14º09'28.9"S, 47º46'56.7"W, 1126 m, 20 Aug 2016, fr., *D. O. Diniz-Neres et al. 1089* (UFG).

Microlicia chrysoglandulosa is endemic to Chapada dos Veadeiros, occurring in *campo limpo*, *campo úmido*, and *cerrado rupestre* (Romero *et al.* 2017), in sandy soil, between 878 and 1126 m elevation. It is preliminarily assessed as Endangered [(EN) (see Romero *et al.* 2017). Collected with flowers from February to June, and fruits in March

and April.

Microlicia chrysoglandulosa can be easily recognised by the spherical golden glands covering branch, the main vein of the leaf blade, on the abaxial surface, hypanthium and sepal (Romero *et al.* 2017), not imbricate and linear leaf blade, campanulate hypanthium, sepal reddish at the apex, petal asymmetrically retuse or acute at the apex, and oblong and yellow anther. *Microlicia chrysoglandulosa* resembles *M. psammophila* Wurdack and their similarities and differences were presented by Romero *et al.* (2017).

Illustrations and images in Romero *et al.* (2017), figures 1 a–l, 2 a–e.

10. *Microlicia clavillosa* Wurdack (1982: 297) = *Chaetostoma scoparium* (Fig 4 c).

Subshrub, 0.5–1.5 m tall, few-branched, main branch thick, lateral branch slender, xylopodium not observed. Branch, adaxial surface of the leaf blade and sepal glabrous, abaxial surface of the leaf blade and sepal, and hypanthium sparsely covered with glandular trichomes, ca. 0.4 mm long, white. Leaf sessile, ascending, imbricate; blade 2.5–4 × 1.5–2 mm, with the same size in main and lateral branch, concolorous, greenish, coriaceous, triangular-lanceolate, apex acute, with a terminal setose or glandular trichome, base attenuate, semi-amplexicaul, margin entire or serrate, glandular-ciliate, flat, not calose, lateral veins inconspicuous, main vein conspicuous on both surfaces, calose. Flower 5-merous, solitary, terminal or lateral, sessile; bract absent; hypanthium 2.5–3 × ca. 2 mm, yellow-greenish, campanulate, crown of glandular bristle at the apex 1–2.5 mm long, white; sepal 3.5–5 × 0.5–1 mm, frequently reddish, sometimes with the same color of hypanthium, triangular-lanceolate, apex apiculate, apiculum ca. 0.4 mm long, margin glandular-ciliate; petal 9–11 × 5–6 mm, purple, obovate, apex acuminate or

apiculate, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, ovate-oblong, tetrasporangiate; antesepalous stamen with filament 4–5.5 mm long, pinkish, pedoconnective 4–7 mm long, pinkish, ventral appendage 0.5–2 mm long, yellow, apex retuse, anther 3–3.5 mm long, reddish, beak ca. 0.3 mm long; antepetalous stamen with filament 4–5 mm long, pinkish, pedoconnective 0.5–1 mm long, pinkish, ventral appendage inconspicuous, ca. 0.3 mm long, yellow, anther ca. 3 mm long, yellow, beak ca. 0.3 mm long; ovary 2.5–3 × ca. 2 mm, 3-locular, superior, glabrous; style 7–14 mm long, pinkish. Capsule ca. 4 × 2.5 mm, brownish, ovate, dehiscent from the apex, columella deciduous; seed ca. 1 × 1.2 mm, brownish.

Specimens examined:—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, 5 July 1978, fl., fr., *S.B. Silva et al. 59* (RB, online image); 21 March 2012, fl., *R.A.R. Drummond et al. 335* (RB, online image), fl., fr., *A.I.M.R. Machado et al. 160* (HUFU); 30 October 2014, fr., *J.B.A. Bringel Jr. et al. 1054, 1055* (CEN, online image); 26 February 2016, bot., *J.C. Fontelas et al. 130* (HUFU); 28 April 2016, fl, fr., *D.O. Diniz 837, 838, 839, 841* (RB, online image).

Microlicia clavillosa is endemic to Chapada dos Veadeiros (Koschnitzke & Martins 2006, Silva *et al.* 2020), occurring in *cerrado*, *campo limpo*, and *campo rupestre*. With a restricted area of occupancy (AOO = 16 km²) and extent of occurrence (EOO = 69 km²), in addition to few records, it is assigned as Critically Endangered category [(CR) A2B1ab(iii)]. Collected with flowers in February, March, April, and July, and fruits in April, July, and October.

Microlicia clavillosa has a robust main branch, and it is totally distinct from the lateral branches (Koschnitzke & Martins 2006). The leaf blade and sepal glandular-ciliate at the margin, both glabrous on the adaxial surface, and the abaxial surface, like the hypanthium,

is sparsely covered with glandular trichomes, except at the apex, with a dense crown of glandular bristle. Furthermore, the stamens are dimorphic with bicolorous anther, reddish in the antesepalous stamen, and yellow in the antepetalous. *Microlicia clavillosa* resembles *M. armata*, *M. cupressina* D.Don, and *M. hexapetala* (D.Nunes, D.O.Diniz, Koschn. & M.J. Silva) Versiane & R.Romero, and their similarities and differences were presented by Koschnitzke & Martins (2006), and Silva *et al.* (2018).

Illustrations in Koschnitzke & Martins (2006), figures 1 j–l, 2 j, as *Chaetostoma scoparium.*

11. *Microlicia consimilis* Wurdack (1959: 6) (Fig 4 d).

Subshrub, 0.2–0.7 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical glands and setose trichomes, 0.05−0.2 mm long, white or cream. Leaf sessile, horizontal or slightly ascending, not imbricate; blade 2−11 × 0.5−2 mm, with the same size in main and lateral branch, concolorous, greenish, sometimes apex or base reddish, chartaceous, linear-oblong, apex acuminate, with a terminal setose trichome, base attenuate, margin entire, ciliate, flat, not calose, 1 pair of basal acrodromous veins, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.5−1.2 mm long, bract absent; hypanthium 3−4 × 1.5−2 mm, greenish, sometimes with reddish stains, oblong, bristle crown at the apex absent; sepal 3−3.5 × 0.5−1 mm, with the same color of the hypanthium, triangular-lanceolate, apex acuminate, with a terminal setose trichome; petal 3−9 × 3−4 mm, pinkish, obovate, apex rounded or acuminate, margin entire, glabrous; stamen 10,

subisomorphic, concolorous, yellow, anther oblong, tetrasporangiate; filament 1.6−3 mm long, white, pedoconnective 0.7−1.6 mm long, white or cream; ventral appendage 0.1−0.2 mm long, yellow, apex rounded or bilobed, anther 2.3−3 mm long, beak 0.1−0.4 mm long, yellow; ovary 2.5−3 × 1−1.5 mm, 3-locular, superior, glabrous; style 5−10 mm long, white, sometimes apex pinkish. Capsule 2.5−3.5 × 1.3−1.8 mm, brown, oblong or ovate, dehiscent from the apex, columella deciduous; seed ca. 0.2 × 0.1 mm, cream.

Specimens examined:—BRAZIL. Distrito Federal: Brasília, Fazenda Água Limpa, 3 May 1968, fl., *D. Philcox et al. 4894* (US, online image); Fazenda Sucupira, 15°55'00"S, 48°01'00"W, 1070 m, 19 May 1999, fl., *J.G. Faria et al. 138* (CEN, HUFU); idem, 15°52'00"S, 48°00'00"W, 1100 m, 4 April 2000, bot., fl., *E.S.G. Guarino et al. 73* (CEN, HUFU); DF-205, 28 November 2001, fl., *A;A. Santos 992* (CEN, online image); Gama, BR-290, Ponte Alta de Cima, 16°00'59"S, 46°08'17"W, 1021 m, 19 April 2006, fl., *A.S. Rodrigues et al. 284* (CEN, HUFU); Parque Nacional de Brasília, 06 March 2007, bot., fl., *E.B.A. Dias et al. 450* (CEN, HUFU). Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, 23 March 1969, fl., *H.S. Irwin 24939* (NY, online image); 21 March 2012, fl., fr., *A.I.M.R. Machado et al. 163* (HUFU); idem, 23 km N. of São João da Aliança, 16 April 1956, bot., fl., *Y. Dawson 14275* (NY, R000171757-online image, US). Cocalzinho de Goiás, Serra dos Pireneus, 15°45'55.9"S, 48°55'57.5"W, 1271 m, 25 April 2012, fl., *A.F.A. Versiane et al. 169* (HUEG, HUFU, K, MBM, RB); lado esquerdo da BR 414, 15°50'48.9" S, 48°46'15.6" W, 1066 m, 3 October 2012, fr., *A.F.A. Versiane et al. 292* (HUFU, UB); Serra dos Pireneus, 15°50'47.6"S, 48°46'16.9"W, 20 February 2013, bot., fl., *R.A. Pacheco et al. 979* (HUEG, HUFU, RB, UEC); idem, 15°47'24"S, 48°52'50"W, 22 May 2013, fl., *A.F.A. Versiane et al. 628* (HUFU, UB); idem, 15°50'48"S, 48°46'17"W, 23 May 2013, fl., fr., *R.A. Pacheco et al. 1089* (HUFU, RB). Pirenópolis,

estrada para a Serra dos Pireneus, 15°49’77"S, 48°54'05"W, 19 June 1998, fr., *F. Almeda et al. 7866* (HUFU, UEC).

Microlicia consimilis is endemic to Goiás and Distrito Federal (Wurdack 1959; Romero & Woodgyer 2015; Diniz & Silva 2020; Romero *et al.* 2020), occurring in *campo limpo* near rocky outcrops, *campo rupestre*, *cerrado*, and *cerrado rupestre*, between 1021 and 1271 m elevation. *Microlicia consimilis* occurs in periodically wet soil from Serra dos Pireneus (Versiane *et al.* 2016). With an area of occupancy (AOO = 28 km²) and extent of occurrence (EOO = 826 km²), it is assigned as Endangered [(EN) B2ab (ii, iii, iv)]. Populations occur in conservation units around Brasília and Chapada dos Veadeiros. Collected with flowers from February to May, and fruits in March, May, and June.

Microlicia consimilis can be recognised by the short, setose trichomes and spherical glands covering branch, leaf blade, hypanthium and sepal, linear-oblong leaf blade, oblong hypanthium, subisomorphic, yellow stamen, and oblong anther. *Microlicia consimilis* resembles *M. euphorbioides* Mart. in having branch, leaf blade, hypanthium and sepal covered with spherical glands and setose trichomes, horizontal, imbricate leaf, and yellow stamen. However, *M. euphorbioides* differs in having petiolate leaf, elliptic or elliptic-lanceolate blade, attenuate at the base, with 1−2 pairs of suprabasal acrodromous veins, pedicellate flower, campanulate or slightly urceolate hypanthium, triangular sepal, and dimorphic stamen with polysporangiate anther. *Microlicia consimilis* also resembles *M. longirostrata* in having sessile, imbricate leaf, concolorous blade, attenuate at the base, one pair of basal acrodromous veins, pedicellate flower, oblong hypanthium, yellow stamen and oblong anther. However, *M. longirostrata* differs in having anther of the antesepalous stamen with a very long beak (2–2.5 mm long), glandular trichomes covering branch, leaf blade, hypanthium and sepal, spherical glands

on the abaxial surface of the petal, subisomorphic stamen with tetrasporangiate anther.

Illustrations and images in Versiane *et al.* (2016), figures 2 f, 3 e–f; 4 b; Diniz & Silva (2020), figures 5 a–m, 6 a–c.

12. *Microlicia crebropunctata* Pilger (1903: 17).

Dwarf tree, 1.5–2.5 m tall, few-branched, branch thick, xylopodium not observed Branch, leaf blade, hypanthium and sepal densely covered with spherical glands. Leaf sessile, horizontal, imbricate; blade 6−15 × 2−6 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, elliptic, apex rounded or acute, glabrous, base decurrent, margin entire, glabrous, flat, not calose, 1 pair of basal acrodromous veins, frequently conspicuous only on the adaxial surface, main vein conspicuous on both surfaces, sometimes inconspicuous on the abaxial surface, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 0.5 mm long, bract absent; hypanthium ca. 7 × 3−4 mm, greenish, oblong, bristle crown at the apex absent; sepal 5−5.5 × 1−1.3 mm, with the same color of the hypanthium, subulate, apex acute; petal 10−12 × 4−6.5 mm, white, obovate, apex acute, glabrous, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, tetrasporangiate; antesepalous stamen with filament ca. 4 mm long, pedoconnective ca. 2 mm long, ventral appendage ca. 0.7 mm, apex obtuse, anther ca. 7 mm long, beak ca. 0.5 mm long; antepetalous stamen with filament ca. 4 mm long, pedoconnective ca. 1 mm long, ventral appendage ca. 0,2 mm long, apex retuse, anther ca. 5.5 mm long, beak ca. 0.4 mm long; ovary 3–4 × 2–3 mm, 3-locular, superior, glabrous; style ca. 10 mm long, white. Capsule 5.5−6 × 4−5.5 mm, brown, oblong, dehiscent from the apex, columella deciduous; seed ca. 1 × 0.5 mm, cream.

Specimens examined:—BRAZIL. Goiás: "Serra da Baliza am Vargem grande", January 1895, bot., fl., *A.F.M. Glaziou 21224* (R000009209,-online image, S05-3196,-online image). Alto Paraíso de Goiás, Parque Nacional da Chapada dos Veadeiros, 14°08'24"S, 47°46'11"W, 1155 m, 26 September 1995, fl., *M.L. Fonseca et al. 582* (CEN, IBGE); idem, trilha para os saltos, 14°09'47.1"S 47°50'23.1"W, 867 m, fr., *R.A.R. Drummond 346 et al.* (RB); idem, 22 March 2012, fr., *A.I.M.R. Machado et al. 167* (HUFU); 22 March 2012, fl., *F.S. Meyer et al. 1201* (UEC, online image). São Jorge, Parque Nacional da Chapada dos Veadeiros, 14°09'40"S, 47°49'35"W, 1032 m, 26 February 2016, fr., *J.C. Fontelas et al. 136* (HUFU).

Microlicia crebropunctata is endemic to Chapada dos Veadeiros (Romero & Woodgyer 2015; Romero *et al.* 2020), occurring in *campo rupestre*, in sandy soil, between 1032 and 1155 m elevation. This species has an restricted extent of occurrence (EOO = 3 km²) , is assigned as Critically Endangered [(CR) B2a]. Although *M. crebropunctata* occurs in a protected area, most of its collections are from a single, well-sampled location that denote a microendemism pattern and rare occurrence. Collected with flowers in September, and fruits in February.

Microlicia crebropunctata is recognised by its dwarf tree habit, with strongly thickened branch and node, spherical glands covering branch, leaf blade, hypanthium and sepal, elliptic leaf blade, decurrent at the base, white petal and yellow stamen. *Microlicia crebropunctata* resembles *M. stenodonoides* D.O. Diniz-Neres & M.J. Silva in having dwarf tree habit, strongly thickened branch, spherical glands covering branch, leaf blade, hypanthium and sepal, concolorous leaf blade, yellow stamen with oblong anther. However, *M. stenodonoides* differs in having leaves concentrated at the apex of the branches, older deciduous, obovate-oblong leaf blade, sessile flower, magenta petal

yellow at the base, and polysporangiate anther.

Illustrations in Diniz & Silva (2020), figures 5 n–z, 7 a–g.

13. *Microlicia cryptandra* Naudin (1845: 175) (Fig. 4 e).

Subshrub or shrub, 0.3–1.5 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal dense to sparsely covered with spherical glands and setose trichomes, 0.1–1.3 mm long, white or cream, frequently purple-reddish in the hypanthium and sepal. Leaf sessile, ascending, conduplicate, imbricate; blade 3–7 × 1–4 mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, chartaceous, ovate or ovate-lanceolate, apex acute, with a terminal setose trichome, base cordate, margin entire, ciliate, flat, not calose, 1 pair of basal acrodromous veins, frequently conspicuous only on the abaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; sessile or pedicel up to 0.7 mm long, bract absent; hypanthium 3–3.5 × 1.5–2 mm, greenish, oblong, bristle crown at the apex absent; sepal 2–3.5 × 0.5–1 mm, with the same color of the hypanthium, triangular or triangular-lanceolate, apex acute, with a terminal setose trichome; petal 5–12 × 3–6 mm, magenta, obovate, apex acute, with a terminal setose trichome, margin entire, ciliate; stamen 10, subisomorphic, anther concolorous, yellow, oblong, tetrasporangiate; filament 2.5–5 mm long, white or magenta, base white, pedoconnective 1.2–2.5 mm long, white or magenta, sometimes yellow, ventral appendage 0.1–0.4 mm long, cream, yellow or magenta, apex bilobed, sometimes retuse, anther 2–5 mm long, beak ca. 0.3 mm long, yellow; ovary 2–3 × ca. 1.5 mm, 3-locular, superior, glabrous; style 9–15 mm long, magenta or white.

Capsule ca. 3.5 × 2.5 mm, brown, globose, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.2 mm, cream.

Specimens examined:—BRAZIL. Goiás: Alto Paraíso de Goiás, Parque Nacional da Chapada dos Veadeiros, 15 May 1986, fl., fr., *S. Romaniuc Neto et al. 446* (UEC, online image); 9 February 1987, bot., fl., *S.Romaniuc Neto et al. 623* (UEC, US); idem, 15 Aug 1990, bot., fl., *T.B. Cavalcanti et al. 666* (CEN); rodovia para Colinas do Sul, 14 June 1993, bot., fl., *G. Hatschbach et al. 59522* (HUFU); Chapada dos Veadeiros, 14°09'68.5"S, 47°36'37"W, 1115 m, 16 June 1998, fl., fr., *R. Romero et al. 5533* (HUFU, UEC); idem, 14°09'68.5"S, 47°36'37"W, 1115 m, 16 June 1998, bot., fl., fr., *R. Romero et al. 5541* (HUFU, UEC); Chapada dos Veadeiros, trilhas próximas ao mirante, 20 March 2012, bot., fl., *A.I.M.R. Machado et al. 150* (HUFU); ca. 27 km da cidade, 1488 m, 17 October 2012, bot., fl., fr., *V.L.C.R. Uliana et al. 644* (ESA, HUFU); Chapada dos Veadeiros, 14°09'68.5"S, 47°36'37"W, 1115 m, 26 February 2016, bot., fl., fr., *R. Romero et al. 5530* (HUFU, UEC). Cavalcante, Parque Nacional da Chapada dos Veadeiros, 20 April 2003, fl., *J.F.B. Pastore 510* (UEC, online image); 13°56'38"S, 47°41'46"W, 1320 m, 15 April 2009, bot., fl., *G. Martinelli et al. 16411* (HUFU, RB). Chapada dos Veadeiros, ca. 8 km do Alto Paraíso, 14°11'S, 47°30'W, 1200 m, 28 April 1984, bot., fl., *J.H. Kirkbride 5529* (HUFU). Cocalzinho de Goiás, estrada para Fazenda Cercado, 15°44'37.7"S, 48°51'55.2"W, 1104 m, 05 July 2012, fl., fr., *R.A. Pacheco et al. 852* (UEC, HUFU, MBM, RB); Cidade de Pedras, 15°48'43.3"S, 48°46'33.8"W, 1192 m, 02 October 2012, fr., *A.F.A. Versiane et al. 266* (HUFU); Mosteiro budista Zen Eish Ji, 15°43'44.4"S, 48°57'50.1"W, 1029 m, 11 December 2012, fr., *A.F.A. Versiane et al. 433* (HUFU, UB, RB); Cidade de Pedras, 15°43'48.4"S, 48°50'19.8"W, 21 February 2013, bot., fl., fr., *R.A. Pacheco et al. 1005* (BHCB, K, UEC, HUEG, HUFU, MBM); estrada para o mosteiro,

15°43'04"S, 48°57'50"W, 21 May 2013, fl., fr., *R.A. Pacheco et al. 1036* (HUFU, HUEG). Colinas do Sul, arredores da Serra do Jipe, 14°50'S, 48°04'W, 500 m, 22 January 2001, bot., fl., *B.M.T. Walter et al. 4732* (CEN, HUFU). Pirenópolis, "in montibus Serra dos Pyreneos prope Meia Ponte", s.d., bot., fl., *A. Saint-Hilaire s.n.* (F-V0360346, online image, K, P); alto da Serra dos Pireneus, 11 February 1996, bot., fl., *M.B. Alcantara et al. 131* (HUEG, HUFU); idem, 20 March 1996, bot., fl., *M.B. Alcantara et al. 134a* (HUEG, HUFU); idem, 20 March 1996, bot., fl., *M.B. Alcantara et al. 134b* (HUEG, HUFU); idem, 20 March 1996, bot., fl., *M.B. Alcantara et al. 140* (HUEG, HUFU). São Jorge, Parque Nacional da Chapada dos Veadeiros, 14°09'58"S, 47°49'35"W, 957 m, 26 February 2016, bot., fl., *J.C. Fontelas et al. 126* (HUFU); idem, 14°12'02"S, 47°21'17"W, 944 m, 27 February 2016, bot., *J.C. Fontelas et al. 139* (HUFU).

Microlicia cryptandra is endemic to Goiás (Romero & Woodgyer 2015), occurring in *campo rupestre*, *cerrado*, *campo limpo* near rocky outcrops, in sandy-clay and rocky soil, wet or dry, between 944 and 1448 m elevation. The expressive number of collections of *M. cryptandra* indicates large populations, however, these are restricted to Chapada dos Veadeiros and Serra dos Pireneus. With a limited extent of occurrence (EOO = 8 km²), *M. cryptandra* is assigned as Vulnerable [(VU) D2]. Collected with flowers from January to August and October, and fruits in February, May, June, July, October, and December.

Microlicia cryptandra can be distinguished in having setose trichomes and spherical glands covering branch, leaf blade, hypanthium and sepal, imbricate and conduplicate leaf, with discolorous blade, cordate at the base, petal ciliate at the margin, with a setose trichome at the apex, subisomorphic stamen with yellow anther, and pedoconnective with bilobed ventral appendage. *Microlicia cryptandra* is similar to *M. veadeirana* D.O.Diniz-Neres & M.J.Silva in having branch, leaf blade, hypanthium, and sepal covered with

spherical glands, imbricate and conduplicate leaf, ovate or ovate-lanceolate blade, oblong hypanthium, triangular sepal, petal acute at the apex, subisomorphic and yellow stamen with oblong and tetrasporangiate anther. However, *M. veadeirana* differs in having setose trichomes covering only the young branches and the apex of the hypanthium, blade acuminate at the apex, sepal glabrous at the apex, petal glabrous at the margin and apex, and ventral appendage rounded at the apex.

Illustrations and images in Versiane *et al.* (2016), figures 2 g, 3 g–h; 4 c; Diniz & Silva (2020), figures 8 a–n, 9 a–e.

14. *Microlicia denudata* Cogniaux (1883: 51) (Fig. 5 a–i).

Subshrub or shrub, 0.3–1.5 m tall, much-branched, branch slender, xylopodium present. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical glands, glandular trichomes dense to sparsely covering hypanthium and sepal, trichome 0.2–0.5 mm long. Leaf sessile, ascending, imbricate; blade 3.5–7 × 0.5–1 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, linear-oblong, apex acute, glabrous, base attenuate, margin entire, glabrous, flat, not calose, 1 pair of basal acrodromous veins, frequently inconspicuous on both surfaces, main vein frequently conspicuous on both surfaces, sometimes inconspicuous, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 0.5 mm long, bract absent; hypanthium 1.3–2 × 1.5–2 mm, greenish, campanulate, bristle crown at the apex absent; sepal ca. 2.5 × 0.5 mm, with the same color of the hypanthium, frequently with apex and margin reddish, triangular-lanceolate, apex acute, with a terminal glandular trichome; petal ca. 7 × 3 mm, pinkish, oblong, apex caudate, margin entire, glabrous; stamen 10, dimorphic, anther

concolorous, yellow, ovate-oblong, tetrasporangiate; antesepalous stamen with filament 2–2.5 mm long, pinkish, pedoconnective ca. 1.2 mm long, yellow, ventral appendage ca. 0,2 mm long, yellow, apex retuse, anther ca. 3 mm long, beak ca. 1 mm long, yellow; antepetalous stamen with filament 1.5–2 mm long, pinkish, pedoconnective ca. 0.5 mm long, yellow, ventral appendage ca. 0.1 mm long, yellow, apex retuse, anther ca. 2 mm long, beak ca. 0.8 mm long, yellow; ovary ca. 1 × 0,7 mm, 3-locular, superior, glabrous; style ca. 6 mm long, pinkish. Capsule ca. 2 × 0.8 mm, brown, globose, dehiscent from the apex, columella deciduous; seed ca. 0.3 × 0.2 mm, cream.

Specimens examined:—BRAZIL. Goiás: "in Prov. Goyaz", s.d., (bot, fl) *Gardner 3731* (K, BM, BR, G, K, OXF, W). Cavalcante, Reserva Natural Serra do Tombador, 27 May 2016, bot, fl, fr*, H.L. Zirondi et al. 8* (HUFU).

Microlicia denudata is endemic to Goiás (Romero & Woodgyer 2015; Romero *et al.* 2020), occurring in *campo sujo* near rocky outcrops, known by only two collections: the type, collected by Gardner in 1848, in the district of "Arrayas", near the border of Goiás and Tocantins, currently Monte Alegre de Goiás, and another specimen, identified during this study, from Serra do Tombador, in Cavalcante. With a restricted area of occupancy (AOO = 8 km²), it is assigned as Critically Endangered [(CR) B2a]. Collected only once after 168 years since the first collection, and apparently, its populations are relatively small and rare. Collected with flowers and fruits in May.

Microlicia denudata can be recognised by the sparse, spherical glands covering branch, leaf blade, hypanthium, sepal, and glandular trichomes covering only hypanthium and sepal, linear-lanceolate blade, with inconspicuous lateral veins, yellow stamen with a very long beak on all anthers. *Microlicia denudata* resembles *M. consimilis* in having branch, leaf blade, hypanthium, and sepal covered with spherical glands, imbricate leaf,

linear-oblong blade, triangular-lanceolate sepal, pinkish and oblong petal, yellow stamen with tetrasporangiate anther. However, *M. consimilis* differs in having only setose trichomes covering branch, leaf blade, hypanthium and sepal, missing glandular trichomes, leaf blade ciliate at the margin, and subisomorphic stamen with oblong anther.

15. *Microlicia euphorbioides* Martius (1831: 107).

Subshrub or shrub, 0.5–1 m tall, few-branched, sometimes much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical glands and setose trichomes, 0.1–0.4 mm long, cream, sometimes purple-reddish in the hypanthium and sepal. Leaf with petiole 0.5–1.5 mm long, horizontal, not imbricate; blade 3–20 × 1–7 mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, chartaceous, elliptic or elliptic-lanceolate, apex acute, with a terminal setose trichome, base attenuate, margin serrate-ciliate, flat, not calose, 1–2 pairs of suprabasal acrodromous veins, sometimes conspicuous only on the abaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 1–2.5 mm long, bract absent; hypanthium 2–3.5 × 1–2 mm, greenish, campanulate or slightly urceolate, bristle crown at the apex absent; sepal 1–2 × 0.4–0.7 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 5–6 × 2–3 mm, white, obovate, apex acute, margin entire, glabrous; stamen 10, dimorphic, anther concolorous, yellow, filament and pedoconnective rarely vinaceous, anther ovate or ovate-oblong, polysporangiate; antesepalous stamen with filament ca. 3 mm long, pedoconnective 2.6–3 mm long, ventral appendage 0.7–1 mm long, apex rounded or retuse, anther 1–2 mm

long, beak 0.2–0.6 mm long; antepetalous stamen with filament 2–2.5 mm long, pedoconnective ca. 1 mm long, ventral appendage 0.1–0.2 mm long, apex bilobed or truncate, anther 1–2 mm long, beak ca. 0.2 mm long; ovary 2 × 1 mm, 3-locular, superior, glabrous; style 7–10 mm long, pinkish. Capsule 4–5 × 1,5–2.5 mm, brown, oblong, dehiscent from the apex, columella deciduous; seed ca. 0.4 × 0.2 mm, cream.

Specimens examined:—BRAZIL. Distrito Federal: Brasília, Fazenda Água Limpa, 15°58'0"S, 47°56'0"W, 1120 m, 7 March 1994, bot., fl., *M. Ianhez 2 (*HUFU, UB); DF 205, km. 8,5, 15°34'44"S, 47°57'10"W, 28 November 2001, bot., fl., *A.A. Santos 992* (CEN, HUFU). Goiás: 6−7 km de Alto Paraíso na estrada para Nova Roma, 1400 m, 7 March 1973, bot., fl., fr., *W.R. Anderson 6568* (NY, UB). Alto Paraíso de Goiás, trilha para o Abismo, 14°10'45.5"S, 47°50'28.2"W, 1061 m, 20 March 2012, bot., fl., *R.A.R. Drummond et al. 323* (RB); Chapada dos Veadeiros, trilhas próximas ao mirante, 20 March 2012, bot., fl., *A.I.M.R. Machado et al. 154* (HUFU). Caiapônia, Cachoeira do Sereno, 16°56'59"S, 51°49'58"W, 691 m, 21 November 2011, bot., *D.P. Saraiva et al. 259* (CEN, NY, RB). Cavalcante, RPPN Serra do Tombador, 13°38'06"S, 47°48'13"W, 841 m, 18 April 2013, fl., *M.L. Brotto et al. 1109* (MBM). Cocalzinho de Goiás, Serra dos Pireneus, 15°47'24"S, 48°52'50"W, 22 May 2013, bot., fl., fr., *A.F.A. Versiane et al. 622 (*HUFU); idem, 15°47'24"S, 48°52'50"W, 1095 m, 22 May 2013, bot., fl., *A.F.A. Versiane et al. 213 (*HUFU, HUEG, K, MBM, RB). Cristalina, ca. 5 km ao sul, 1200 m, 2 March 1966, bot., fl., fr., *H.S. Irwin et al. 13282* (NY, UB); ca. 8 km ao sul, 1200 m, 6 March 1966, fl., fr., *H.S. Irwin et al. 13649* (NY, UB). Formosa, Rio Paranã, ca. 35 km N de Formosa sentido São Gabriel, 14°S,46°W, 950 m, 28 March 1966, fl., fr., *H.S. Irwin et al. 14194* (NY, UB).

Microlicia euphorbioides occurs in Goiás, Mato Grosso, Minas Gerais, São Paulo, and

Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020) and it is found in *campo rupestre* and *campo sujo*, on rocky soil, between 691 and 1400 m elevation. Due to its wide distribution, *M. euphorbioides* is assigned as Least Concern (LC) category. Collected with flowers from March to May, and November, and fruits in March and May.

Microlicia euphorbioides can be recognised by the variable size of the leaves in the main and lateral branches, horizontally inserted, petiolate leaf, discolorous, and elliptic or elliptic-lanceolate blade with 1 or 2 pairs of suprabasal veins. Furthermore, *M. euphorbioides* has a long pedicel (1–2.5 mm long), white petal in Goiás, and yellow stamen with polysporangiate anther. *Microlicia euphorbioides* resembles *M. consimilis* in having branch, leaf blade, hypanthium, and sepal covered with setose trichomes and spherical glands, horizontal leaf, attenuate at the base, and yellow stamen. However, *M. consimilis* differs in having sessile leaf, concolorous and linear-oblong blade, with 1−2 pairs of basal veins, oblong hypanthium, triangular-lanceolate sepal, pinkish petal, and subisomorphic stamen with tetrasporangiate anther.

Illustration and image in Martins *et al.* (2009), figures a–b; Diniz & Silva (2020), figures 8 o–z.

16. *Microlicia fasciculata* Martius ex Naudin (1845: 180) (Fig. 4 f).

Subshrub or shrub, 0.2–1.2 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical glands and setose trichomes, 0.2–1 mm long, glaucous. Leaf sessile, ascending, imbricate, with the same size in main and lateral branch; blade 3–9 × 1.5–4 mm, concolorous, greenish, chartaceous, lanceolate or ovate-lanceolate, apex acute, with a terminal setose

trichome, base rounded or slightly attenuate, margin serrate-ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.5–1.5 mm long, bract absent; hypanthium 2–3 × 1–2 mm, greenish or reddish, frequently with reddish stains, campanulate, bristle crown at the apex absent; sepal 1.3–2 × 0.5–1 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 7–12 × 4–6 mm, pinkish, magenta or purple, obovate, apex acute, with a terminal setose trichome, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong or ovate, polysporangiate; antesepalous stamen with filament 3–5.5 mm long, magenta or pinkish, pedoconnective 2.5–3.5 mm long, magenta or pinkish, ventral appendage 0.7–1.2 mm long, yellow, apex retuse , truncate or rounded, anther 1.5–3 mm long, vinaceous or pinkish, beak 0.3–0.6 mm long, pinkish; antepetalous stamen with filament 2–5 mm long, magenta or pinkish, pedoconnective 0.6–1.7 mm long, yellow, innapendiculate, anther 1.3–2.5 mm long, yellow, beak 0.2–0.4 mm long, yellow; ovary 1.7–3 × 1 mm, 3-locular, superior, glabrous; style 3.5–8 mm long, magenta or pinkish. Capsule 4–6 × 2.5–3.5 mm, brown, oblong to ovate-oblong, dehiscent from the apex, columella deciduous; seed 0.3–0.5 × 0.1–0.3 mm, cream.

Specimens examined:—BRAZIL. Distrito Federal: Brasília, Reserva Ecológica do Guará, 15°50'S, 47°57'W, 1050 m, 18 November 1994, bot., fl., *C.B.R. Munhoz et al. 206* (HUFU, UB); idem, 5 May 1995, bot., fl., fr., *C. Munhoz 266* (UEC); APA GAMA-Cabeça de Veado, 15°52'11"S, 47°52'59"W, 970 m, 7 October 2002, bot., fl., *M.L. Fonseca et al. 3584* (HUFU, IBGE); idem, 15°54'51.9"S, 47°57'43.4"W, 1050 m, 21 October 2002, bot., fl., *M.L. Fonseca et al. 3728* (IBGE, HUFU); APA da Cafuringa, 25 July 2003, fl., *A.S. Rodrigues et al. 90* (CEN, HUFU); Jardim Botânico de Brasília,

15°52'S, 47°51'W, 1150 m, 13 January 2005, bot., fl., *S.N.F. Aguiar et al. 12* (HEPH, HUFU); Parque Nacional de Brasília, 15°38'23"S, 47°48'30"W, 1120 m, 1 December 2006, bot., fl., *C.A.F. Neiva et al. 252* (CEN, HUFU); idem, 1082 m, 7 December 2006, bot. fl., fr., *C.A.F. Neiva et al. 255, 256, 262* (CEN, HUFU); Reserva Ecológica do IBGE (RECOR), 15°55'51"S, 47°54'00"W, 1100 m, 6 March 2008, bot., fl., fr., *C.B.R. Munhoz et al. 3453* (HUFU, IBGE); Jardim Botânico de Brasília, 15°52'21"S, 47°50'50"W, 11 April 2008, fr., *C.B.R. Munhoz et al. 3795* (HUFU, IBGE); Reserva Ecológica do IBGE, 15°55'51"S, 47°54'00"W, 1100 m, 5 June 2008, bot., *C.B.R. Munhoz et al. 4093* (HUFU, IBGE); Jardim Botânico de Brasília, 22 October 2009, *V.F. Paiva et al. 622* (HEPH, HUFU); Estação Ecológica do Jardim Botânico de Brasília, 15°53'23"S, 47°50'42"W, 23 July 2015, fl., fr., *P.O. Rosa et al. 1649* (HEPH, HUFU). Goiás. Campos do Rio Gama, 21 November 1894, fl., *A.F.M. Glaziou 21235* (RB). Alto Paraíso de Goiás, Fazenda Paepalum, ca. 5 km N de Alto Paraíso, 900 m, 3 December 1988, bot., fl., *M.G.L. Wanderley 1827* (UEC, SP). Caldas Novas, Parque Estadual da Serra de Caldas Novas, 7 January 2001, bot., fl., *M.L Santos 143* (HUFU); idem, 14 December 2001, fr., *R. Romero et al. 6157* (HUFU); idem, 13 October 2004, bot., fl., fr., *Simão 149* (HUFU); idem, 17°46'36"S, 48°40'02"W, 903 m, 13 November 2008, bot., fl., *P.O. Rosa 1300* (HUFU). Cocalzinho de Goiás, BR 070, 15°47'30.9"S, 48°52'16"W, 1257 m, 24 April 2012, fr., *J.N. Nakajima et al. 5053* (HUFU, MBM, RB); idem, Marco 9 do Parque Estadual dos Pireneus, 15°47'21.5"S, 48°52'51.6"W, 1107 m, 24 April 2012, bot., fl., *J.N. Nakajima et al. 5031* (HUFU). idem, 15°47'06"S, 48°49'46"W, 3 July 2012, bot., fl., fr., *A.F.A. Versiane et al. 185* (HUFU, K); Serra dos Pireneus, 15°47'24"S, 48°52'53"W, 1095 m, 4 July 2012, fr., *Versiane et al. 215 (*HUFU); marco 9 do Parque Estadual dos Pireneus, 15°50'48.7"S, 48°46'15.4"W, 1142 m, 4 October 2012, bot., fl., fr., *A.F.A. Versiane et al.*

302 (HUEG, HUFU, UB); idem, 15°50'48.7"S, 48°46'15.4"W, 1142 m, 11 December 2012, bot., fl., *A.F.A. Versiane et al. 441* (HUEG, HUFU); idem, 15°43'43.8"S, 48°53'56.4"W, 1090 m, 12 December 2012, bot., fl., fr., *R.A. Pacheco et al. 889 (*UEC, HUFU, MBM); idem, 15°46'54"S, 48°49'39"W, 19 February 2013, fr., *A.F.A. Versiane et al. 520* (HUFU); Serra dos Pireneus, ca. de 13 km de Cocalzinho de Goiás, 20 February 2013, fr., *R.A. Pacheco et al. 985 (*HUFU, RB); idem, 22 May 2013, fr., *A.F.A. Versiane et al. 625 (*HUFU, RB); Marco 9 do Parque Estadual dos Pireneus, 15°46'51"S, 48°49'39"W, 15 November 2014, bot., fr., *A.F.A. Versiane et al. 650* (HUFU); estrada para a Fazenda Ana Paula, 15°49'57.1"S, 48°49'29.1"W, 1234 m, 16 November 2014, bot., fl., *D.B. Silva et al. 42* (HUFU). Pirenópolis, Parque Estadual dos Pireneus, 15°47'27"S, 48°50'12"W, 1300 m, 10 December 2005, bot., fl., *M.A. Silva et al. 5785* (HUFU, IBGE). São João da Aliança, 4 km na estrada ao leste de São João, 1000 m, 24 March 1973, bot., fl., *W.R. Anderson 7894* (NY).

Microlicia fasciculata is widely distributed in Bahia Goiás, Mato Grosso, Minas Gerais, São Paulo, and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020). In Goiás, *M. fasciculata* frequently occurs in cerrado, *campo rupestre*, *campo limpo*, and *campo sujo*, in wet or dry soil, between 980 and 1300 m elevation. Due to its distribution, *M. fasciculata* is preliminarily assigned here as Least Concern (LC) category. Collected with flowers in April, July, October, November, and December, and fruits in the same months, and also in February and May.

Microlicia fasciculata is easily recognised in the field by the glaucous indumentum (Romero 2000). Other diagnostic features are the imbricate leaf, ovate or ovate-lanceolate blade, with 1–2 pairs of basal veins, bicolorous. *Microlicia fasciculata* bears some resemblance to *M. insignis* in having branch, leaf blade, hypanthium and sepal covered

with setose trichomes and spherical glands, sessile and ascending leaf, concolorous, and lanceolate or ovate-lanceolate blade, acute at the apex with a teminal setose trichome, serrate-ciliate at the margin, pedicellate flower, campanulate hypanthium, dimorphic stamen with polysporangiate anther. However, *M. insignis* differs in having sparse setose trichomes, sepal aristate at the apex, petal glabrous at the apex and yellow stamen. *Microlicia fasciculata* also resembles *M. ramosa* Pilger in having branch, leaf blade, hypanthium and sepal covered with setose trichomes and spherical glands, ovate or ovate-lanceolate leaf blade, 1–2 pairs of basal acrodromous veins, pedicellate flower, triangular sepal, bicolorous and polysporangiate anther. However, *M. ramosa* differs in having a typical branching pattern, in which the short lateral branches growing from the main branch (Versiane *et al.* 2016). In addition, *M. ramosa* has discolorous leaf blade and oblong-urceolate hypanthium. *Microlicia fasciculata* also resembles *M. vestita* DC. (Versiane *et al.* 2016), in having branch, leaf blade, hypanthium and sepal covered with setose trichomes and spherical glands, concolorous and ovate or ovate-lanceolate leaf blade, campanulate, greenish hypanthium, triangular sepal, and petal with a terminal setose trichome at the apex. However, *M. vestita* has hypanthium and sepal without reddish stains, tetrasporangiate and concolorous anthers, with vinaceous or orange stains in the antesepalous anthers.

Illustrations in Cogniaux (1883), plate 26; Pataro *et al.* (2017), figure 3 i–j.

17. *Microlicia flavipetala* Versiane & Romero (2021: 19) = *Chaestostoma flavum* (Fig. 4 g).

Subshrub, 0.3–1 m tall, much-branched, branch slender, xylopodium sometimes present.

Branch, leaf blade, hypanthium and sepal frequently glabrescent, sometimes abaxial surface of leaf blade, sepal and hypanthium sparsely covered with setose trichomes, ca. 0.4 mm long, cream. Leaf sessile, ascending, imbricate; blade 3–7 × 0.5–1 mm, with the same size in main and lateral branch, concolorous, greenish, coriaceous, triangular-lanceolate, apex apiculate, apiculum ca. 0.3 mm long, base attenuate, semi-amplexicaul, margin entire or serrate, glabrous, flat, calose, 2 pairs of basal acrodromous veins, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, calose. Flower 5-merous, solitary, terminal or lateral, sessile; bract absent; hypanthium 2.5–4.5 × 2–3 mm, greenish, oblong-campanulate, bristle at the apex up to 0.5 mm long, cream; sepal 3–4 × 1–2 mm, with the same color of the hypanthium, triangular-lanceolate, apex apiculate, apiculum ca. 0.3 mm long, margin and main vein calose; petal 6–8(–11) × 3.5–7 mm, yellow, obovate-oblong, apex acuminate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther ovate-oblong, tetrasporangiate; antesepalous stamen with filament 4–5 mm long, pedoconnective 3–5 mm long, ventral appendage 1–2 mm long, apex bilobed, anther 2–3 mm long, beak ca. 1 mm long; antepetalous stamen with filament ca. 4 mm long, pedoconnective ca. 1 mm long, ventral appendage inconspicuous, ca. 0.2 mm long, anther 1.5–2.5 mm long, beak ca. 0.7 mm long; ovary 2–4 × 1–2 mm, 4–5-locular, superior, glabrous; style 5–7 mm long, yellow. Capsule 4–7 × 2–3 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed 0.4–0.6 × 0.3–0.6 mm, pinkish.

Specimens examined:—BRAZIL. Goiás: s.d., fl., *A.F.M. Glaziou 21208* (K, online image, RB, online image). Alto Paraíso de Goiás, 20 March 1969, fl., *H.S. Irwin et al. 24676* (RB, online image); Chapada dos Veadeiros, s.d., fl., *W.R. Anderson 6707* (RB, online image); 18 March 1976, fl., fr., *J. Semir et al. 712* (MO, online image); 16 April

2009, fl., *G. Martinelli et al. 16543* (HUFU); 4 June 2010, fl., *N.F.O. Mota et al. 1544* (HUFU); 20 March 2012, fl., *A.I.M.R. Machado et al. 152* (HUFU). Catalão, Serra do Facão, 2 April 2008, fl., *A.A.A. Arantes et al. 960, 960b* (HUFU). Cristalina, Balneário das Lajes, 16 July 2013, fl., *A.L.F Oliveira 2*0 (HUFU). São Jorge, 28 February 2016, fl., *J.C. Fontelas et al 137* (HUFU).

Microlicia flavipetala is endemic to Chapada dos Veadeiros, occurring in *campo rupestre*, *campo limpo*, *campo sujo*, *cerrado*, and *cerrado rupestre*, ocasionally in wet soil (Koschnitzke & Martins 2006; Neres 2016; Silva *et al.* 2020). With a restricted extent of occurrence (EOO = 1.6 km²) and area of occupancy (AOO = 36 km²), it is assessed as Endangered [(EN) B2ab]. Collected with flowers and fruits from February to September.

Microlicia flavipetala is easily recognised in having yellow petal and stamen, sessile, coriaceous leaf, triangular-lanceolate blade, attenuate and semi-amplexicaul at the base, callose margin and veins, and sessile flower. *Microlicia flavipetala* resembles *M. macedoi* L.B. Sm. & Wurdack, endemic to Niquelândia (Wurdack 1955), due to the yellow petal and stamen, the much-branched habit, sessile leaf, ascending, concolorous, greenish, and triangular-lanceolate blade. However, *M. macedoi* differs in having glutinous aspect given by the spherical glands covering branch, leaf blade, hypanthium and sepal, leaf blade acute at the apex, not callose at the margin and veins, and with 1 pair of lateral veins. In addition, *M. macedoi* has pedicellate flower, narrow-triangular sepal, cuspidate at the apex, 3-locular ovary, and rounded capsule. The bristle crown is absent at the apex of the hypanthium.

Illustration in Koschnitzke & Martins (2006), figures 1 a–i, noted as *Chaetostoma flavum*.

18. *Microlicia gracilis* Fontelas & R.Romero (2020: 115).

Subshrub, 0.4–0.6 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical glands and setose trichomes, 0.2−0.4 mm long, cream. Leaf sessile, ascending or horizontal, spreading; blade 2−3 × 0.5−1 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate, apex acute, with a terminal setose trichome, base attenuate, semi-amplexicaul, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, conspicuous only on the adaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 0.5 mm long, bract absent; hypanthium 2.5−3 × 1−1,5 mm, purple or greenish with purple stains, urceolate, bristle crown at the apex absent; sepal 0.5−1 × 3.5−5 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 4−4.5 × 3−3.5 mm, magenta, obovate, apex acuminate, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, ovate-oblong, polysporangiate; antesepalous stamen with filament 2−2.5 mm long, magenta, pedoconnective 2−2.5 mm long, magenta, ventral appendage ca. 1 mm long, yellow, apex obtuse, anther ca. 1.8 mm long, vinaceous, beak ca. 0.5 mm long, pinkish; antepetalous stamen with filament 2−2.5 mm long, pinkish, pedoconnective 0.5−1 mm long, yellow, ventral appendage ca. 0.2 mm long, yellow, apex rounded, anther ca. 1.5 mm long, yellow, beak ca. 0.3 mm long, yellow; ovary ca. 1.5 × 1 mm, 3-locular, superior, glabrous; style ca. 3 mm long, magenta. Capsule ca. 2 × 2 mm long, brown, rounded, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Fazenda Água Fria,

14°4'21"S, 47°30'33"W, 1 May 1998, bot., fl., fr., *R.C. Oliveira et al. 1059* (HEPH, MBM, UB, online image); Chapada dos Veadeiros, ca. 11 km da cidade, 14°09'68.5"S, 47°36'37.0"W, 1115 m elev., 16 June 1998, bot., fl., fr., *R. Romero et al. 5522* (HUFU, UEC); Fazenda Água Fria, ca. 10 km em direção a Teresina de Goiás, 14°04'217"S, 47°30'336"W, 1448 m elev., 3 June 2000, bot., fl., fr., *C. Munhoz et al. 1519* (HUEG, HUFU, MO, online image); idem, 27 March 2001, bot., fl., *C. Munhoz et al. 2649* (HUFU, IBGE, online image, MO, online image).

Microlicia gracilis is endemic to Chapada dos Veadeiros, frequently occurring in wet areas near rocky outcrops, and in *cerrado rupestre*, between 1115 and 1448 m elevation. *Microlicia gracilis* is assigned as Critically Endangered (CR) (see Fontelas & Romero 2020). Collected with flowers in March, May and June, and fruits in May and July.

Microlicia gracilis can be recognised in having sessile leaf with a lax arrangement, lanceolate blade, semi-amplexicaul at the base, and branch, leaf blade, hypanthium, and sepal covered with spherical glands and short setose trichomes (0.2−0.4 mm long), urceolate hypanthium, purple or greenish, with purple stains, petal acuminate at the apex, and polysporangiate anther (Fontelas & Romero 2020). *Microlicia gracilis* resembles *M. ramosa* Pilger and *M. xylopodidera* Fontelas & R.Romero and their similarities and differences were presented by Fontelas & Romero (2020).

Images in Fontelas & Romero (2020), figures 1 a–i.

19. *Microlicia helvola* (Sprengel) Triana (1873: 25) (Fig 4 h).

Subshrub or shrub, 0.5–1.5 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical

glands and setose trichomes, 0.1−1.3 mm long, pale, cream or white, hypanthium and sepal sometimes glabrescent. Leaf sessile or petiole up to 0.5 mm long, ascending or slightly horizontal, imbricate or not; blade 4−25 × 1.5−12 mm, with a larger size in the main branch, concolorous, greenish, chartaceous, lanceolate or elliptic-lanceolate, apex acute or rounded, frequently with a terminal setose trichome, base rounded, margin serrate-ciliate, flat, not calose, 1−2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium 2−3 × 1−1.5 mm, greenish, with reddish or nigrescent stains, urceolate, bristle at the apex absent; sepal 1−2 × 0.7−1.5 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 4.5−9 × 3−5 mm, pinkish, obovate, apex rounded or retuse, margin entire, glandular-ciliate; stamen 10, dimorphic, anther bicolorous, ovate-oblong, polysporangiate; antesepalous stamen with filament 2.8−3.8 mm long, pinkish, pedoconnective ca. 2 mm long, pinkish, ventral appendage 1−1.5 mm long, yellow, apex truncate, retuse or slightly rounded, anther 1.5−2 mm long, vinaceous, beak ca. 0.4 mm long, pinkish; antepetalous stamen with filament 2.7−3.6 mm long, pinkish, pedoconnective 0.7−1 mm long, yellow, ventral appendage 0.1−0.2 mm long, yellow, apex truncate, retuse or slightly rounded, anther ca. 1.5 mm long, yellow, beak ca. 0.2 mm long, yellow; ovary ca. 2 × 1 mm, 3-locular, superior, glabrous; style 2.5−3.5 mm long, pinkish. Capsule 3−3.5 × 2−3 mm long, brown, rounded, dehiscent from the apex, columella deciduous; seed 0.4−0.5 × ca. 0.2 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Brasília, 23 November 1976, bot., fl., *A.C. Allem 537* (CEN, online image); APA Gama-Cabeça de Veado, rio Corumbá, 15°43’46"S, 47°56'36"W, .990 m, 14 May 2003, bot., fl., fr., *M.L. Fonseca et al. 4716*

(HUFU, IBGE); Parque Nacional de Brasília, 15°39'28"S, 48°04'50"W, 1030 m, 7 July 2006, fr., *C.A. Faria et al. 260* (CEN, HUFU); 14 November 2006, fl., *E.B.A. Dias 178* (CEN, online image); Fazenda Água Limpa, 15°55'35.4"S, 47°54'20.8"W, 1050 m, 14 March 2007, bot., *A.G. Amaral et al. 1053* (HUFU). Goiás: Alto Paraíso de Goiás, Pouso Alto, 1800 m, 21 December 1868, bot., fl., *G.M. Barroso et al. 620* (NY, UB); GO 118, arredores da estação de tratamento de água, 14°08'15"S, 47°32'21"W, 1160 m, 22 January 2005, bot., fl., *J. Paula-Souza et al. 4459* (ESA, HUFU). Bela Vista de Goiás, 13 January 2009, bot., *I.L.M. Resende 6* (HUFU). Caçu, UHE's Salto and Salto do Rio Verdinho, 18°43'S, 51°10'W, 10 July 2008, fr., *F.A.G. Guilherme et al. 1121* (HJ, HUFU); idem, 19°05'S, 50°46'W, 11 July 2008, fr., *F.A.G. Guilherme et al. 1137* (HJ, HUFU); idem, 18°42'S, 51°19'W, 24 October 2008, bot., fl., *F.A.G. Guilherme et al. 1380* (HJ, HUFU). Caldas Novas, Parque Estadual da Serra de Caldas Novas, March 2007, bot., fr., *C.M. Rodrigues 36* (HUFU). Cocalzinho de Goiás, BR 070, 15°47'30.9"S, 48°52'16.7"W, 1257 m, 24 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5052* (HUFU); marco 9 do Parque Estadual dos Pireneus, 15°47'21.5"S, 48°52'51.6"W, 1107 m, 24 April 2012, fr., *J.N. Nakajima et al. 5033* (HUFU, UB); idem, 15°47'06"S, 48°49'46"W, 1111 m, 3 July 2012, bot. fl., fr., *A.F.A. Versiane et al. 184* (HUFU, MBM, RB, UB); idem, 15°50'48.7"S, 48°46'15.4"W, 1142 m, 11 December 2012, bot., fl., *A.F.A. Versiane et al. 440* (HUEG, HUFU, K, MBM, RB, UB, UEC); BR 070, ca. de 16 km de Cocalzinho, 15°47'31.7"S, 48°53'40.2"W, 1120 m, 12 December 2012, bot., fl., fr., *R.A. Pacheco et al. 898* (HUFU, MBM, UEC); estrada para Fazenda Ana Paula, 15°47'10.8"S, 48°46'19.6"W, 13 December 2012, bot., fl., *A.F.A. Versiane et al. 451* (HUFU, MBM, RB); BR 070, 15°46'46"S, 48°52'08"W, 19 February 2013, bot., fl., *A.F.A. Versiane et al. 547* (HUFU, UEC); Serra dos Pireneus, 15°49'58.4"S, 48°40'25.4"W, 20 February 2013, bot., *R.A.*

Pacheco et al. 956 (HUEG, HUFU); Marco 9 do Parque Estadual dos Pireneus, 15°46'06"S, 48°49'46"W, 22 May 2013, fl., fr., *A.F.A. Versiane et al. 580* (HUEG, HUFU); idem, 15°46'51.4"S, 48°46'38.9"W, 15 November 2014, bot., fl., fr., *D.B. Silva et al. 11* (HUFU); Parque Estadual dos Pireneus, bot., fl., *Miranda et al. 849* (HUEG, HUFU). Ivolândia, Fazenda Campo Redondo, 16°28'42"S, 51°21'26"W, 451 m, 12 October 2007, *S.S. Silva et al. 340* (HUFU, IBGE). Jataí, 20 km de Jataí para Goiânia, 1 October 1963, *J.M. Pires* 56987 (UB). Montes Claros de Goiás, bacia do Rio Caiapó, 15°53'52"S, 52°50'31"W, 866 m, 06 April 2007, fl., *S.S. Silva et al. 179* (HUFU, IBGE); idem, 15°53'40"S, 51°50'46"W, 295 m, 16 October 2007, bot., fl., *M.A. Silva et al. 6454* (HUFU, IBGE). Piracanjuba, Sítio Cabaças and Porongos, 10 March 2012, fr., *L.F.A. Oliveira et al. 1* (HUFU). Pirenópolis, Fazenda Bonsucesso, 08 December 1995, bot., fl., *M.B. Alcântara et al. 113* (HUFU, UFG); Parque Estadual dos Pireneus, 12 December 2001, bot., fl., *M.L. Santos 83, 86* (HUEG, HUFU); idem, 9 January 2002, bot., fl., *M.L. Santos 67* (HUEG, HUFU); idem, 15°47'48"S, 48°50'38"W, 1218 m, 23 July 2014, fr., *R.B.N. Alves et al. 136* (CEN). Serranópolis, Pousada das Araras, Fazenda Pedraria, 18°26'25"S, 52°00'13"W, 495 m, 18 July 1998, *M.L. Fonseca et al. 1986* (HEPH, IBGE); Morro do Guardião, ponto 19, 18°26'22"S, 51°59'43"W, 620 m, January 2005, bot., *L.F. Souza 1822* (HJ, HUFU); idem, 18°26'46"S, 52°00'22"W, 565 m, V.2007, bot., fl., *L.F. Souza et al. 1822* (HJ, HUFU). Silvânia, 15 January 2008, bot., *I.L.M. Resende s.n.* (HUFU 57888).

Microlicia helvola occurs in Minas Gerais, Goiás, Mato Grosso, Mato Grosso do Sul, and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020; Versiane *et al.* 2020). In Goiás and Distrito Federal occurs in *campo limpo*, *campo sujo*, *cerrado*, and *campo rupestre*, commonly on wet areas. In the Serra dos Pireneus it is found in *campo*

limpo and *vereda*, on wet or dry sandy soil(Versiane *et al.* 2016). Due to its wide distribution, it is assigned as Least Concern (LC), according to the IUCN criteria (2019). Collected with flowers in March and May, and fruits in May and July.

Microlicia helvola can be recognised in having elliptic-lanceolate leaf blade, with a larger size in the main than lateral branches, pedicellate flower (ca. 1 mm long), urceolate hypanthium, shorter sepal (1−2 mm long) than the hypanthium, petal glandular-ciliate at the margin, and polysporangiate anther. Furthermore, the sepal and hypanthium are frequently reddish or nigrescent, and usually, the fruit of the previous season remains in the middle portion of the branch (Versiane *et al.* 2016, 2020).

Illustrations in Versiane *et al.* (2016), figures 2 h; 3 i−j; 4 e−f; images in Machado & Romero (2020), figure 7 f; Versiane *et al.* (2020), figure 4 a−f.

20. *Microlicia hexapetala* (D.Nunes, D.O.Diniz, Koschn. & M.J. Silva 2018: 986) Versiane & R.Romero, (2021: 19) = *Chaetostoma hexapetalum.*

Subshrub, 0.3–1 m tall, rarely decumbent, much-branched, branch slender, xylopodium not observed. Branch, leaf and sepal glabrous, except margin glandular-ciliate, hypanthium sparsely covered with glandular trichomes, densely at the apex. Leaf sessile, ascending, imbricate; blade 5–9 × 1–2.5 mm, with the same size in main and lateral branches, concolorous, greenish, coriaceous, triangular-lanceolate, apex acute, with a terminal glandular trichome, or glabrous, base attenuate, semi-amplexicaul, margin entire, glandular-ciliate, flat, calose, 2 pairs of basal acrodromous veins, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, calose. Flower 6-merous, solitary, terminal or lateral, sessile or pedicel 0.4–0.7 mm long; bract

absent; hypanthium 3.5–5.5 × 4–5 mm, yellow-greenish, campanulate, crown of glandular bristles at the apex 1.5–2.5 mm long, cream; sepal 2.5–5 × 1–2 mm, reddish or with the same color of hypanthium, triangular, apex acute, with a terminal glandular trichome; petal 5.5–15 × 4–8 mm, pinkish, elliptic or oblong, apex acute, margin entire, glabrous, sometimes glandular-ciliate at the apex; stamen 12, subisomorphic, anther concolorous, yellow, oblong, tetrasporangiate; antesepalous stamen with filament 5–8 mm long, pinkish, pedoconnective 0.5–2.5 mm long, white, ventral appendage 0.5–1 mm long, yellow, apex retuse, anther 3–5 mm long, beak 0.2–0.6 mm long; ovary 2–3 × 1–2 mm, 4-locular, superior, glabrous; style 6–14 mm long, pinkish. Capsule 4–7 × 2–3.5 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed 0.5–1 × 0.3–0.7 mm, pinkish or yellowish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, 15 February 2015, fl., *D.O. Diniz 36* (RB, online image); 5 June 2015, fr., *D.O. Diniz 388* (RB, online image); idem, 20 November 2015, fr., *D.O. Diniz 696 and 697* (RB, online image).

Microlicia hexapetala is endemic to Chapada dos Veadeiros, occurring in *cerrado* and *campo rupestre*, between 1003 and 1463 m elevation (Silva *et al.* 2018). *Microlicia hexapetala* is assessed as Endangered (see Silva *et al.* 2018). Collected with flowers in February, and fruits in June and November.

Microlicia hexapetala is recognised by having 6-merous flower, elliptic or oblong petal, and 4-locular ovary (Silva *et al.* 2018). *Microlicia hexapetala* resembles *M. clavillosa* Wurdack and *M. cupressina* D. Don and their similarities and differences were presented by Silva *et al.* (2018).

Illustration and images in Silva *et al.* (2018), figures 1 a–m, 2 a–f, 3 a–d, as

Chaetostoma hexapetalum.

21. *Microlicia insignis* Schldtl. (1834: 388) (Fig. 4 i).

Subshrub or shrub, 0.2–1 m tall, few or much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical translucent glands and setose trichomes, 0.3–2 mm long, white, frequently pinkish-reddish in the hypanthium and sepal, leaf blade and sepal sometimes glabrescent. Leaf sessile, ascending, imbricate or not; blade 2–8 × 1–3 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate or ovate-lanceolate, apex acute, with a terminal setose trichome, base rounded, semi-amplexicaul, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, frequently inconspicuous on one or on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 1–2 mm long, bract absent; hypanthium 2.5–3.5 × 1–2 mm, greenish, campanulate, sometimes oblong-urceolate, bristle crown at the apex absent; sepal 2–3 × 0.8–1.2 mm, with the same color of the hypanthium, lanceolate, apex aristate, arista ca. 1 mm, reddish; petal 8–9.5 × 4−6 mm, pinkish or white, obovate, apex acute, retuse or truncate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow; anther ovate or ovate-oblong, polysporangiate; antesepalous stamen with filament 2.7–3.6 mm long, pedoconnective 1,8–3,7 mm long, ventral appendage 0.5–1.5 mm long, apex bilobed or retuse, anther 2–2,5 mm long, beak 0.5–0.8 mm long; antepetalous stamen with filament 2.5–3 mm long, pedoconnective ca. 1 mm long, ventral appendage 0.3–0.5 mm long, apex rounded or retuse, anther 1.5–2 mm long, beak ca. 0.5 mm long; ovary 2–2.3 × 1.2–1.5 mm, 3-locular, superior, glabrous; style 7–10 mm long,

pinkish. Capsule 5–6 × 3–4 mm, brown, oblong or ovate-oblong, dehiscent from the apex, columella deciduous; seed 0.4–0.6 × 0.1–0.3 mm, cream.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, ca. 2 km da portaria do Parque, 17 June 1998, bot., fl., fr., *R. Romero et al. 5577* (UEC, HUFU); idem, ca. 3 km da cidade, 18 June 1998, bot., fl., fr., *R. Romero et al. 5570* (UEC, HUFU). Caiapônia, bacia do Rio Caiapó, 17°05'26"S, 51°34'49"W, 2 August 2007, fr., *S.S. Silva et al. 294* (HUFU, IBGE). Cocalzinho de Goiás, ca. 2 km da cidade para Corumbá, 15°48'33"S, 48°46'17"W, 1130 m, 14 March 2002, bot., fl., *M.L. Fonseca et al. 3217* (IBGE, HUFU); Parque Estadual dos Pireneus, 15°47'56"S, 48°49'07"W, 1175 m, 15 May 2006, bot., fl., fr., *P.G. Delprete et al. 9742* (HUFU, UFG); Serra dos Pireneus, marco 9 do Parque Estadual dos Pireneus, 15°47'21"S, 48°52'51.6"W, 1107 m, 24 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5034* (HUFU); idem, ca. 10 km da cidade, 15°47'20.1"S, 48°52'51.8"W, 1073 m, 24 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5048* (HUFU, MBM, RB); acima da extração de pedra mineira, 15°47'12.4"S, 48°46'16.4"W, 1221 m, 25 April 2012, bot., fl., fr., *A.F.A. Versiane et al. 160* (HUFU, RB); Parque Estadual dos Pireneus, 15°49'18"S, 48°42'35"W, 1337 m, 26 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5096* (HUEG, HUFU); BR 070, 15°47'06"S, 48°49'46"W, 1111 m, 3 July 2012, bot., fl., fr., *R.A. Pacheco et al. 806* (HUFU, UEC); idem, 15°47'06"S, 48°49'46"W, 1111 m, 3 July 2012, bot., fl., fr., *A.F.A. Versiane et al. 182* (UEC, HUFU); idem, 15°47'24.2"S, 48°52'53"W, 1095 m, 4 July 2012, bot., fl., fr., *A.F.A. Versiane et al. 212* (HUFU); BR 414, 18°48'43.3"S, 48°46'33.8"W, 1 October 2012, fl., fr., *R.A. Pacheco et al. 881* (HUFU); trilha para o Salto do Corumbá, 15°43'04.1"S, 48°57'49.7"W, 987 m, 3 October 2012, fl., fr., *A.F.A. Versiane et al. 282* (HUFU, MBM, RB); BR 070, 15°43'43.8"S, 48°53'56.4"W, 1090 m, 12 December 2012,

fl., fr., *R.A. Pacheco et al. 890* (HUEG, HUFU, K); BR 070, Parque Estadual dos Pireneus, 15°43'20.6"S, 48°51'35.9"W, 1328 m, 12 December 2012, fl., fr., *R.A. Pacheco et al. 922* (HUFU, MBM); idem, 15°49'18" S, 48°23'50" W, 19 February 2013, fl., fr., *A.F.A. Versiane et al. 922* (HUFU); idem, BR 414, 15°48'22.5"S, 48°46'5"W, 21 February 2013, fl., fr., *R.A. Pacheco et al. 1013* (HUFU); idem, estrada para Hotel Fazenda Cabana dos Pireneus, 20 May 2013, bot., fl., fr., *A.F.A. Versiane et al. 557* (HUEG, HUFU); idem, marco 9 do P.E. dos Pireneus, 15°46'06"S, 48°49'46"W, 22 May 2013, bot., fl., fr., *A.F.A. Versiane et al. 581* (HUFU, MBM, RB, UB); idem, 15°47'24"S, 48°52'50"W, 22 May 2013, bot., fl., fr., *A.F.A. Versiane et al. 623* (UEC, HUEG, HUFU, K, MBM, RB, UB); Serra dos Pireneus, estrada para Fazenda Ana Paula, 15°49'59"S, 48°40'25"W, 23 May 2013, bot., fl., fr., *R.A. Pacheco et al. 1073* (HUFU). Colinas do Sul, Serra da Mesa, 15 June 1993, fl., *G.M. Hatschbach et al. 59602* (MBM). Jataí: Sudoeste de Goiás, 21 August 2001, veg., *L.F. Souza 365* (HJ, HUFU). Mossâmedes, Estância Quinta da Serra (Fazenda Dona Ilma), 16°04'53.5"S, 50°11'29.8"W, 750 m, 28 September 2012, fl., fr., *A.I.M.R. Machado et al. 183* (HUFU, UFG). Pirenópolis, Serra dos Pireneus, lado direito da estrada para topo da serra, 24 November 1994, bot., fr.., *V.L.G. Klein et al. 2614* (HUEG, HUFU); Parque Estadual dos Pireneus, 19 January 2003, bot., fl., fr., *M.L. Santos 173* (HUEG, HUFU); idem, 10 July 2003, bot., fl., fr., *Miranda et al. 336* (HUEG, HUFU). São Jorge, Chapada dos Veadeiros National Park, 14°09'58"S, 47°49'35"W, 957 m, 26 February 2016, *J.C. Fontelas et al. 123* (HUFU); idem, 14°09'58"S, 47°49'35"W, 957 m, 26 February 2016, bot., *J.C. Fontelas et al. 124* (HUFU); idem, 14°09'40"S, 47°49'35"W, 1032 m, 26 February 2016, bot., fl., fr., *J.C. Fontelas et al. 134* (HUFU).

Microlicia insignis occurs in Brazil, in Amazonas, Pará, Rondônia, Maranhão, Goiás,

Mato Grosso do Sul, and Mato Grosso (Romero & Woodgyer 2015; Romero *et al.* 2020), and in Bolivia (Pacífico *et al.* 2020). In Goiás, occurs in dry or wet areas, near *vereda*, *cerrado*, *cerrado rupestre*, *campo rupestre*, *campo sujo*, *campo limpo*, in sandy or rocky-clay soil, between 750 and 1330 m elevation. Due to its wide distribution, it is assigned as Least Concern (LC). Collected with flowers and fruits in all months, except in August.

The main characteristics of *Microlicia insignis* are branch, leaf blade, hypanthium and sepal sparsely covered with spherical, translucent glands and setose trichomes, leaf blade and sepal sometimes glabrescent, lanceolate or ovate-lanceolate leaf blade, semi-amplexicaul at the base, long-ciliate margin, lanceolate sepal, and yellow and polysporangiate anther. *Microlicia insignis* presents an expressive variation in the trichomes distribution, from sparse to dense,, in the leaf size and its arrangement in the branches, and in the petal color, which can be white or pinkish. This species is very similar to *M. acuminata* and *M. fasciculata*, in having setose trichomes and spherical glands covering branch, leaf, hypanthium, and sepal, sessile leaf, ascending, concolorous, lanceolate or ovate-lanceolate blade, rounded at the base, serrate-ciliate margin, pedicellate flower, and polysporangiate anther. However, *M. fasciculata* differs in having triangular sepal, acute at the apex, petal with a setose trichome at the apex, bicolorous anther with vinaceous or pinkish anther in the antesepalous stamen, and yellow in the antepetalous. *Microlicia acuminata* differs in having leaf blade acuminate at the apex, oblong hypanthium, subisomorphic stamen, and short rostrate anther.

Illustration and images in Diniz & Silva (2020), figures 10 a–j, 11 a–f; Machado & Romero (2020), figures 4 a–c; 7 g.

22. *Microlicia latifolia* D.O. Diniz & M.J. Silva (2018: 176).

Shrub, 0.5–1.6 m tall, few-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical yellowish glands and setose trichomes, 1–3 mm long, cream. Leaf sessile, ascending, imbricate; blade 10–43 × 4–25 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, elliptic or ovate-elliptic, apex apiculate, apiculum 2–5 mm long, base attenuate, amplexicaul, margin entire, ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5–(6–7)-merous, solitary, terminal or lateral; pedicel 1–2 mm long, bract absent; hypanthium 4–6.5 × 3.5–7 mm, greenish, campanulate, bristle crown at the apex absent; sepal 9.5–13 × ca. 1 mm, with the same color of the hypanthium, subulate, apex apiculate, apiculum 2–3 mm long; petal 11.5–18 × 6.5–9 mm, pink, obovate, apex acuminate, margin entire, glabrous; stamen 10–(12–14), subisomorphic, concolorous, yellow; anther oblong, polysporangiate; filament 4.2–6.2 mm long, pedoconnective 1.5–3.5 mm long, ventral appendage 0.6–1.3 mm long, apex slightly bilobed, anther 3–5.5 mm long, beak ca. 0.5 mm long; ovary 4–5.3 × 2–3 mm, 4–5-locular, superior, glabrous; style 9–12 mm long, pink. Capsule 5–12 × 3–5 mm, yellow-greenish or brown, oblong, dehiscent from the apex, columella deciduous; seed 0.5–0.7 × 0.25–0.45 mm, brownish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros National Park, 14°09'32.5"S, 47°47'34.8"W, 1078 m, 21 May 2016, fl., fr., *D.O. Diniz et al. 919* (HUFU).

Microlicia latifolia is endemic to Goiás, occurring exclusively in the Chapada dos Veadeiros National Park in *campo limpo*, on clayey soil, between 1068 and 1094 m elevation (Diniz & Silva 2019, 2020). *Microlicia latifolia* is assigned as Critically

Endangered (see Diniz & Silva 2019, 2020). Collected with flowers in May and June, and fruits in August (Diniz & Silva 2020).

Microlicia latifolia can be recognised in having thick branch and imbricate leaf, larger blade (10–43 × 4–25 mm), elliptic or ovate elliptic, leaf blade and sepal apiculate at the apex, long pedicellate flower (1–2 mm long), subulate, and subisomorphic stamen, yellow. *Microlicia latifolia* resembles *M. acuminata* in having setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, subisomorphic stamen, yellow, and oblong, polysporangiate anther. However, *M. acuminata* differs in having lanceolate or ovate-lanceolate leaf blade, acuminate at the apex, oblong hypanthium and lanceolate sepal.

Illustration and images in Diniz & Silva (2018), figures 1 and 2.

23. *Microlicia longirostrata* R.Romero, Fontelas & Versiane (2019: 349)

Subshrub, 0.3–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical translucent glands and glandular trichomes, 0.1–0.5 mm long, white. Leaf sessile, ascending, imbricate; blade 5–10 × 1–2 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate, apex acute, with a terminal glandular trichome, base attenuate, entire, ciliate, margin slightly revolute or flat, not calose, 1 pair of basal acrodromous veins, frequently inconspicuous on one or on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.3–1.5 mm long, bract absent; hypanthium 2–3.5 × 1.5–2.5 mm, greenish, oblong or oblong-campanulate, bristle crown at the apex absent; sepal 2–4 × 0.5–1.5 mm, with the same color of the hypanthium, oblong-triangular, apex acute, with a terminal

glandular trichome; petal 6–9 × 2–4 mm, pink, obovate, face abaxial covered with spherical glands, apex cuspidate, margin entire, glabrous; stamen 10, dimorphic, anther concolorous, yellow, ovate-oblong or oblong, polysporangiate; antesepalous stamen with filament 1.5–3 mm long, magenta, apex yellow, pedoconnective 0.3–0.7 mm long, yellow, ventral appendage 0.05–0.1 mm long, yellow, apex rounded, anther 3.5–5 mm long, beak 2–2.5 mm long, antepetalous stamen with filament 1.5–4 mm long, magenta, apex yellow, pedoconnective 0.3–0,5 mm long, yellow, ventral appendage 0.01–0.05 mm long, yellow, apex rounded, anther 1.8–2.3 mm long, beak 0.7–0.8 mm long, ovary 2.2–2.8 × 2–3 mm, 3-locular, superior, glabrous; style 2.5–8.5 mm long, yellow. Capsule ca. 3 × 2 mm, brown, ovate, dehiscent from the apex, columella deciduous; seed 0.4–0.6 × 0.2–0.4 mm, cream.

Specimens examined—BRAZIL. Goiás: Cavalcante, Vila Veneno, km 3,5, 330 m, 13°34'01"S, 48°05'05"W, 22 February 2001, fl., *G. Pereira-Silva et al. 4772* (CEN); estrada Vila Veneno-Serra White, 380 m, 13°34'25"S, 48°04'20"W, 20 February 2002, fl., *G. Pereira-Silva et al. 5888* (CEN, HUFU). Minaçu, estrada para Vila Veneno, 437 m, 13°26'2547"S, 48°01'54"W, 28 February 2016, fl., *J.C. Fontelas et al. 142* (HUFU). Niquelândia, ca. 13 km de Niquelândia em direção à Muquêm, 480 m, 14°28'32"S, 48°10'42"W, 08 May 1998, fl., *M.L. Fonseca et al. 1836* (IBGE, US).

Microlicia longirostrata is endemic to Goiás (Romero *et al.* 2019), restricted to Cavalcante, Minaçu, and Niquelândia, occurring in *cerrado*, in sandy soil, between 330 and 480 m elevation. *Microlicia longirostrata* is assessed as Endangered (E) (see Romero *et al.* 2017). Collected with flowers in February, April and May, and fruits in April.

Microlicia longirostrata is mainly characterised by the anther with very long beak in the antesepalous stamen, 2–2.5 mm long, glandular trichomes and spherical glands

covering branch, leaf blade, hypanthium, and sepal, and spherical glands on the petal abaxial surface . Furthermore, can be recognised in having lanceolate leaf blade, flat or slightly revolute margin, and petal cuspidate at the apex (Romero *et al.* 2017). *Microlicia longisrostrata* resembles *M. psammophila* Wurdack and *M. consimilis,* and their similarities and differences were presented by Romero *et al.* (2019).

Illustration and images in Romero *et al.* (2019), figures 1 and 2.

24. *Microlicia macedoi* L.B. Sm. & Wurdack (1955: 200) (Fig. 6 a–h).

Subshrub, 0.6–0.7 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal glutinous, densely covered with spherical translucent glands, frequently deciduous on the leaf. Leaf sessile, ascending, not imbricate; blade 1.5–3 × 0.7–1.5 mm, with the same size in main and lateral branches, concolorous, greenish, chartaceous, frequently triangular-lanceolate, sometimes ovate-lanceolate, apex acute, glabrous, base attenuate or rounded, margin entire, glabrous, flat, not calose, 1 pair of basal acrodromous veins, frequently conspicuous on the abaxial surface, inconspicuous on the adaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.1–0.3 mm long, bract absent; hypanthium 1.2–2.2 × 1–2 mm, greenish, campanulate, bristle crown at the apex absent; sepal 1–1.5 × 0.1–0.2 mm, with the same color of the hypanthium, narrow-triangular, apex cuspidate; petal 3–6 × 1–2 mm, yellow, oblong, apex cuspidate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow; anther ovate-oblong, polysporangiate; antesepalous stamen with filament 2–2.5 mm long, pedoconnective 2–2.7 mm long, ventral appendage 0.7–1 mm long, apex retuse, anther ca. 1.5 mm long,

beak ca. 0.2 mm long; antepetalous stamen with filament ca. 2 mm long, pedoconnective 0.6–1 mm long, ventral appendage 0.2–0.3 mm long, apex retuse or rounded, anther ca. 1.2 mm long, beak ca. 0.2 mm long; ovary ca. 1.5 × 1.2 mm, 3-locular, superior, glabrous; style ca. 6 mm long, white. Capsule 1 × ca. 0.5 mm, brown, rounded, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.2 mm, cream.

Specimens examined—BRAZIL. Goiás: Niquelândia, Macedo, 24 July 1952, fl., fr., *A. Macedo 3636* (US, online image, NY, online image, S, online image SP, online image). idem, km 2, 14°23'03"S, 48°24'57"W, 27 May 1996, fl., fr., *M.L.M. Azevedo et al. 993* (FLOWER, IBGE, US); ca. 1 km da mina de níquel, 14°20'12"S, 48°23'54"W, 14 August 1996, fl., *M.L. Fonseca et al. 1100* (IBGE, SPF, US); Usina de Níquel Tocantins, 18 October 1996, fl., *R. Marquete et al. 2635* (IBGE); Macedo, 14°24'16"S, 48°24'59"W, 1410 m, 28 November 1996, fl., fr., *M.L. Fonseca et al. 1376* (IBGE, US); Companhia de Níquel Tocantins, 14°22'23"S, 48°24'44"W, 12 August 1997, fl., fr., *R.C. Mendonça et al. 3005* (FLOR, IBGE, US); idem, 14°21'29"S, 48°23'11"W, 965 m, 7 May 1998, fl., fr., *D. Alvarenga et al. 1187* (HEPH, IBGE, US); idem, fl., fr., *M.L. Fonseca et al. 1803* (HEPH, IBGE, US); Macedo, 14°18'512"S, 48°23'364"W, 1000 m, 2 February 2005, bot., fl., *Reeves et al. 2936* (CEN).

Microlicia macedoi is endemic to Goiás (Smith 1955; Romero & Woodgyer 2015; Romero *et al.* 2020), with restricted distribution to the municipality of Niquelândia, occurring in *cerrado* and *campo sujo*, commonly in lateritic soil, between 965 and 1400 m elevation. With a restricted extent of occurrence (EOO = 12 km²), *M. macedoi* is here assessed as Critically Endangered [(CR) A2B1ab(iii)]. *Microlicia macedoi* occurs exclusively in an intensive extraction nickel location, under high extinction danger. Collected with flowers in February, May, August and November, and fruits in May,

August and November.

Microlicia macedoi can be easily recognised byits yellow petal, spherical translucent glands covering branch, leaf blade, hypanthium, and sepal, triangular-lanceolate or ovate-lanceolate leaf blade, small (1.5−3 × 0.7−1.5 mm), acute at the apex, with entire and glabrous margin. Moreover, it has short-pedicellate flower (0.1–0.3 mm long), campanulate hypanthium, narrow-triangular sepal, cuspidate at the apex, and yellow stamen with polysporangiate anther. According to Smith & Wurdack (1955), *M. macedoi* resembles *M. lutea* Markgraf, endemic to Bahia (Romero & Woodgyer 2015; Romero *et al.* 2020), in having spherical glands covering branch, leaf blade, hypanthium, and sepal, campanulate hypanthium, yellow petal, and dimorphic stamen, , with yellow and polysporangiate anther. However, *M. lutea* differs in having imbricate leaf, discolorous, elliptic or ovate blade, triangular sepal, and oblong anther. *Microlicia macedoi* is similar to *M. flavipetala* as previously discussed in the comments of this species.

25. *Microlicia macrantha* Versiane & R.Romero (2021: 20) = *Lavoisiera grandiflora.*

Shrub, 1.5–2 m tall, much-branched, branch thick, xylopodium not observed. Abaxial surface of the leaf blade sparsely covered with spherical translucent glands, branch, adaxial surface of the leaf blade, hypanthium and sepal glabrous, rarely sparsely covered with glandular trichomes, glandular trichomes inconspicuous in the node. Leaf sessile, ascending or slightly horizontal, imbricate or not; blade 20–45(–80) × 10–20(–40) mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, green-yellowish, subcoriaceous, ovate-oblong or oblong-lanceolate, apex acute or rounded, base rounded, margin entire, glabrous, flat, sometimes slightly revolute, calose,

3–4 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, calose. Flower (5–)6-merous, solitary, terminal or lateral; pedicel 3–4 mm long; bract 28–40 × 18–20 mm, sessile; hypanthium 12–20 × 10–15 mm, greenish, oblong, bristle crown at the apex absent; sepal 4–6 × 2–3.5 mm, with the same color of the hypanthium, triangular, apex acute, sometimes with a terminal glandular trichome; petal 25–30 × 10–15 mm, white or pinkish, base yellow, obovate-oblong, apex rounded or truncate, margin entire, glabrous; stamen 12, dimorphic, concolorous, yellow, anther oblong, tetrasporangiate; antesepalous stamen with filament 12 mm long, pedoconnective 10–12 mm long, ventral appendage 3–4 mm long, brownish post pollination, apex obtuse or truncate, anther ca. 8 mm long, beak ca. 0.7 mm long; antepetalous stamen with filament ca. 8 mm long, pedoconnective 2–3 mm long, ventral appendage 1–1.5 mm long, apex rounded or bilobed, anther ca. 7 mm long, beak ca. 0.5 mm long; ovary ca. 9 × 6.5 mm, 6-locular, semi-inferior, glabrous; style 12–15 mm long, yellow. Capsule 12–13 × 8–10 mm, brown-grayish, oblong, dehiscent from the apex, columella persistent; seed 1.2–2 × 0.4–0.6 mm, brown or orange-colored.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros National Park, 20 November 1987, fl., *N.M. Castro et al. 237* (HUFU). Cocalzinho de Goiás, Serra dos Pireneus, 14 Dez 2004, fl., *L.B. Bosquetti et al. 9430* (HUFU); 24 April 2012, fl., *J.N. Nakajima et al. 5047* (HUFU); 26 April 2012, fl., *J.N. Nakajima et al. 5081* (HUFU); 4 July 2012, fl., fr., *A.F.A. Versiane et al. 217* (HUFU); 12 December 2012, fl., *R.A. Pacheco et al. 893* (HUFU); 20 February 2013, fl., *R.A. Pacheco et al. 988* (HUFU); 22 March 2013, fl., *A.F.A. Versiane et al. 621* (HUFU); 23 March 2013, fl., *R.A.Pacheco et al. 1067* (HUFU). Cristalina, Serra dos Cristais, 10 September 1998, fl., *V.C. Souza et al. 21449* (HUFU).

Microlicia macrantha is widely distributed in Goiás, Minas Gerais and Distrito Federal (Martins & Almeda 2017). In Goiás and Distrito Federal, occurs in *cerrado*, *campo rupestre* and *vereda*, in wet or dry areas, between 975 and 1600 m elevation. Due to its wide distribution, *M. macrantha* is assigned as Least Concern (LC), according to the IUCN criteria (2019). Collected with flowers and fruits from December to July.

Microlicia macrantha can be recognised by the large leaf blade (20–45(–80) × 10–20(–40) mm), ovate-oblong or oblong-lanceolate blade, calose at the margin, pedicel 3–4 mm long, sessile and large bract (28–40 × 18–20 mm), oblong hypanthium, triangular sepal, yellow ventral appendage, becoming brownish post pollination in the antesepalous stamen (Martins & Almeda 2017). Furthermore, the ovary is 6-locular and semi-inferior, with persistent collumelae. *Microlicia macrantha* is similar to *M. cataphracta* as previously discussed in the comments of this species.

Illustration and images in Martins & Almeda (2017), figures 3 a–c, 40 a–j, as *Lavoisiera grandiflora.*

26. *Microlicia melanostagma* Pilger (1903: 18) (Fig. 4 j–k, 7 a–h).

Subshrub, ca. 0.3 m tall, much or few-branched, branch slender, xylopodium not observed. Branch glabrous, leaf, hypanthium and sepal sparsely covered with glandular trichomes, 0.5–1 mm long, frequently pinkish-reddish, sometimes greenish, vinaceous glands at the trichome apex, frequently glabrescent. Leaf sessile, horizontal or ascending, not imbricate; blade 3–5 × 2–2.5 mm, with the same size in main and lateral branch, concolorous, yellow-greenish, membranaceous, ovate or ovate-lanceolate, apex aristate, arista 0.4–1 mm long, rarely acute, base rounded or slightly cordate, amplexicaul, margin

serrate, glandular-ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium ca. 1.5 × 1–1.5 mm, greenish, campanulate, bristle crown at the apex absent; sepal 1.6–2 × ca. 0.5 mm, with the same color of the hypanthium, triangular, apex aristate, arista ca. 0.5 mm long; petal 5–6.5 × 3–4 mm, magenta, with greenish abaxial surface at the apex, oblong or obovate-oblong, apex rounded, margin entire, glandular-ciliate; stamen 10, dimorphic, anther bicolorous, tetrasporangiate; antesepalous stamen with filament 2–3 mm long, magenta, pedoconnective 1–1.5 mm long, magenta, ventral appendage 1–1.3 mm long, yellow, apex rounded, anther 1.5–2 mm long, vinaceous, ovate-oblong, beak 0.5–1 mm long, pinkish; antepetalous stamen with filament 1.7–2 mm long, magenta, pedoconnective 0.4–0.6 mm long, magenta, innapendiculate, anther 1.2–1.5 mm long, yellow, oblong, beak 0.1–0.2 mm long, yellow; ovary ca. 1.7 × 1.3 mm, 3-locular, superior, glabrous; style 2–2.5 mm long, white. Capsule ca. 2 × 2 mm, brown, globose, dehiscent from the apex, columella deciduous; seed ca. 1 × 0.5 mm, cream.

Specimens examined:—BRAZIL. Distrito Federal: Brasília, Saia Velha, 10 March 1961, fl., *E.P. Heringer 8149* (NY, US); 10 May 1961, fl., *8152* (HEPH, US) 15 February 1965, fl., *E.P. Heringer 10083* (UB). Goiás: "Cachoeira da Vargem Grande", 11 January 1895, bot., fl., *A.F.M. Glaziou 21230* (K, NY, P, R, online image, S, online image, US). Alto Paraíso de Goiás, Chapada dos Veadeiros, Cachoeira da Vargem Grande, 5 January 1895, bot., fl., *A.F.M. Glaziou s.n.* (K); Fazenda da Boa Vista, 14 January 1895, bot., fl., *A.F.M. Glaziou s.n.* (F, online image, K, P, US, online image); Cachoeira da Vargem Grande, 24 January 1997, fl., fr., *M.C. Assis et al. 350* (CEN, SPF); Chapada dos Veadeiros, 4 February 1990, fl., *M.M. Arbo et al. 3641* (K); turnoff at Km 12 from main

road to Chapada dos Veadeiros National Park, 1145 m, 19 February 2009, bot., fl., fr., *F. Almeda et al. 9427* (UEC); ca. 24 km sentido São Jorge, 1203 m, 21 February 2009, bot., fl., *F. Almeda et al. 9645* (UEC, online image); ca de 12 km na GO-239 sentido Mulungú, 14°07'46"S, 47°38'19"W, 1211 m, 06 March 2015, fl., fr., *M. Mendoza et al. 4847* (CEN).

Microlicia melanostagma occur in Goiás state and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020), occurring in *campo limpo*, *campo sujo*, *cerrado rupestre* and *cerradão*, in wet and sandy soil. With a restricted area of occupancy (AOO = 8 km²), *M. melanostagma* is assigned as Critically Endangered (CR) [A2deB1ab(i,ii,iii,iv); 2ab(i,ii)]. Some collections from Distrito Federal apparently shows that *M. melanostagma* occurs in a transition area between rural and urban zones. Collected with flowers in January, February and March, and fruits in January.

Microlicia melanostagma can be recognised by the bicolorous petal, magenta, with greenish abaxial surface at the apex, glabrous branch, membranaceous leaf blade, amplexicaul at the base, serrate and glandular-ciliate margin, aristate at the apex, rarely acute, and frequently glabrescent. In addition, the leaf, hypanthium and sepal are covered with glandular trichomes, 0.5–1 mm long, frequently pinkish-reddish, sometimes greenish, with a terminal vinaceous gland, sepal aristate at the apex, and a long beak (0.5–1 mm long) in the antesepalous stamen anther . *Microlicia melanostagma* resembles *M. ramosa* in having ovate or ovate-lanceolate leaf blade, magenta petal, triangular sepal, bicolorous anther, and anther of the antesepalous stamen with a long beak. However, *M. ramosa* has a typical branching pattern (Versiane *et al.* 2016), chartaceous leaf blade, setose trichomes and spherical glands covering branch, leaf, hypanthium, and sepal, shorter sepal, oblong-urceolate hypanthium, and polysporangiate anther.

27. *Microlicia neopyrenaica* (Naudin 1844: 154) Versiane & R.Romero (2021: 20) = *Trembleya neopyrenaica* (Fig. 4 l).

Shrub, 0.8–1.5 m tall, much-branched, branch thick, young branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with glandular trichomes, 0.2–1 mm long, white, sometimes purple-reddish. Leaf with petiole 3–10 mm long, horizontal or slightly ascending, not imbricate, with a variable size in main and lateral branch; blade 30–75 × 10–35 mm, concolorous, greenish, membranaceous, ovate, ovate-lanceolate, ovate-elliptic or elliptic, apex acute or obtuse, glabrous or with a terminal glandular trichome, base rounded or cordate, margin flat, serrate-ciliate, not calose, 2–3 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, covered with setose trichomes, not calose. Flower 5-merous, rarely 6-merous, thyrsus in dichasia, pedicel ca. 3 mm long; bract 6–16 × 2–5 mm, petiole 3–10 mm long, bracteole 5–10 × 3–5 mm, petiole ca. 2 mm long; hypanthium 3.5–4.5 × ca. 3 mm, greenish, urceolate or campanulate, bristle crown at the apex absent; sepal 3–5 × ca. 1 mm, with the same color of the hypanthium, subulate, apex apiculate, apiculum ca. 0.5 mm long; petal ca. 11 × 6 mm, pinkish or white, with pinkish stains, obovate, apex apiculate, apiculum ca. 0.3 mm long, margin entire, glabrous; stamen 10, rarely 12, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament ca. 4 mm long, white or pinkish, pedoconnective ca. 3 mm long, white or pinkish, ventral appendage ca. 1 mm long, yellow, apex obtuse or bilobed, anther ca. 2 mm long, pinkish or reddish, beak ca. 0.3 mm long; antepetalous stamen with filament ca. 3 mm long, white or pinkish, pedoconnective ca. 1 mm long, white or pinkish, ventral appendage inconspicuous, ca. 0.3 mm long mm long, yellow, anther ca. 2 mm long,

yellow, beak ca. 0.3 mm long; ovary 1.8–3 × 1.5–2 mm, 5-locular, superior, glabrous; style 3.5–5 mm long, yellow. Capsule 4.5–6 × 4–5 mm, brownish, urceolate, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.3 mm, brownish or golden.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, s.d., fl., *H.S. Irwin et al. 32784* (NY, online image). Caiapônia, Serra do Caiapó, fl., *W. Anderson et al. 9367* (US, online image). Cocalzinho de Goiás, Serra dos Pireneus, 18 Aug 1995, fl., *M.B. Alcantara et al. 98* (HUFU); 24 April 2012,fl. *J.N. Nakajima et al. 5039* (HUFU, UEC, online image); 25 April 2012, fl., *A.F.A. Versiane et al. 152, 158* (HUFU); 26 April 2012, fl., *J.N. Nakajima et al. 5075, 5076, 5092* (HUFU, MBM, online image); 3 July 2012, fr., *A.F.A. Versiane et al. 181, 199* (HUFU); 4 July 2012, fl., *A.F.A. Versiane et al. 216* (HUFU); 1 October 2012, fr., *R.A. Pacheco et al. 886* (HUFU); 21 May 2013, fl., *A.F.A. Versiane et al. 1035* (HUFU, UEC, online image). Mossâmedes, 25 April 2009, fl., *A.M. Teles et al. 564* (HUFU); Serra Dourada, 28 May 2011, fr., *A.I.M.R. Machado et al. 10* (HUFU); 26 November 2011, fr., *A.I.M.R. Machado et al. 63* (HUFU); 18 March 2012, fl., *A.I.M.R. Machado et al. 140, 143* (HUFU, UEC, online image, UFG, online image); 18 March 2012, fl., *F.S. Meyer et al. 1155, 1160* (UEC, online image, UPCB, online image). Pirenópolis, Serra dos Pireneus, 26 May 2011, fl., fr., *L=D.F. Lima et al. 293* (MBM, online image, UEC, online image, UPCB, online image); 24 April 2012, fl., *R.A. Pacheco et al. 739* HUFU); 22 May 2013, fl., *R.F. Vieira 2590* (HUEFS, online image).

Microlicia neopyrenaica is endemic to Goiás (Machado & Romero 2020), occurring frequently in the Serra dos Pireneus and Serra Dourada, rarely in the Chapada dos Veadeiros, in *cerrado*, *campo sujo*, *campo rupestre*, near *vereda* and *cerrado rupestre*. With an extent of occurrence (EOO = 48 km²) and records in two Conservation Units, is

assigned as Least Concern [LC]. Collected with flowers from February to July, and fruits from March to December.

Microlicia neopyrenaica is characterised in having white, sometimes purple-reddish, glandular trichomes covering branch, leaf blade, hypanthium, and sepal, not imbricate leaf, with variable blade shape, ovate, ovate-lanceolate, ovate-elliptic or elliptic, membranaceous, pinkish or white petal with pinkish stains, apiculate at the apex, and dimorphic stamen, bicolorous anther, oblong and tetrasporangiate. *Microlicia neopyrenaica* resembles *M. phlogiformis* in having branch, leaf blade, hypanthium, and sepal covered with glandular trichomes, petiolate and horizontal or slightly ascending leaf, blade with a variable size in main and lateral branch, flat and not callose margin, with 2–3 pairs of veins. In addition, both have pedicellate flower, subulate sepal, apiculate at the apex, dimorphic stamen with bicolorous, oblong and tetrasporangiate anther, and 5-locular ovary. However, *M. phlogiformis* differs in having a chartaceous leaf blade and oblong or obovate-oblong petal, acuminate at the apex, with a terminal glandular trichome at the apex.

Illustrations and image in Martins (1997), figures 6 d, 10 b, 11 e, 16 e–f, 43 a–g; Martins *et al.* (2009), image 1, figures l–o; Machado & Romero (2020), Figures 4 i–k, 8 l.

28. *Microlicia ordinata* (Wurdack) F. Almeda & A.B. Martins (2001: 5).

Subshrub or shrub, 0.5–1.5 m tall, few-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical translucent glands glandular trichomes, 0.5–1.5 mm long. Leaf sessile, ascending, imbricate; blade 5–20 × 2.5–13.5 mm, with the same size in main and lateral branch,

concolorous, greenish, chartaceous, ovate or ovate-lanceolate, apex acute, with a terminal glandular trichome, base rounded or slightly cordate, margin serrate, glandular-ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins, frequently conspicuous only on the abaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 0.5 mm long, bract absent; hypanthium 3–4 × 1–2 mm, greenish, campanulate, bristle crown at the apex absent; sepal 1–2 × 1–1.5 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal glandular trichome; petal 6.5–11.5 × 5–8.5 mm, magenta, obovate or obovate-oblong, retuse or truncate at the apex, glabrous, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther ovate or ovate-oblong, polysporangiate; antesepalous stamen with filament 2.5–3.5 mm long, pedoconnective 2–2.7 mm long, ventral appendage ca. 1 mm long, apex retuse or slightly bilobed, anther 2–3 mm long, with orange-colored or vinaceous stains, beak 0.6–0.8 mm long; antepetalous stamen with filament 2.5–3.5 mm long, pedoconnective ca. 0.5 mm long, ventral appendage ca. 0.2 mm long, apex retuse, anther 1.5–2 mm long, beak 0.3–0.5 mm long; ovary ca. 2.3 × 1.5 mm, 3-locular, superior, glabrous; style 6.5–8.5 mm long, pinkish. Capsule 5–6 × ca. 4 mm, brown, oblong or ovate-oblong, dehiscent from the apex, columella deciduous; seed 0.5–0.6 × 0.2–0.3 mm, cream.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Chapada dos Veadeiros, ca. 5 km W of Veadeiros, 1000 m, 12 February 1966, bot., fl., *H.S. Irwin et al. 2695* (G, online image, S, online image, SP, online image, US, online image); GO-118, 10 February 1994, bot., fl., *G. & M. Hatschbach et al. 60297* (HUFU, MBM); Chapada dos Veadeiros, ca. 11 km da cidade, 14°09'685"S, 47°36'370"W, 1115 m, 16 June 1998, bot., *R. Romero et al. 5524, 5545, 5554* (UEC, HUFU); GO-118, km 174,

14°04'S, 47°30'W, 31 July 2000*, R.C. Forzza et al. 1615* (HUFU, SPF); entrada para o Hotel Fazenda Água Clara, 14°04'16,7"S, 47°30'26"W, 1360 m, 19 June 2008, bot., fl., *H.R. Tsuji et al. 2693* (HPL, HUFU). Mossâmedes, Serra Dourada, 5 December 1995, fr., *V.L.C. Klein et al. 2938* (HUFU, UFG); Parque Estadual da Serra Dourada, próximo ao morro do Mirante, 28 May 2011, bot. fl., fr., *A.I.M.R. Machado et al. 11, 12* (HUFU, UB, UFG); idem, nos arredores da pedra goiana, 29 October 2011, fr., *A.I.M.R. Machado et al. 51* (HUFU, RB, UB). idem, 25 November 2011, fr., *A.I.M.R. Machado et al. 55* (HUFU, RB, UB). Paraúna, Parque Estadual de Paraúna, Serra das Galés, 16°59'23"S, 50°38'13"W, 746 m, 31 May 2013, bot., *J.E.Q. Faria et al. 3673* (HUEG, HUFU, UB). São Jorge, Chapada dos Veadeiros National Park, 14°09'58"S, 47°49'35"W, 957 m, 26 February 2016, fl., *J.C. Fontelas et al. 127* (HUFU).

Microlicia ordinata is endemic to Goiás (Almeda & Martins 2001; Romero & Woodgyer 2015; Romero *et al.* 2020), occurring in cerrado and *campo rupestre*, in wet or dry soil. With an extent of occurrence (EOO = 4 km²) and populations occurring at least three Conservation Units, *M. ordinata* is assigned as Vulnerable [(VU) B1ab(i,ii,iv)]. Collected with flowers in February, May and June, and fruits in May, November and December.

Microlicia ordinata is characterised by the glandular trichomes and spherical glands densely distributed on the branch, leaf blade, hypanthium and sepal, sepal with half the length of hypanthium, magenta petal, yellow stamen, and polysporangiate anther, with orange-colored or vinaceous stains on the antesepalous stamen. *Microlicia ordinata* resembles *M. melanostagma* in having glandular trichomes covering branch, leaf blade, hypanthium and sepal, ovate or ovate-lanceolate leaf blade, serrate margin, glandular-ciliate, rounded at the base, 1–2 pairs of basal acrodromous veins, campanulate

hypanthium, and triangular sepal, acute at the apex, with a terminal glandular trichome. However, *M. melanostagma* differs in having concolorous, membranaceous, glabrescent, and smaller leaf blade (3–5 × 2–2.5 mm), sepal longer than the length of the hypanthium, petal retuse or truncate at the apex, and tetrasporangiate anther, with a very long beak (0.5–1 mm long) in the antesepalous stamen. *Microlicia ordinata* also resembles *M. ramosa* in having spherical glands covering branch, leaf blade, hypanthium and sepal, sessile and ascending leaf, ovate or ovate-lanceolate blade, triangular sepal, shorter than the length of the hypanthium, ovate or ovate-oblong and polysporangiate anther. However, *M. ramosa* differs in having setose trichomes covering branch, leaf blade, hypanthium and sepal, oblong-urceolate hypanthium, sepal with vinaceous stains, and vinaceous anther in the antesepalous stamen.

Illustration and images in Diniz & Silva (2020), figures 13 m–y, 14 a–f; Machado & Romero (2020), figure 4 d–e.

29. *Microlicia parviflora* (D.Don 1883: 127) Versiane & R.Romero (2021: 21) = *Trembleya parviflora* (Fig. 8 a).

Shrub or dwarf tree, 0.4–2 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical yellowish glands. Leaf with petiole 4–12 mm long, horizontal, not imbricate; blade 20–115 × 3–40 mm, with a variable size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, chartaceous, lanceolate, apex acute, glabrous, base attenuate, margin entire, glabrous, revolute, not calose, 1 pair of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, covered with

setose trichomes, not calose. Flower 5-merous, thyrsus in dichasia, pedicel 1–4 mm long; bract 6–16 × 2–5 mm, petiole 3–10 mm long, bracteole 1–7 × 0.5–1.5 mm, petiole 1–3 mm long; hypanthium 2–3 × 2.5–3 mm, greenish, campanulate, bristle crown at the apex absent; sepal 0.5-2 × 0.8-1.5 mm, with the same color of the hypanthium, subulate, apex acute, glabrous; petal 5–11 × 2–7 mm, white or pinkish, obovate or oblong, apex acute or retuse, glabrous, margin entire, glabrous, or sometimes sparsely glandular-ciliate; stamen 10, dimorphic, anther bicolorous, ovate, tetrasporangiate; antesepalous stamen with filament ca. 3.5 mm long, white or pinkish, pedoconnective ca. 3 mm long, white or pinkish, ventral appendage ca. 1 mm long, yellow, apex bilobed, anther ca. 1.5 mm long, pink-reddish, beak 0.2–0.3 mm long; antepetalous stamen with filament ca. 2.5 mm long, white or pinkish, pedoconnective ca. 0.2 mm long, white or pinkish, ventral appendage inconspicuous, ca. 0.2 mm long, yellow, anther ca. 1.5 mm long, yellow, beak 0.2–0.3 mm long; ovary ca. 2 × 1.8 mm, 5-locular, superior, glabrous; style ca. 3 mm long, pinkish. Capsule 2.7–4 × 2.5–3.3 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.3 mm, golden.

Specimens examined—BRAZIL. Goiás: s.d., fl., *Gardner 379* (NY, online image, US, online image). Alto Paraíso de Goiás, Chapada dos Veadeiros, 25 June 1994, fl., *V.L.G. Klein et al. 2475* (HUFU). Cocalzinho de Goiás, 4 October 2012, fl., *A.F.A. Versiane et al. 305* (HUFU). Pirenópolis, 7 October 2001, fl., *M.L. Santos 57* (HUFU).

Microlicia parviflora is widely distributed in Bahia, Goiás, Espírito Santo, Minas Gerais, Rio de January, Paraná, and Distrito Federal (Pacifico & Fidanza 2020). In Goiás and Distrito Federal occurs in *campo limpo*, *campo sujo*, *campo rupestre*, *mata de galeria*, and *vereda*, in wet or dry area. Due to its wide distribution, *M. parviflora* is assessed as Least Concern (LC). Collected with flowers in January, April, and from June to October,

and fruits from June to October.

Microlicia parviflora is quite variable in the leaf blade size (20–115 × 3–40 mm), and can be recognised in having discolorous blade (darker on the adaxial surface), entire margin, glabrous, revolute, main vein covered with setose trichomes, and subulate sepal. *Microlicia parviflora* is similar to *M. altoparaisensis,* as previously discussed in the comments of this species.

Illustration in Martins (1997), figures 32 a–f, noted as *Trembleya parviflora*.

30. *Microlicia phlogiformis* (De Candolle 1828: 126) Versiane & R.Romero (2021: 21) = *Trembleya phlogiformis* (Fig. 8 b).

Shrub, 0.3–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with glandular trichomes, 0.5–1 mm long, white. Leaf with petiole 3–5 mm long, horizontal or slightly ascending, not imbricate; blade 10–90 × 5–30 mm, with a variable size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate or ovate-lanceolate, apex acute, with a terminal glandular trichome, base attenuate or rounded, margin serrate, glandular-ciliate, flat, not calose, 2–3 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, covered with setose trichomes, not calose. Flower 5-merous, thyrsus in dichasia or reduced to a single flower, pedicel 1–4 mm long; bract 8–11 × 2.5–4 mm, petiole 0.5–2 mm long, bracteole 3.5–6 × 1–2 mm, petiole ca. 0.5 mm long; hypanthium 3.5–5 × 2–4 mm, greenish, urceolate, bristle crown at the apex absent; sepal 3.5–5.5 × 0.5–1 mm, with the same color of the hypanthium, subulate, apex apiculate, apiculum ca. 0.4 mm long; petal 7–13 × 3–7 mm, white, sometimes with

pinkish stains, oblong or obovate-oblong, acuminate at the apex, with a terminal glandular trichome, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament 2–3 mm long, white, pedoconnective 2–3.5 mm long, white, ventral appendage ca. 1 mm long, yellow, apex bilobed, anther 2–2.5 mm long, pinkish, beak ca. 0.3 mm long; antepetalous stamen with filament 1–2 mm long, white, pedoconnective 1–1.5 mm long, white, ventral appendage inconspicuous, ca. 0.2 mm long, yellow, anther 1.5–2 mm long, yellow, beak ca. 0.3 mm long; ovary 3–4 × 2.5–3 mm, 5-locular, superior, glabrous; style 4.5–7 mm long, yellow. Capsule 5–7 × 3–4 mm, greenish, urceolate, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Goiás: s.d., fl., fr., *Gardner 4147* (K, online image). Aparecida do Rio Doce, 11 Aug 2007, fl., fr., *F.A.G. Guilherme et al. 779* (HUFU). Caiapônia, s.d., fl., *W.R. Anderson 9645* (NY, online image). Cocalzinho de Goiás, Serra dos Pireneus, 23 May 2013, fl., *R.A. Pacheco et al. 1070* (HUFU); 20 May 2013, fl., *A.F.A. Versiane et al. 555* (HUFU); 3 July 2012, fl., fr., *R.A. Pacheco et al. 1039* (HUFU). Catalão, 2 April 2008, fl., *A.A.A. Arantes et al. 935* (HUFU).

Microlicia phlogiformis is widely distributed in Bahia, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Rio de January, São Paulo, and Distrito Federal (Pacifico & Fidanza 2020). In Goiás and Distrito Federal, occurs in *cerrado*, *campo sujo*, *vereda*, and *cerrado rupestre*. Due to its wide distribution, *M. phlogiformis* is assigned as Least Concern (LC). Collected with flowers in March, from April to July, and fruits in March, and from May to December.

Microlicia phlogiformis can be recognised in having leaf with petiole 3–5 mm long, horizontal or slightly ascending blade, white petal, sometimes with pinkish stains, and

resembles *M. neopyrenaica,* as previously discussed in the comments of this species.

Illustrations in Martins (1997), figures 45 a–g; Martins *et al.* (2009), image 16, figures i–k, noted as *Trembleya phlogiformis*.

31. *Microlicia pohliana* (O.Berg. ex Triana 1872: 30) Versiane & R.Romero (2021: 21) = *Lavoisiera pohliana* (Fig. 8 c).

Shrub or tree, 2–3 m tall, much-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical glands glandular trichomes, ca. 0.5 mm long, glandular trichomes inconspicuous in the node. Leaf sessile, horizontal, not imbricate; blade 7–20 × 5–10 mm, with the same size in main and lateral branch, concolorous, greenish, coriaceous, ovate or ovate oblong, sometimes oblong-elliptic, apex acute or acuminate, recurved, base rounded or attenuate, margin entire, glabrous, rarely glandular-ciliate, revolute, calose, 1–2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, calose. Flower (5–)6-merous, solitary, terminal or lateral; sessile, bract absent; hypanthium 4–5 × 4 mm, greenish, campanulate, bristle crown at the apex absent; sepal 5–6 × 2.5–3.5 mm, with the same color of the hypanthium, ovate-oblong, apex acute; petal 9–25 × 10–18 mm, white, base yellow, sometimes with pinkish stains in flower bud, obovate or spatulate, apex asymmetrically truncate, margin entire, glabrous, rarely glandular-ciliate; stamen 10–12, dimorphic, concolorous, yellow, anther oblong, tetrasporangiate; antesepalous stamen with filament 7–8 mm long, pedoconnective ca. 10 mm long, ventral appendage 1.5–2 mm long, apex rounded or bilobed, anther 5–5.5 mm long, beak ca. 0.5 mm long; antepetalous stamen with filament 6–7 mm long, pedoconnective 2–3 mm long,

ventral appendage ca. 1 mm long, apex truncate or bilobed, anther 4.5–5 mm long, beak ca. 0.5 mm long; ovary 12–16 × 6–7.5 mm, (5–)6-locular, semi-inferior, glabrous; style 12–16 mm long, yellow. Capsule 6–12 × 6–12 mm, brownish, globose or urceolate, dehiscent from the apex, columella persistent; seed 1–2 × 0.7–0.8 mm, orange-colored.

Specimens examined—BRAZIL. Goiás: Cristalina, Serra dos Cristais, s.d., fl., fr., *A.F.M. Glaziou 21312* (HUFU, P, RB, online image, S, online image); Linda Serra dos Topázios, 22 March 1998, fl., fr., *R.C. Oliveira 285* (HUFU, MBM).

Microlicia pohliana is widely distributed in Goiás and Minas Gerais (Martins & Almeda 2017). In Goiás occurs exclusively in Cristalina, in *cerrado rupestre*. *Microlicia pohliana* is assigned as Endangered (E) (see Martins & Almeda 2017). Collected with flowers in January, February, March, October, November and December, and fruits in February, March, June and September.

Microlicia pohliana can be easily recognised by the large shrub or tree habit (2–3 m tall), much-branched, thick branch, glandular trichomes and spherical glands sparsely distributed in the branch, leaf blade, hypanthium, and sepal, horizontal leaf, not imbricate, recurved at the apex, revolute at the margin, ovate-oblong sepal, and white petal, yellow at the base, sometimes with pinkish stains in the flower bud, and yellow stamen. *Microlicia pohliana* resembles *M. crebropunctata* in having thick branch, horizontal and concolorous (greenish) leaf blade, white petal, and yellow stamen with oblong anther. However, *M. crebropunctata* differs in having elliptic leaf blade, flat at the margin, not calose, pedicellate flower, oblong hypanthium, narrow-triangular sepal, and entirely white petal.

Illustrations in Martins & Almeda (2017), figures 51 a–i.

32. *Microlicia polystemma* Naudin (1845: 179) (Fig. 8 d).

Subshrub, 0.3–1 m tall, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal dense or sparsely covered with spherical translucent glands and setose trichomes, 0.2–1.5 mm long, cream. Leaf sessile, ascending, imbricate or not; blade 3–10 × 1.5–6.5 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, lanceolate, ovate-lanceolate or ovate, apex acute, with a terminal setose trichome, base rounded or attenuate, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, sometimes inconspicuous on the adaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium 3.5–6 × 2.5–3.5 mm, greenish, oblong-campanulate, bristle crown at the apex absent; sepal 1.5–3 × 1–1.5 mm, with the same color of the hypanthium, triangular-lanceolate, apex apiculate, apiculum ca. 1 mm long; petal 8–13 × 4–10 mm, magenta, obovate, apex apiculate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, polysporangiate; antesepalous stamen with filament ca. 3.5 mm long, pedoconnective 2–3 mm long, ventral appendage 1.5–2 mm long, apex truncate, anther 2.5–3 mm long, beak 0.3–0.5 mm long; antepetalous stamen with filament ca. 2.5 mm long, pedoconnective 1.5–2 mm long, innapendiculate, anther ca. 1.5 mm long, beak ca. 0.3 mm long; ovary ca. 1.5 × 1 mm, 3-locular, superior, glabrous; style ca. 5 mm long, pinkish. Capsule ca. 4 × 3 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Distrito Federal: Brasília, Bacia do Rio Gama, bot., fl., fr*., A.F.M. Glaziou 21249* (NY, online image, RB, US, online image); próximo à Cachoeirinha, 15 December 1981, bot., fl*., Filgueiras et al. 943* (K); *15*°52'00"S,

48°00'00"W, 1100 m, 18 April 2000, bot., fl., fr.*, E.S.G. Guarino et al. 111* (CEN); Parque Nacional de Brasília, 15°44'30"S, 47°59'41"W, 1100 m elev, 31 January 2007, bot., fl., fr.*, J. Roveratti et al. 716* (CEN, online image); Fazenda Sucupira, 2 February 2007, bot., fl.*, G.D. Vale et al. 290* (CEN, online image). Goiás: Caldas Novas, Serra da Arnica, 20 January 1976, bot., fl., fr.*, G. Hatschbach et al. 38135* (UEC, online image; US, online image); Cavalcante, Engenho II, estrada para Brocotó, 28 February 2010, bot., fl., *R.C. Martins et al. 1077* (RB, online image). Pirenópolis, RPPN Vargem Grande, 15°48'54"S, 48°55'08"W, 951 m elev., 19 May 2018, bot., fl.*, M.L. Fonseca et al. 6956* (RB, online image).

Microlicia polystemma occurs in Goiás, Minas Gerais, São Paulo, and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020). In Goiás and Distrito Federal occurs in *campo rupestre*, *campo limpo*, wet or dry, *cerrado*, occasionally in sandy or flooded soil. Due to its wide distribution, *M. polystemma* is assigned as Least Concern (LC). Collected with flowers in January, February, April, May and December, and fruits in January and April.

Microlicia polystemma can be recognised by the setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, yellow stamen, with innapendiculate pedoconnective and tetrasporangiate anther. As reported for some specimens from Serra da Canastra, Minas Gerais (Romero 2000), a xylopodium was observed in a collection made in Distrito Federal (*G.D. Vale et al. 290*). This species presents an expressive variation regarding the indumentum distribution on the whole plant, the leaf blade size of the and its arrangement on the branches, also observed in *M. acuminata*, which *M. polystemma* shares similarity. Both species have branch, leaf blade, hypanthium, and sepal covered with setose trichomes and spherical glands, lanceolate or ovate lanceolate

leaf blade, rounded or attenuate at the base, yellow, oblong, and polysporangiate anther. However, *M. acuminata* differs in having oblong hypanthium and subisomorphic stamen with a conspicuous ventral appendage (0.1−0.5 mm long) in the antepetalous stamen.

Images in Bacci *et al.* (2016) figures 28 and 29.

33. *Microlicia psammophila* Wurdack (1959: 4) (Fig. 8 e).

Subshrub, 0.2–0.5 m tall, much-branched, branch slender, xylopodium present. Branch, leaf blade, hypanthium and sepal glabrous, except for the spherical glands at sepal margin, densely distributed. Leaf sessile, ascending, not imbricate; blade 1.5–4 × 0.5–1 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, triangular or triangular-lanceolate, narrow, apex aristate, arista 0.1–0.7 mm long, base truncate, semi-amplexicaul, margin glabrous, revolute, not calose, lateral and main vein inconspicuous. Flower 5-merous, solitary, terminal or lateral; sessile or pedicel up to 0.3 mm long, bract absent; hypanthium 3–4 × 2.5–3 mm, greenish, campanulate, bristle crown at the apex absent; sepal 2–4 × 0.5–1.5 mm, with the same color of the hypanthium, triangular, apex aristate, arista 0.2–1 mm long; petal 7.5–10 × 4–7 mm, pinkish, obovate, apex caudate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther ovate, tetrasporangiate; antesepalous stamen with filament 2.5–5 mm long, pedoconnective 1–1.5 mm long, innapendiculate, anther 3–5 mm long, beak 1–2 mm long; antepetalous stamen with filament 2.5–3 mm long, pedoconnective ca. 1 mm long, innapendiculate, anther 2–3.5 mm long, beak 0.3–0.6 mm long; ovary ca. 2 × 1 mm, 3-locular, superior, glabrous; style ca. 9 mm long, yellow. Capsule 3−3.5 × 2−2.5 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed 0.5−0.7 × 0.2−0.4

mm, cream.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, Region of the Chapada dos Veadeiros at W, 24 April 1956, fl., fr., *E.Y. Dawson 14620* (R, online image, NY, US); Chapada dos Veadeiros National Park, 14 May 1986, bot., fl., fr., *C.B. Toledo et al. 102* (UEC, SP, US); estrada para Colinas, 14°10'00"S, 47°37'10"W, 6 December 1988, bot., *R.C. Mendonça et al. 1112* (IBGE); Fazenda São Bento, 23 February 1991, bot., fl., *D. Alvarenga et al. 767* (RB, online image); Chapada dos Veadeiros, trilha para os saltos, 22 March 2012, bot., fl., *A.I.M.R. Machado et al. 165* (HUFU); margem da estrada para São Jorge, 14°06'00"S, 47°28'19"W, 1031 m, 5 April 2014, bot., fl., *J.E.Q. Faria et al. 3987* (HUEG, HUFU, RB, SP, UB). São Jorge, Chapada dos Veadeiros National Park, 14°09'40"S, 47°49'35"W, 1032 m, 26 February 2016, fl., *J.C. Fontelas et al. 133* (HUFU).

Microlicia psammophila is endemic to Goiás (Wurdack 1959; Romero & Woodgyer 2015; Romero *et al.* 2020), occurring exclusively to Chapada dos Veadeiros, in *campo rupestre* and *campo limpo*, in sandy soil, in wet or dry areas. With an extent of occurrence (EOO = 93 km²) and area of occupancy (AOO = 12 km²) restricted, is assigned as Critically Endangered [(CR) B1ab(i,ii,iv)]. Collected with flowers from February to May, and fruits in May.

Microlicia psammophila can be easily recognised in having much-branched habit, glabrous plant, except by the spherical glands covering the sepal margin, ascending leaf, narrow, triangular or triangular-lanceolate blade, and aristate at the apex. Also, it differs in having yellow stamen, innapendiculate pedoconnective, ovate and tetrasporangiate anther with a very long beak (1–2 mm long). *Microlicia psammophila* resembles *M. armata*, *M. chrysoglandulosa,* and *M. longirostrata*, and the similarities and distinctions

are discussed in their respective notes.

Illustration in Diniz & Silva (2020), figures 16 a–k.

34. *Microlicia quinquenervis* (Wurdack 1974: 136) Versiane & R.Romero (2021: 22) = *Lavoisiera quinquenervis.*

Subshrub, ca. 1 m tall, much-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal glabrous, sometimes sparsely covered with glandular trichomes, glandular trichomes inconspicuous in the node. Leaf sessile, horizontal or slightly ascending, imbricate, with the same size in main and lateral branch; blade 8–15 × 5–9 mm, concolorous, yellow-greenish, chartaceous, ovate or ovate-oblong, apex acute, with a terminal glandular trichome, base rounded or subcordate, semi-amplexicaul, margin glandular-ciliate, trichome 1–1.5, mm long, flat or slightly revolute, not calose, 1(–3) pairs of basal acrodromous veins, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, not calose. Flower 5–6-merous, solitary, terminal or lateral; sessile; bract 14–16 × 9 mm, subsessile; hypanthium 5–7 × 4 mm, greenish, campanulate, bristle crown at the apex absent; sepal 7–9 × 2.5–2.7 mm, with the same color of the hypanthium, oblong-triangular, apex acute or acuminate, with a terminal glandular trichome; petal 20–25 × 12–15 mm, magenta, oblong-obovate, apex rounded or acuminate, with a terminal setose trichome, ca. 2.5 mm long, margin glandular-ciliate; stamen 10–12; dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament ca. 8 mm long, magenta, pedoconnective 7–7.5 mm long, magenta, ventral appendage ca. 1.5 mm long, yellow, apex obtuse, anther 5–5.5 mm long, yellow, with reddish stains, beak 0.5–0.7 mm long; antepetalous stamen with

filament ca. 6 mm long, magenta, pedoconnective 2–2.5 mm long, magenta, ventral appendage ca. 1 mm long, yellow, apex rounded or bilobed, anther 4–4.5 mm long, yellow, beak ca. 0.5 mm long; ovary ca. 13 × 7 mm, 6-locular, semi-inferior, glabrous; style ca. 13 mm long, yellow. Capsule 6–8 × 6 mm, brownish, globose, dehiscent from the base, columella persistent; seed 0.9–1.3 × 0.6 mm, brown-grayish.

Specimens examined—BRAZIL. Distrito Federal: Brasília, "campo slope immediately east of Lagoa Paranoá", 975 m, 11 December 1965, fl., *H.S. Irwin et al. 11197* (US, online image); Bacia do Rio São Bartolomeu., 24 March 1980, fl., *Heringer et al. 4061* (HUFU, K); Parque Nacional de Brasília, 23 November 2006, fl., *F.B.A. Dias et al.200* (HUFU). Goiás: S.l., s.d., fl., fr., *A.F.M. Glaziou 21310* (K, P); "Guariroba, au Morro do Cubatão", s.d., *A.F.M. Glaziou 21311* (P, R, online image, S); Cavalcante, Reserva Natural Serra do Tombador, 09 February 2014, fl., *A. Fidelis et al. 921* (HUFU).

Microlicia quinquenervis is endemic to Goiás and Distrito Federal, occurring in *cerrado*, *campo rupestre* or near rivers, between 975−1000 m elevation. *Microlicia quinquenervis* is assigned as Critically Endangered (see Martins and Almeda 2017). Collected with flowers in March and December, and fruits in March, August and December.

Microlicia quinquenervis can be recognised in having glabrous branch, leaf blade, hypanthium and sepal, sometimes sparsely covered with glandular trichomes, ovate blade, oblong-triangular sepal, oblong, yellow anther, with reddish stains in the antesepalous stamen, and 6-locular, semi-inferior, and glabrous ovary. *Microlicia quinquenervis* resembles *M. setifolia* in having thick branch, inconspicuous glandular trichomes in the node, sessile, imbricate leaf, ovate or ovate-oblong blade, acute at the apex, with a terminal glandular trichome, sessile flower, subsessile bract, glandular-ciliate

at the margin, campanulate hypanthium, and yellow anther with reddish stains in the antesepalous stamen. *Microlicia setifolia* differs in having spherical reddish glands and glandular trichomes densely covering branch, hypanthium, leaf, and sepal, blade calose at the margin, lilac, obovate petal, and semi-inferior ovary.

Illustration in Martins & Almeda (2017), figures 55 a–g.

35. *Microlicia ramosa* Pilger (1903: 18) (Fig. 8 f–g).

Subshrub or shrub, 0.4–1 m tall, few-branched, branch slender, lateral branch short, xylopodium not observed. Branch, leaf blade, hypanthium, and sepal sparse or densely covered with spherical yellowish glands and setose trichomes, 0.2–1.5 mm long, white or golden. Leaf sessile, ascending, imbricate or not; blade 2.5–10 × 1.5–6 mm, with a variable size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, chartaceous, ovate or ovate-lanceolate, apex acute, with a terminal setose trichome, base cordate or rounded, margin serrate-ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins, sometimes inconspicuous on the adaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium 3–5 × 1.5–2 mm, greenish, frequently with vinaceous stains, oblong-urceolate, bristle crown at the apex absent; sepal 1.5–2 × 1.3–2 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 8–11 × 4–7 mm, magenta, obovate, apex acute or retuse, glabrous, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, ovate or ovate-oblong, polysporangiate; antesepalous stamen with filament 2.5–4.5 mm long, magenta, pedoconnective 2.5–3 mm long, magenta, ventral appendage ca. 1 mm long, yellow, apex

retuse, anther 2–4 mm long, vinaceous, beak 0.5–1 mm long; antepetalous stamen with filament 2.5–4.5 mm long, magenta, pedoconnective ca. 0.5 mm long, yellow, ventral appendage 0.1–0.3 mm long, yellow, apex retuse, anther 2–2.5 mm long, yellow, beak 0.5–1 mm long; ovary 2–3 × 1–1.5 mm, 3-locular, superior, glabrous; style 3.5–7 mm long, magenta. Capsule 3–5 × ca. 3 mm, brown, globose, dehiscent from the apex, columella deciduous; seed 0.5–1 × ca. 0.5 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Brasília, Fazenda Água Limpa, 15°55'35"S, 47°54'21"W, 1050 m, 2 November 2006, bot., fr., *A.G. Amaral et al. 364* (HUFU). Goiás: Alto Paraíso de Goiás, Cabeceira do Rio Gama, s.d., fl., fr., *A.F.M. Glaziou 21221* (K), *21225* (K), *21226* (K). GO-118, 16 km, à direita da estrada, 1540 m, 24 May 1994, bot., fl., *B.M.T. Walter et al. 2109* (CEN); Chapada dos Veadeiros, 14°09'68.5"S, 47°36'37.0"W, 1115 m, 16 June 1998, bot. fl., fr.; ca. 10 km em direção à Teresina de Goiás, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 22 April 2000, bot., fl., *C. Munhoz et al. 1175* (HUFU, UB); idem, 23 September 2000, bot., fl., *C. Munhoz et al. 1995* (HUEG, HUFU); margin da GO-118, 14°08'12"S, 47°32'17"W, 1150 m, 22 January 2005, fl., *J.Paula-Souza et al. 4430* (ESA, UEC); à direita da rodovia GO-239 sentido vila de São Jorge, ca. 15 km após a rotatória de acesso ao município, 24 April 2012, bot., fl., *A. Campos-Rocha et al. 849* (HPL, HUFU). Cavalcante, Chapada dos Veadeiros National Park, Alto do Cruzeiro, 13°56'38"S, 47°41'46"W, 1320 m, 15 April 2009, bot., fl., *G. Martinelli et al. 16440* (HUFU, RB). Cocalzinho de Goiás, Serra dos Pireneus, BR-070, 15°47'0.1"S, 48°52'51.8"W, 1073 m, 24 April 2012, bot., fl., *J.N. Nakajima et al. 5049* (HUEG, HUFU, K, MBM, UB, UEC); BR-070, idem, 15°47'24.2"S, 48°52'53"W, 1095 m, 4 July 2012, fr., *A.F.A. Versiane et al. 214* (HUEG, HUFU, UB); Fazenda Betel, 15°50'36.1"S, 48°46'18"W, 1158 m, 13 December 2012, fr., *A.F.A. Versiane et al. 480*

(HUEG, HUFU, UB); Serra dos Pireneus, ca. 5 km de Cocalzinho, 15°49'33.5"S, 48°45'12"W, 1356 m, 20 May 2013, bot., fl., *A.F.A. Versiane et al. 559* (HUFU, K, MBM, UEC); idem, ca. 11 km de Cocalzinho, 15°47'24"S, 48°52'50"W, 22 May 2013, bot., fl., *A.F.A. Versiane et al. 624* (HUFU, RB). Pirenópolis, alto da Serra dos Pireneus, 28 April 1996, bot., fl., *M.B. Alcantara 154* (HUEG, HUFU); Serra dos Pireneus, Fazenda Solar dos Pireneus, 1100-1200 m, 14 February 2000, bot., *G. Hatschbach et al. 70282* (HUFU, MBM).

Microlicia ramosa is endemic to Goiás and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020), occurring in *campo rupestre*, *cerrado*, *campo sujo*, in wet or dry area. With an extent of occurrence (EOO = 36 km²) and area of occupancy (AOO = 15 km²) restricted, *M. ramosa* is assigned as Vulnerable [(VU) D2]. Despite having protected populations in two conservation units, Chapada dos Veadeiros National Park and Fazenda Água Limpa, the other populations occur in unprotected areas in Serra dos Pireneus. Situated in the midwestern portion of Goiás, the Serra dos Pireneus region covers 40,000 ha, of which only 2,833 ha are protected by the Serra dos Pireneus State Park (Versiane *et al.* 2016; SEMAD 2020). In this area, populations of *M. ramosa* occur mainly outside ca. 7% of the protected area, and where arson fires are frequent. Collected with flowers from May to June and September, and fruits in June, July and December.

Microlicia ramosa can be distinguished by the typical branching pattern, with short lateral branches growing up from the main branch (Versiane *et al.* 2016), and the setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, oblong-urceolate hypanthium, and triangular sepal, both with vinaceous stains. *Microlicia ramosa* shows an expressive variation regarding the distribution of indumentum in the whole plant, the size of the leaf blade, and its arrangement in the branches. *Microlicia*

ramosa resembles *M. vestita* in having branch, leaf blade, hypanthium, and sepal covered with setose trichomes and spherical glands, ovate or ovate-lanceolate leaf blade, acute at the apex, with a terminal setose trichome, serrate-ciliate margin, triangular sepal, and magenta petal. However, *M. vestita* differs in having concolorous leaf blade, with 1 pair of veins, campanulate hypanthium, and tetrasporangiate anther.

Illustrations and image in Versiane *et al.* (2016), figures 2 I, 3 k–l, 4 g; Diniz & Silva (2020), figures 16 l–z, 18 a–e.

36. *Microlicia rubra* Ferreira-Alves & R.Romero (2020: 294).

Shrub or dwarf tree, 0.6–2 m alt, few-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal covered densely with spherical translucent glands, glutinous. Leaf sessile, slightly ascending, not imbricate; blade 38–75 × 10–23 mm, with the same size in main and lateral branch, concolorous, greenish or discolorous, adaxial surface greenish, abaxial surface brownish, young leaf greenish, becoming grayish with age, chartaceous, elliptic or lanceolate, apex acuminate, glabrous, base cuneate, margin entire, glandular, flat, not calose, 3–4 pairs of basal acrodromous or suprabasal veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 7–9 merous, dichasia reduced to a single flower, terminal or lateral, sessile or pedicellate, ca. 0.7 mm long; bract 4.3–6.4 × 2–3.6 mm, petiole ca. 1 mm; hypanthium ca. 6.5 × 3.5 mm, greenish, campanulate or slightly urceolate, bristle crown at the apex absent; sepal 7–8.5 × ca. 1.5 mm, greenish, linear, apex acuminate, glabrous; petal 16–18 × 5–6 mm, reddish, obovate, apex acuminate, glabrous, margin entire, glabrous; stamen 14–18, subisomorphic, anther concolorous, yellow, oblong,

tetrasporangiate; filament 6–7.8 mm long, reddish, pedoconnective 1.3–1.7 mm long, reddish, ventral appendage 0.1–0.3 mm long, yellow, apex rounded, anther 4–4.5 mm long, beak 0.3–0.5 mm compr; ovary ca. 5 × 3 mm, 4-locular, superior, glabrous; style ca. 12 mm long, reddish. Capsule ca. 6.2 × 8.7 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed. 1.5–1.8 × 0.6–0.8 mm, brownish.

Specimens examined—BRAZIL. Goiás: Cavalcante, Reserva Natural Serra do Tombador, Trilha da Campina, 9 February 2014 fl., *A. Fidelis et al. 928* (HUFU, UEC); GO 241, from Minaçu to Cavalcante; 865 m, 6 March 2017 fl., fr., *L.M. Borges et al. 1129* (CEN, HUFU, SPSC).

Microlicia rubra is endemic to Serra do Tombador, Goiás, occurring in *campo sujo* and *cerrado*, in clayey soil, at ca. 865 m elevation (Ferreira-Alves & Romero 2020). It is assessed as Critically Endangered (CR) (see Ferreira-Alves & Romero 2020). Collected with flowers in February and March, and fruits in March.

Microlicia rubra can be easily distinguished from the other *Microlicia* species by the reddish petal, filament, pedoconnective, and style, and the glutinous or vernicose aspect of the branch, leaf blade, hypanthium and sepal, conferred by the spherical glands under crypts (Ferreira-Alves & Romero 2020). *Microlicia rubra* resembles *M. stenodonoides* D.O. Diniz-Neres & M.J. Silva in having thick branch, spherical glands covering branch, leaf blade, hypanthium, and sepal, sessile leaf, yellow and oblong anther, and 4-locular ovary. However, *M. stenodonoides* differs in having strongly imbricate leaf, obovate-oblong blade, rounded at the apex, glabrous at the margin, 5–6-merous flower, oblong hypanthium, triangular sepal, magenta petal, yellow at the base, dimorphic stamen with yellow filament and pedoconnective, and oblong capsule.

Images in Ferreira-Alves & Romero (2020), figures 1 and 2.

37. *Microlicia selaginea* Naudin (1845: 188) = *Chaetostoma selagineum* (Naud.) C.Koschn. & A.B.Martins (1999: 202).

Subshrub, 0.3–0.5(1) m tall, much-branched, branch slender, xylopodium not observed. Branch, adaxial surface of the leaf blade, sepal and hypanthium glabrous, abaxial surface of the leaf blade and sepal sparsely covered with setose trichomes, ca. 0.4 mm long, white. Leaf sessile, ascending, imbricate; blade 4–7 × ca. 1.5 mm, with the same size in main and lateral branch, concolorous, greenish, coriaceous, triangular-lanceolate, apex acuminate, glabrous, base attenuate, semi-amplexicaul, margin entire or serrate-ciliate, flat, not calose, 2–3 pairs of basal acrodromous veins, calose, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long; bract absent; hypanthium 2.5–3.5 × ca. 2 mm, yellow-greenish, campanulate, with a attenuate base, bristle crown at the apex ca. 1 mm long, white; sepal 3–4 × 1–1.5 mm, greenish or yellow-greenish, triangular-lanceolate, apex apiculate, apiculum ca. 0.5 mm long; petal 6–9 × 4–6 mm, purple, yellow, pinkish, orange-colored or white, obovate, apex apiculate, apiculum ca. 0.2 mm long, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther ovate-oblong, tetrasporangiate; antesepalous stamen with filament 3–5 mm long, pedoconnective 2–4 mm long, ventral appendage 0.5–1 mm long, apex retuse, anther 2–2.5 mm long, beak ca. 0.3 mm long; antepetalous stamen with filament 3–4 mm long, pedoconnective ca. 1 mm long, innapendiculate, anther ca. 2 mm long, beak ca. 0.3 mm long; ovary 2–3 × ca. 2 mm, 3-locular, superior, glabrous; style 6–7 mm long, yellow. Capsule ca. 3.5 × 2.5 mm, brownish, oblong, dehiscent from the apex, columella

deciduous; seed ca. 0.6 × 0.6 mm, brownish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, 17 June 1998, fl., *R. Romero et al. 5564* (HUFU); 4 January 2003, fl., *J.F.B. Pastore 222* (CEN, online image, HUFU); 16 May 2015, fl., *J.E.Q. Faria et al. 4523* (HUFU). Cristalina, 11 October 1988, fl., *M.G.L. Wanderley 1290* (HUFU); 15 June 1998, fl., *R. Romero et al. 5483* (HUFU); *F. Almeda et al. 5504* (HUFU); 10 September 1998, fl., *V.C. Souza et al., 21399, 21446* (HUFU); 10 June 2002, fl., *M.L. Fonseca et al. 3403* (HUFU); 13 June 2004, fl., *J.F. Pastore et al. 1019* (HUFU); 17 July 2007, fl., fr., *R.C. Forzza et al. 4479* (HUEFS, online image); 16 July 2013, fl., *A.L.F. Oliveira et al. 22* (HUFU); 17 July 2013, fl., fr., *A.L.F. Oliveira et al. 26* (HUFU); 18 July 2013, fl., fr., *A.L.F. Oliveira et al. 36* (HUFU). Ipameri, 14 March 1997, fl., *T.B. Cavalcanti et al. 2168* (HUFU).

According to Koschnitzke & Martins (2006), *M. selaginea* is endemic to Serra dos Cristais. However, the collections carried out in Alto Paraíso de Goiás (Chapada dos Veadeiros) and Ipameri are recognised as *M. selaginea*, expanding its geographic distribution. *Microlicia selaginea* occurs in *campo limpo*, *campo rupestre*, *campo sujo* and *cerrado*, wet or dry. With an area of occupancy (AOO = 84 km²) and extent of occurrence inside only one protected area, *M. selaginea* is assigned as Endangered [(EN) B2ab]. Collected with flowers in March, June, July, September and October, and fruits in July.

Microlicia selaginea can be recognised by the pedicellate flower, and hypanthium attenuate at the base, standing out the flower from the leaves imbrication. The long attenuate base of the hypanthium in the fruit gives a pyre-like appearance to the hypanthium-fruit set (Koschnitzke & Martins 2006; Silva *et al.* 2020). The variation in the petal color is also a noteworthy feature in *M. selaginea*. *Microlicia selaginea*

resembles *M. stenocladon* (Naudin) Koschn. & A.B.Martins, endemic to Goiás and Distrito Federal (Silva *et al.* 2020), in having ascending and imbricate leaf, coriaceous and triangular-lanceolate blade, acuminate at the apex, semi-amplexicaul at the base, 2–3 pairs of callose veins, sessile flower, hypanthium with bristle crown at the apex, sepal apiculate at the apex, dimorphic and concolorous (yellow) stamen with innapendiculate pedoconnective, and tetrasporangiate anther. However, *M. stenocladon* distinguish by the branch, adaxial surface of the leaf blade, and hypanthium covered with setose trichomes, leaf blade callose at the margin, triangular sepal, glabrous on both surfaces, callose, and striate hypanthium, striae covered by appressed-setose trichomes, petal acuminate at the apex, oblong anther, and 5-locular ovary.

Illustration in Koschnitzke & Martins (2006), figures 2 k, 3 a–b, as *Chaetostoma selagineum.*

38. *Microlicia serpylifolia* D.Don (1823: 302) (Fig. 8 h).

Subshrub or shrub, 0.4–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium, and sepal sparsely covered with spherical translucent glands and setose trichomes, 0.05–0.1 mm long, white or cream. Leaf sessile or petiole up to 0.3 mm long, horizontal or slightly ascending, imbricate or not; blade 2–10 × 1–6 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, elliptic, apex obtuse or rounded, with a terminal setose trichome, base rounded, margin serrate-ciliate, flat, not calose, 1–2 pairs of basal acrodromous veins, frequently inconspicuous on the adaxial surface, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 1–3 mm long, bract

absent; hypanthium 2–3 × 1–1.5 mm, greenish, frequently with reddish stains, oblong or oblong-campanulate, bristle crown at the apex absent; sepal 1–1.5 × 0.5–1 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 4–10 × 3–6 mm, pinkish, oblong or obovate, apex acuminate or rounded, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament 2–3 mm long, magenta, sometimes white, pedoconnective 2.5–3 mm long, magenta, sometimes white, ventral appendage 0.5–1.5 mm long, yellow, apex retuse or slightly bilobed, anther 1.5–2 mm long, magenta, beak ca. 0.5 mm long; antepetalous stamen with filament 1.5–3 mm long, magenta, pedoconnective 0.5–1 mm long, white or yellow, ventral appendage 0.2–0.5 mm long, yellow, apex retuse, anther 1.2–1.7 mm long, yellow, beak 0.2–0.5 mm long; ovary 1.5–2 × ca. 1.5 mm, 3-locular, superior, glabrous; style 5–6 mm long, magenta. Capsule ca. 3 × 2 mm, brown, globose, dehiscent from the apex, columella deciduous; seed ca. 0.5 × 0.3 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Brasília, Fazenda Água Limpa, ca. de 18 km de Vargem Bonita, 28 April 1976, bot., fl., *J.A. Ratter et al. 2955* (UB, UEC); Cachoeira da Forquilha, Ribeirão Sobradinho, 15°44'S, 47°44'W, 990 m, 5 April 1983, bot., fl., fr., *J.H. Kirkbride 5180* (MBM); Parque Nacional de Brasília, Alto do Milho Cozido, 15°53'0"S, 47°56'0"W, 12 December 1990, bot., fl., fr., *P.C.M. Ramos 398* (HUFU, UB); Estrada Sobradinho-Brazlândia, 15°40'00"S, 48°06'00"W, 1 April 1992, fr., *R.F. Vieira et al. 1248* (CEN, HUFU); APA Gama and Cabeça de Veado, 15°53'51.8"S, 47°56'39.8"W, 28 Aug 2002, bot., fl., fr., *R.C. Mendonça et al. 4848* (HUFU, IBGE); APA Gama and Cabeça de Veado, 15°55'53.6"S, 47°54'57.3"W, 985 m, 21 May 2003, fl. fr., *M.L. Fonseca et al. 4815* (HUFU, IBGE); Poço do Lourival, Fazenda

Água Limpa, 23 September 2004, fl., fr., *L.H. Soares and Silva et al. s.n* (HUFU, UB); Parque Nacional de Brasília, 15°44'15"S, 47°56'49"W, 29 June 2006, fl., fr., *C.A. Faria et al. 101* (CEN, HUFU); idem, 15°38'14"S, 47°59'33"W, 6 July 2006, bot., fl., fr., *C.A. Faria et al. 133* (CEN, HUFU); idem, entrada pelo portão 3, 27 July 2006, fl., fr., *C.A. Faria et al. 208* (CEN, HUFU); idem, entrada entre o portão 7 and 8, 15°44'31"S, 47°58'29"W, 1 March 2007, fl., fr., *C.A. Faria et al. 275* (CEN, HUFU); Jardim Botânico de Brasília, 15°52'21"S, 47°50'50"W, 11 April 2008, bot., fl., *C.B.R. Munhoz et al. 3841* (HUFU, IBGE); idem, 15°52'21"S, 47°50'50"W, 13 June 2008, bot., fl., fr., *C.B.R. Munhoz et al. 4217* (HUFU, IBGE); idem, 15°52'21"S, 47°50'50"W, 9 July 2008, bot., fl., fr., *C.B.R. Munhoz et al. 4520* (HUFU, IBGE); idem, 15°52'21"S, 47°50'50"W, 9 August 2008, bot., fl., fr., *C.B.R. Munhoz et al. 4597* (HUFU, IBGE); Jardim Botânico de Brasília, 15°53'14"S, 47°50'25"W, 9 November 2009, fr., *J.B. Bringel et al. 489* (HEPH, HUFU); Fazenda Água Limpa, 15°58'12"S, 47°56'13"W, 23 May 2013, bot., fl., fr., *R.C. Oliveira 2914* (HUFU, UB); idem, 15°57'S, 47°54'W, 1070 m, s.d.col., fr., *J.N. Peters et al. s.n.* (HUFU 60787, UB); Parque Nacional de Brasília, 15°46'31"S, 47°58'36"W, s.d., bot., fl., fr., *C.B.R Munhoz et al. 7802* (HUFU, UB). Goiás: Cocalzinho de Goiás, Serra dos Pireneus, 15°43'04.1"S, 48°57'49.7"W, 3 October 2012, fr., *A.F.A. Versiane et al. 283* (HUFU); Parque Estadual dos Pireneus, 15°49'18"S, 48°23'50"W, 19 February 2013, bot., fl., *A.F.A. Versiane et al. 491* (BHCB, HUFU, K); idem, estrada para fazenda Maria dos Anjos, 15°45'38"S, 48°55'08"W, 22 May 2013, bot., fl., *A.F.A. Versiane et al. 607* (HUFU). Cristalina, RPPN Linda Serra dos Topázios, 18 July 2013, bot., fl., *A.L.F. Oliveira et al. 43* (HUFU). Pirenópolis, Parque Estadual dos Pireneus, 15°48'33"S, 48°51'51"W, 1250 m, 11 December 2005, fr., *M. Aparecida da Silva et al. 5836* (CEN, HUFU).

Microlicia serpyllifolia is widely distributed in Minas Gerais, Goiás, Bahia, and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020). In Goiás state and Distrito Federal occurs in *cerrado rupestre* and *campo sujo*, in wet or dry area. Due to bewidely distributed, it is here assigned as Least Concern (LC). Collected with flowers in February, May and July, and fruits in October and December.

Microlicia serpyllifolia can be recognised by the short setose trichomes (0.05–0.1 mm long), covering branch, leaf blade, hypanthium, and sepal, which gives a velutineous aspect to the whole plant. It also has a sessile leaf to short-petiolate (up to 0.3 mm long), horizontal, elliptic leaf blade, ciliate margin, long-pedicellate flower (1–3 mm long), oblong or oblong-campanulate hypanthium, frequently reddish, bicolorous oblong, and tetrasporangiate anther.

Illustrations in Martins *et al.* (2009), image 12, figures c–d; Diniz & Silva (2020), figures 19 l–x; Versiane *et al.* (2016), figure 2 j, 3 m–n, 4 d.

39. *Microlicia setifolia* (A.B.Martins & Almeda 2017: 164) Versiane & R.Romero (2021: 22) = *Lavoisiera setosa.*

Subshrub, 0.7–1 m tall, much-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical reddish glands and glandular trichomes, adaxial surface of leaf blade glabrous, glandular trichomes inconspicuous in the node. Leaf sessile, ascending, imbricate, with the same size in main and lateral branch; blade 5–9 × 5–6 mm, discolorous, abaxial surface green-yellowish, adaxial surface green-grayish, chartaceous or subcoriaceous, ovate or ovate-oblong, apex acute, with a terminal glandular trichome, base rounded, amplexicaul, margin entire,

glandular-ciliate, ca. 1 mm, flat or slightly revolute, calose, 2–3(–4) pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, calose. Flower 6-merous, solitary, terminal or lateral; sessile; bract 6–7 × 6–7 mm, subsessile; hypanthium 5–6 × 6–7 mm, greenish, campanulate, bristle crown at the apex absent; sepal 4–5 × 2–3 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal glandular trichome; petal ca. 20 × 15 mm, lilac, obovate, apex rounded or truncate, margin entire, glabrous, sometimes sparsely glandular-ciliate; stamen 12; dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament 8–9 mm long, magenta, pedoconnective 7–8 mm long, magenta, ventral appendage 1.5–2 mm long, yellow, apex acute or retuse, anther 4–4.5 mm long, yellow, with reddish stains, beak ca. 0.7 mm long; antepetalous stamen with filament 6–7 mm long, magenta, pedoconnective 6–7 mm long, magenta, ventral appendage 1–1.5 mm long, yellow, apex rounded, anther 3–4 mm long, yellow, beak ca. 0.6 mm long; ovary 9–10 × ca. 5 mm, 6-locular, semi-inferior, glabrous; style 9–10 mm long, magenta. Capsule and seed not observed.

Specimens examined—BRAZIL. Goiás: Niquelândia, Macedo, cerrado na curva da mina, 1095 m, 14°21'36"S, 48°24'13"W, 21 November 1997, fl., *Azevedo et al. 1184* (UEC, online image); 22 November 1997, fl., *F.C.A. Oliveira et al. 1000* (HEPH, online image, NY, online image, SP, online image).

So far, *M. setifolia* is known only in a region of intensive nickel extraction, as well as *M. macedoi*, in cerrado close to the municipality of Niquelândia (Martins & Almeda 2017). *Microlicia setifolia* is assigned as Critically Endangered (CR) (see Martins & Almeda 2017). Collected with flowers in November.

Microlicia setifolia can be recognised in having thick branch, spherical reddish glands

and glandular trichomes covering branch, leaf blade, hypanthium and sepal, adaxial surface of the leaf blade glabrous, discolorous (green-yellowish abaxial surface, green-grayish adaxial surface), amplexicaul at the base, and calose and glandular-ciliate at the margin. In addition, it has sessile, 6-merous flower, and yellow anther, with reddish stains only in the antesepalous stamen. *Microlicia setifolia* is similar to *M. quinquenervis* as previously discussed in the comments of this species.

Illustration in Martins & Almeda (2017), figures 61 a–i.

40. *Microlicia speciosa* Versiane & R.Romero (2021: 22) = *Trembleya elegans*.

Subshrub, ca. 1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with spherical yellowish glands and setose trichomes, ca. 0.5 mm long, cream, sometimes glabrescent. Leaf sessile or petiole up to 1 mm long, ascending or slightly horizontal, imbricate; blade 7–10 × 1–3 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, elliptic or elliptic-lanceolate, apex acute, with a terminal setose trichome, base attenuate, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, thyrsus in dichasia or reduced to a single flower, pedicel ca. 1 mm long; bract absent, bracteole 3–4 × ca. 1 mm, deciduous; hypanthium ca. 3.5 × 2.5 mm, greenish, campanulate, bristle crown at the apex absent; sepal ca. 3.5 × 1.5 mm, with the same color of the hypanthium, subulate, apex apiculate, with a terminal setose trichome; petal ca. 10 × 7 mm, pinkish, obovate-oblong, apex truncate, margin entire, ciliate; stamen 10, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with

filament 4–5 mm long, white, pedoconnective 3–4 mm long, white, ventral appendage ca. 1 mm long, yellow, apex slightly bilobed or retuse, anther ca. 2 mm long, reddish, beak ca. 0.5 mm long; antepetalous stamen with filament ca. 4 mm long, white, pedoconnective ca. 1 mm long, white, ventral appendage inconspicuous, ca. 0.1 mm long mm long, yellow, anther ca. 2 mm long, yellow, beak ca. 0.3 mm long; ovary ca. 2.5 × 2 mm, 4-locular, semi-inferior, glabrous; style ca. 5 mm long, pinkish. Capsule ca. 2 × 2 mm, brownish, oblong-rounded, dehiscent from the apex, columella deciduous; seed ca. 0.8 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Distrito Federal: Brasília, 18 Aug 2006, fl., fr., *C.A. Faria et al. 240* (CEN, online image, HUFU). Goiás: s.d., fl., *A.F.M. Glaziou 21297* (K, online image).

Microlicia speciosa occurs in Minas Gerais, Goiás, and Distrito Federal (Pacifico & Fidanza 2020), occurring in wet area (*brejo*). Due to wide distribution, *M. speciosa* is assessed as Least Concern (LC). Collected with flowers and fruits in August.

Microlicia speciosa can be recognised in having branch, leaf blade, hypanthium and sepal covered with spherical glands and setose trichomes, imbricate leaf, blade serrate-ciliate at the margin, with 1 pair of basal acrodromous veins, campanulate hypanthium, subulate sepal and bicolorous anther, reddish in the antesepalous stamen, yellow in the antepetalous. *Microlicia speciosa* resembles *M. euphorbioides* in having slender branch, setose trichomes and spherical glands covering branch, leaf, hypanthium and sepal, imbricate leaf, elliptic or elliptic-lanceolate blade, acute at the apex, with a terminal setose trichome, flat, serrate-ciliate, not calose at the margin, 5-merous flower, and dimorphic stamen. *Microlicia euphorbioides* differs in having discolorous leaf (darker adaxial surface), triangular sepal, white petal, acute at the apex, glabrous at the margin, yellow

stamen, with ovate or ovate-oblong anther, polysporangiate, and 3-locular ovary.

Illustrations in Cogniaux (1883), figures 36 I; Faria (2008), figures 9 y–z, a1–a2, as *Lavoisiera elegans.*

41. *Microlicia stenocladon* Naudin (1845: 188) = *Chaetostoma stenocladon* (Naud.) Koschn. & A.B.Martins (1999: 202).

Subshrub, 0.3–0.5 m tall, much-branched, branch slender, xylopodium sometimes present. Branch, abaxial surface of the leaf blade and sepal glabrous, adaxial surface of the leaf blade and hypanthium sparsely covered with appressed-setose trichomes, ca. 0.5 mm long, cream. Leaf sessile, ascending, imbricate, with the same size in main and lateral branch; blade 3–7 × 0.5–1.5 mm, concolorous, greenish, coriaceous, triangular-lanceolate, apex acuminate, with a terminal setose trichome or glabrous, base attenuate, semi-amplexicaul, margin entire or serrate-ciliate, flat, calose, 2–3 pairs of basal acrodromous veins, conspicuous on both surfaces, sometimes inconspicuous, main vein conspicuous on both surfaces, calose. Flower 5-merous, solitary, terminal or lateral, sessile; bract absent; hypanthium 3–4 × 2–3 mm, yellow-greenish, campanulate or oblong-campanulate, bristle crown at the apex 3–4 mm long, white, striate, striae covered with appressed trichomes; sepal 3–4 × 0.5–1.5 mm, base pinkish, apex yellow-greenish, triangular, apex apiculate, apiculum ca. 1 mm long; petal 7.5–9 × 3–5 mm, white or pinkish, obovate, apex acuminate, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, tetrasporangiate; antesepalous stamen with filament 4.5–5.5 mm long, pedoconnective 4–5 mm long, ventral appendage 1–2 mm long, apex retuse, anther 2.5 mm long, beak ca. 0.3 mm long; antepetalous stamen with filament 4–

5.5 mm long, pedoconnective 1–2 mm long, innapendiculate, anther ca. 2 mm long, beak ca. 0.3 mm long; ovary 2.5–4 × ca. 2 mm, 5-locular, superior; glabrous; style 5–7 mm long, yellow. Capsule 3–5 × ca. 2.5 mm, brownish, oblong, dehiscent from the apex, columella deciduous; seed ca. 0.7 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Distrito Federal: Brasília, 28 November 2001, fl., *A.A. Santos et al. 1006* (CEN, online image); Parque Nacional de Brasília, 1 March 2007, fl., *C.A. Faria et al. 274* (HUFU); Goiás: Cocalzinho de Goiás, Serra dos Pireneus, 23 April 2012, fl., *A.F.A. Versiane et al. 128* (HUFU, MBM, online image); 24 April 2012, fl., *R.A. Pacheco et al. 740* (HUFU); 26 April 2012, fl., *R.A. Pacheco et al. 785* (HUFU); 3 July 2012, fr., *A.F.A. Versiane 196* (HUFU); 4 October 2012, fl., *A.F.A. Versiane et al. 321* (HUFU); 19 February 2013, fl., *A.F.A. Versiane et al. 490* (HUFU); 21 February 2013, fl., *R.A. Pacheco et al. 1007* (HUFU). Pirenópolis, Serra dos Pireneus, 20 March 1996, fl., *M.B. Alcantara et al. 133* (HUFU).

Microlicia stenocladon is endemic to Serra dos Pireneus and Distrito Federal (Koschnitzke & Martins 2006; Silva *et al.* 2020), occurring in *cerrado rupestre*, *campo limpo*, *campo sujo*, and *campo rupestre* (Versiane *et al.* 2016). With an area of occupancy (AOO = 80 km²) and extent of occurrence (EOO = 2.5 km²) restricted, it is assigned as Endangered (EN). Collected with flowers from October to May, and fruits from April to December.

Microlicia stenocladon can be recognised in having striate hypanthium, with short, setose trichomes, covering densely striae (Koschnitzke & Martins 2006; Silva *et al.* 2020). *Microlicia stenocladon* also differs in having sepal pinkish at the base, yellow-greenish at the apex, dimorphic stamen with yellow, oblong anther, and innapendiculate pedoconnective in the antepatalous stamen. *Microlicia stenocladon* is similar to *M.*

selaginea as previously discussed in the comments of this species.

Illustration in Koschnitzke & Martins (2006), figure 2 k, noted as *Chaetostoma stenocladon.*

42. *Microlicia stenodonoides* D.O. Diniz-Neres & M.J. Silva (2017: 554).

Dwarf tree, 0.3–2 m tall, much-branched, branch thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical yellowish glands. Leaf sessile, ascending, imbricate, leaves concentrated only at the apex of the branch; blade 20–45 × 5–18 mm, concolorous, greenish, chartaceous, obovate-oblong, apex rounded, glabrous, base attenuate, margin entire, glabrous, flat, not calose, 1–2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5–6-merous, solitary, terminal or lateral, sessile, bract absent; hypanthium 7–9 × 5–7 mm, greenish, oblong, bristle crown at the apex absent; sepal 6.5–7.6 × 1.5–2.7 mm, with the same color of the hypanthium, triangular, apex acute, glabrous; petal 7–9 × 5–7 mm, magenta, base yellow, obovate or elliptic-obovate, apex acuminate, margin entire, glabrous; stamen 10–12, dimorphic, concolorous, yellow, anther oblong, polysporangiate; antesepalous stamen with filament 6–7 mm long, pedoconnective 6.5–8 mm long, ventral appendage 1–2 mm long, apex bilobed, anther 3.4–4.8 mm long, beak 0.5 mm long; antepetalous stamen with filament 5.5–6.5 mm long, pedoconnective 1.2–2 mm long, ventral appendage 0.4–0.7 mm long, apex bilobed, anther 3.8–4.9 mm long, beak 0.5 mm long; ovary 4–5 × 2.7–3.2 mm, 4-locular, superior, glabrous; style 19–22 mm long, pinkish. Capsule 5–10 × 4.8–5.2 mm, brown, oblong, dehiscent from the apex, columella deciduous; seed 1–1.5 × 1–1.4 mm, brownish.

Specimens examined—BRAZIL. Goiás: Chapada dos Veadeiros, s.d., *A.F.M. Glaziou 21303* (K, RB, online image, S, online image); Serra da Baliza, September 1892, *E.G.H. Ule 766* (HBG, online image, R, online image); trilha p/ a área do Mulungu, 14º'60'52"S, 47°38'04.6"W, 1246 m, 24 April 2013, fr., *R. F. Vieira et al. 2561* (CEN, online image, HUEFS, online image); Morro da Baleia, 14°06'52"S, 47°38'41"W, 1258 m elev., 20 November 2013 fr., *R.B.N. Alves 83* (CEN, online image); 14°06'52.2"S, 47°38'41.6"W, 1257 m, 4 April 2015, fr., *D.O. Diniz-Neres et al. 418, 419, 420* (UEC, online image). 1272 m, 4 February 2016, fl., fr., *D.O. Diniz-Neres & R.N. Ribeiro 795* (HUFU).

Microlicia stenodonoides is endemic to Chapada dos Veadeiros, occurring in *campo limpo* and *campo rupestre*, in clayey soil, between 1240 and 1258 m elevation. *Microlicia stenodonoides* is assessed as Critically Endangered (CR) (see Neres & Silva 2017a). Collected with flowers in February and May, and fruits in February, April, May, June, July, November, and December.

Microlicia stenodonoides is easily distinguished from other species of *Microlicia* by the dwarf tree habit, thick branch, strongly imbricate leaf, concentrated only at the apex of the branch. In addition, it can be recognised in having sessile and 5–6-merous flower, oblong hypanthium, magenta petal, yellow at the base, yellow stamen with oblong, tetrasporangiate anther. *Microlicia stenodonoides* is similar to *M. rubra* as previously discussed in the comments of this species.

Illustration and images in Diniz-Neres & Silva (2017a), figures 1 and 3.

43. *Microlicia suberosa* Versiane & R.Romero (2021: 23) = *Stenodon suberosus* (Fig. 8 i).

Subshrub or shrub, 0.3–2 m tall, few-branched, branch slender or thick, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical translucent or yellowish glands, setose and glandular trichomes, 0.2–1 mm long, greenish, cream or sometimes pinkish. Leaf sessile, horizontal or slightly ascending, not imbricate; blade 15–112 × 3–40 mm, with the same size in main and lateral branch, concolorous, greenish, sometimes whitish or brownish; chartaceous, frequently lanceolate, sometimes oblanceolate, elliptic or oblong-lanceolate, apex acuminate, sometimes with a terminal setose trichome, base cuneate, rarely rounded, margin entire, ciliate or serrate-ciliate, flat, not calose, 1–4 pairs of acrodromal or suprabasal basal veins, frequently cream on both surfaces, calose only on the abaxial surface, frequently with setose trichomes on the main vein, conspicuous on both surfaces, calose. Flower 5–8-merous, solitary or in dichasia, reduced to a single flower, terminal or lateral, sessile or pedicel 1–9 mm long; bract 2.5–5.2 × 0.6–2.2 mm, sessile; hypanthium 3.3–8.5 × 2.5–6 mm, greenish or cream-greenish, campanulate, oblong or sometimes slightly urceolate, bristle crown at the apex absent; sepal 3.5–13 × 1–3 mm, greenish, rarely pinkish, linear, linear-lanceolate, triangular-lanceolate or rarely oblong, apex acuminate, sometimes with a terminal setose trichome; petal 12–18 × 3–9 mm, magenta or pinkish, obovate or oblong, apex acuminate, sometimes rounded or truncate, margin entire, glabrous; stamen 10–16, subisomorphic, anther concolorous, yellow, oblong, sometimes ovate-oblong, tetrasporangiate; filament 3–7.5 mm long, pinkish, pedoconnective 0.6–2.2 mm long, pinkish, ventral appendage 0.2–1 mm long, yellow, rarely pinkish, apex bilobed, anther 3.5–6.6 mm long, beak 0.3–1.7 mm long; ovary 4–4.5 × 3–4 mm, 4–5-locular, superior, glabrous; style 8.5–16.5 mm long, pinkish. Capsule 3.3–6.5 × 2.8–5.7 mm, brownish, globose, dehiscent from the

apex, columella deciduous; seed 1–1.6 × 0.3–0.6 mm, brown.

Specimens examined—BRAZIL. Distrito Federal: Fazenda Sucupira, 2 May 2007, fl., *C.G. Fontes 186* (CEN, online image); 18 April 2007, fl., *G.D. Vale 421* (CEN, online image); Granja do Ipê, 20 May 2008, fl., *R.C. Martins et al. 922* (HUFU); Goiás: s.d., fl., fr., *W.J. Burchell 7655* (K); 3 May 1895, fl., *A.F.M. Glaziou 21350* (P, online image, K, online image). Alto Paraíso de Goiás, Chapada dos Veadeiros, 29 April 1956, fl., *E.Y. Dawson 14718* (NY, online image); 23 February 1991, fl., *B.A.S. Pereira 1522* (US, online image); 17 June 1998, fl., *F. Almeda et al. 7861* (HUFU); 3 June 1999, fl., *R. Mello-Silva et al. 1661* (UB, CEN); 20 November 2013, fr., *R.B.N. Alves et al. 78* (HUFU, CEN); 6 April 2015, fl., *D.O. Diniz et al. 413* (HUFU); 20 April 2015, fl., *D.O. Diniz et al. 201* (HUFU); 20 April 2015, fl., *D.O. Diniz et al. 202* (HUFU); 20 April 2015, fl., *D.O. Diniz et al. 206* (HUFU); 3 May 2015. fl., *D.O. Diniz et al. 285* (HUFU); 6 June 2015, fl., *D.O. Diniz et al. 424* (HUFU); 3 July 2015, fl., *D.O. Diniz et al. 443* (HUFU); 3 July 2015, fl., *D.O. Diniz et al. 446* (HUFU); 5 June 2015, fl., fr., *D.O. Diniz et al. 374* (HUFU); 6 June 2015, fl., *D.O. Diniz et al. 417* (HUFU); 3 July 2015, fl., fr., *D.O. Diniz et al. 445* (HUFU); 5 December 2018, fr., *R.F. Alves et al. 9* (HUFU). Campo Alegre, 2 April 2008, fl., *A.A. Arantes et al. 914* (HUFU). Cavalcante, 8 November 2000, fr., *B.M.T. Walter et al. 4568* (CEN); 18 April 2002, fl., *G. Pereira-Silva et al. 6420* (HUFU); 21 May 2002, fl., *G. Pereira-Silva et al. 6458* (HUFU); 3 February 2004, fl., *J.F.B. Pastore et al. 808* (HUFU); 13 April 2014, fl., *R.C. Mendonça et al. 5523* (HUFU); Serra do Tombador, 6 March 2017, fl., *L.M. Borges 1129* (CEN, online image); 4 December 2018, *R.F. Alves et al. 1* (HUFU); 4 December 2018, *R.F. Alves et al. 6* (HUFU). Cocalzinho de Goiás, 26 April 2012, fl., *J.N. Nakajima et al. 5065* (HUFU, RB); 4 July 2012, fl., *A.F.A. Versiane et al. 227* (HUFU); 4 October 2012, fl., fr., *A.F.A. Versiane et al. 333*

(HUFU); 23 May 2013, fl., *R.A. Pacheco et al. 1054* (UB, HUFU); 23 May 2013, fl., *R.A. Pacheco et al. 1088* (HUFU); 16 November 2014, fl., *L.C. Honório et al. 37* (HUFU). Colinas do Sul, 5 December 2018, fl., fr., *R.F. Alves et al. 10* (HUFU); 6 December 2018, *R.F. Alves et al. 13* (HUFU); 6 December 2018, *R. Romero et al. 8596* (HUFU). Ipameri, Rio Corumbá, 11 December 1976, fl., *G. Hatschbach 38804* (MBM, online image); 9 April 2003, fl., *G. Pereira-Silva et al. 7483* (HUFU). Minaçu, 28 February 2016, fl., *J.C. Fontelas et al. 141* (HUFU). Moquém, 6 December 2018, fr., *K.V.C. Moreira et al. 2* (HUFU); 6 December 2018, fl., fr., *R.F. Alves et al. 12* (HUFU); 6 December 2018, fl., fr., *R. Romero et al. 8595* (HUFU). Niquelândia, 13 April 1992, *B.M.T. Walter et al. 1254* (CEN, UB, HUFU); 6 December 2018, fl., fr., *K.V.C. Moreira et al. 1* (HUFU); 6 December 2018, fl., fr., *R.F. Alves et al. 11* (HUFU); 6 December 2018, fl., fr., *R. Romero et al. 8594* (HUFU).

Microlicia suberosa is endemic to Goiás, and Distrito Federal (Romero & Woodgyer 2015), occurring in *cerrado*, *cerrado rupestre*, *campo rupestre*, *campo limpo*, *campo úmido* and *campo sujo*. With an extent of occurrence (AOO = 224 km²) and area of occupancy (EOO = ca. 52 km²) restricted, *M. suberosa* is assigned as Least Concern (LC). Collected with flowers in all months, and fruits from March to December.

Microlicia suberosa features an expressive polymorphism regarding the thickness branch, shape, color, and size of the leaf blade, shape of hypanthium, sepal, and petal, as well as stamen number which can range from 10 to 16. *Microlicia suberosa* resembles *M. rubra* in having thick branch, sessile and not imbricate leaf, blade acuminate at the apex, cuneate at the base, flat at the margin, subisomorphic stamen, with yellow and tetrasporangiate anther. The latter is distinguished by the absence of setose or glandular trichomes and glutinous aspect conferred by the spherical glands in crypts (Ferreira-Alves

& Romero 2020) that occur in the branch, leaf blade, hypanthium, and sepal. In addition, *M. rubra* has petiolate bract (ca. 1 mm long), reddish petal, filament and pedoconnective, and ventral appendage rounded at the apex. According to Ferreira-Alves (2019), *Stenodon gracilis* (=*Microlicia neogracilis* Versiane & R. Romero in Versiane *et al.* 2021), currently cited to Goiás (Versiane & Gonçalves 2020), should be considered a *M. suberosa* synonym.

Images in Ferreira-Alves (2019), figures 4, 5 and 6.

44. *Microlicia veadeirana* D.O. Diniz-Neres & M.J. Silva (2017: 85).

Subshrub, 0.3–1 m tall, few-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical glands, young branch and hypanthium apex with setose trichomes, ca. 0.1 mm long, white, sparsely distributed. Leaf sessile or petiolate, up to 0.4 mm long; ascending, conduplicate, imbricate; blade 4.5–8 × 1–3.3 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, ovate or ovate-lanceolate, apex acuminate, glabrous, base rounded, entire, glabrous, margin slightly revolute, not calose, lateral veins inconspicuous, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.4–1.5 mm long, bract absent; hypanthium 4.8–7.5 × 2.5–5.5 mm, greenish, with reddish stains, oblong, bristle crown at the apex absent; sepal 2.7–4.2 × 1.3–2.2 mm, with the same color of the hypanthium, triangular, apex acute, glabrous; petal 7.5–10 × 4–6 mm, pinkish, obovate, apex acute, margin entire, glabrous; stamen 10, subisomorphic, anther concolorous, yellow, oblong, tetrasporangiate; antesepalous stamen with filament 4–5.8 mm long, magenta, base white, pedoconnective 1.4–2.5 mm long, magenta, ventral

appendage ca. 0.2 mm long, magenta, apex rounded, anther 4–6 mm long, beak 0.2–0.5 mm long; antepetalous stamen with filament 3.5–5 mm long, magenta, pedoconnective 0.5–1.5 mm long, magenta, ventral appendage ca. 0.1 mm long, magenta, apex rounded, anther 3–4 mm long, beak 0.2–0.4 mm long; ovary 2.3–3.8 × 1.2–2.4 mm, 3-locular, superior, glabrous; style 10–14 mm long, magenta. Capsule 4–8 × 2.3–4 mm, brown, urceolate, dehiscent from the apex, columella deciduous; seed 0,4–1 × 0,4–0,5 mm, brownish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, 56 km N, 1000 m, 30 November 1988, fr., *R.Kral et al. 75739* (HUFU, SP).

Microlicia veadeirana is endemic to Chapada dos Veadeiros National Park, occurring in *cerrado* and *campo rupestre*in wet area, on clayey or sandy soil, between 1060 and 1161 m elevation (Diniz & Silva 2017b; 2020). *Microlicia veadeirana* is assigned as Data Deficient (see Diniz & Silva 2017b). Collected with flowers in February, March, and December, and fruits from February to April, in September, October, and December (Diniz-Neres & Silva 2017b).

Microlicia veadeirana can be recognised by the short setose trichomes at the young branch and hypanthium apex, spherical yellowish glands covering branch, leaf blade, hypanthium and sepal, concolorous (greenish), ovate or ovate-lanceolate blade, oblong hypanthium, triangular sepal, subisomorphic stamen with yellow oblong, and tetrasporangiate anther. *Microlicia veadeirana* is similar to *M. cryptandra* as previously discussed in the comments of this species.

Illustrations and images in Diniz-Neres & Silva (2017b), figures 1 and 2.

45. *Microlicia vestita* De Candolle (1828: 119) (Fig. 8 j).

Subshrub, 0.2–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal densely covered with spherical yellowish glands and setose trichomes, 0.5–2 mm long, white or cream, sometimes pinkish. Leaf sessile, ascending, imbricate; blade 2.5–10 × 1.5–3.5 mm, with the same size in main and lateral branch, concolorous, greenish, chartaceous, ovate or ovate-lanceolate, apex acute, with a terminal setose trichome, base rounded or slightly cordate, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium 2–5 × 1.5–3 mm, greenish, campanulate, bristle crown at the apex absent; sepal 1–2.5 × 1–1.5 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal setose trichome; petal 8–12 × 4–9.5 mm, magenta, obovate, apex acute, with a terminal setose trichome, margin entire, glabrous; stamen 10, dimorphic, anther concolorous, yellow, oblong, tetrasporangiate; antesepalous stamen with filament 4–5 mm long, white, pedoconnective 4–4.5 mm long, white, ventral appendage 1.2–1.5 mm long, yellow, apex obtuse, anther 2–3.5 mm long, with vinaceous or orange-colored stains, beak 0.5–0.7 mm long; antepetalous stamen with filament 3.5–4 mm long, white, pedoconnective 0.7–1 mm long, white, ventral appendage ca. 0.3 mm long, yellow, apex retuse or obtuse, anther 1.5–2.5 mm long, yellow, beak 0.3–0.5 mm long; ovary 2–3 × 1–2 mm, 3-locular, superior, glabrous; style 7–11 mm long, magenta, white at base. Capsule ca. 6 × 3 mm, brown, ovate-oblong, dehiscent from the apex, columella deciduous; seed ca. 1 × 0,5 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Brasília, Margin do lago Paranoá, 1000 m, 2 February 1968, fl., *H.S. Irwin 19461* (NY, online image); Parque Nacional de

Águas Emendadas, 17 July 1979, fl., *E.P. Heringer et al. 1850* (US, online image); Bacia do Rio Bartolomeu, 4 January 1980, fl., *E. P. Heringer et al. 3033* (NY, online image); 16 March 1981, fl., *E.P. Heringer 6432* (US, online image); Estação Cabeça de Veado, 14 April 1983, fl. *M.A. Alves 96* (CEN, online image); Águas Emendadas, 22 May 1993, fl., *C. Munhoz 36* (MAC, online image, NY, online image). Goiás: "Azeja do Rio Gama", 4 December 1894, fl., *A.F.M. Glaziou 21223* (P, online image); 14 February 1895, fl., *A.F.M. Glaziou 21265* (NY, online image). Alto Paraíso de Goiás, Fazenda Água Fria, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 20 December 2000, bot., *C. Munhoz et al. 2328* (HUEG, HUFU); idem, 21 May 2000, bot., fl., *C. Munhoz et al. 1435* (HUEG, HUFU); idem, 3 January 2001, fl., *C. Munhoz et al. 2356* (HUEG, HUFU); idem, 18 January 2001, fl., *C. Munhoz et al. 2422* (HUEG, HUFU); idem, 4 February 2001, bot., fl., *C. Munhoz et al. 2514* (UEC, HUFU); idem, 20 February 2001, fl., *C. Munhoz et al. 2570* (HUEG, HUFU); Chapada dos Veadeiros, km 72 da estrada Alto Paraíso–Colinas de Goiás, 8 September 1994, bot., fl., *M.L. Fonseca et al. 105* (HUFU, IBGE). Cocalzinho de Goiás, Parque Estadual da Serra dos Pireneus, 15°47'56"S, 48°49'07"W, 1175 m, 15 May 2006, bot., fl., *P.G. Delprete et al. 9768* (HUFG, HUFU); Serra dos Pireneus, 15°47'12.4"S, 48°46'16.4"W, 1221 m, 25 April 2012, bot., fl., fr., *A.F.A. Versiane et al. 154* (HUFU); idem, 15°47'30.9"S, 48°52'16.7"W, 1257 m, 24 April 2012, bot., fr., *R.A. Pacheco et al. 738* (HUFU); idem, 15°49'18"S, 48°42'35"W, 1337 m, 26 April 2012, bot., fl., fr., *J.N. Nakajima et al. 5093* (HUFU); idem, próximo ao Morro do Cabeludo, 4 July 2012, fl., *A.F.A. Versiane et al. 225* (UEC, HUEG, HUFU, K, MBM, RB, UB); estrada para Fazenda Cercado, 15°44'49"S, 48°50'26"W, 1177 m, 5 July 2012, fl., fr., *A.F.A. Versiane et al. 237* (HUEG, HUFU); estrada para Hotel Fazenda Cabana dos Pireneus, 18°18'34.7"S, 43°52'58.5"W, 1106 m, 10 December 2012, fr., *A.F.A. Versiane et al. 411*

(HUFU, RB); P.E. dos Pireneus, BR-070, 15°48'20.6"S, 48°51'35.9"W, 1328 m, 12 December 2012, bot., fr., *R.A. Pacheco et al. 921* (UEC, HUFU); Fazenda Betel, 15°50'36.1"S, 48°46'18"W, 1158 m, 13 December 2012, fr., *A.F.A. Versiane et al. 482* (HUFU, MBM, RB); P.E. dos Pireneus, estrada para Morro do Cabeludo, 19 February 2013, bot., fl., *A.F.A. Versiane et al. 489* (HUFU, UB); idem, 15°43'48,4"S, 48°50'19,8"W, 21 February 2013, fl., fr., *R.A. Pacheco et al. 1004* (HUFU, K); idem, estrada principal para Hotel Fazenda Cabana dos Pireneus, 20 May 2013, bot. fl., fr., *A.F.A. Versiane et al. 558* (HUEG, HUFU); idem, 16 June 2002, bot., *M.L. Santos 150* (HUEG, HUFU). Formosa, Rio Paraná, 30 March 1966, fl., *H.S. Irwin et al. 14264* (US, online image). Pirenópolis, Alto da Serra dos Pireneus, 28 April 1996, bot., fl., *M.B. Alcantara 153* (HUFG, HUFU); estrada para Serra dos Pireneus, 15°50'S, 49°30'W, 19 June 1998, fl., *R. Romero et al. 5604* (UEC, HUFU); Fazenda Portal dos Pireneus, 1300 m, 13 February 2000, bot., fl., *G. Hatschbach et al. 70201* (HUFU, MBM); Serra dos Pireneus, 15°47'58"S, 48°49'40"W, 1280 m, 18 March 2006, fl., *P.G. Delprete et al. 9653* (HUFG, HUFU); idem, 16 June 2002, bot., fl., *M.L. Santos 149* (HUEG, HUFU); 30 January 2004, fl., *J.F.B. Pastore 762* (P, online image).

Microlicia vestita is widely distributed in Minas Gerais, Goiás, Mato Grosso do Sul, Pará, and Distrito Federal (Romero & Woodgyer 2015; Machado & Romero 2020). In Goiás and Distrito Federal, occurs in *campo úmido* near *vereda*, *campo rupestre*, and *campo sujo*, in rocky or clayey soil. Due to its wide distribution, *M. vestita* is assigned as Least Concern (LC). Collected with flowers from January to July, in September and December, and fruits in February, April, May, July, and December.

Microlicia vestita can be recognised by the setose trichomes, sometimes pinkish, and spherical glands densely covering branch, leaf blade, hypanthium, and sepal. In addtition,

it has campanulate hypanthium, magenta petal, with a terminal setose trichome at the apex, dimorphic and concolor (yellow) stamen, with oblong and tetrasporangiate anther, frequently with orange-colored or pinkish stains in the antesepalous stamen. *Microlicia vestita* resembles *M. acuminata* in having setose trichomes and spherical glands covering branch, leaf blade, hypanthium, and sepal, pedicellate flower, yellow stamen, and oblong anther. However, *M. acuminata* differs in having oblong hypanthium, petal glabrous at the apex, subisomorphic stamen with tetrasporangiate anther.

Illustrations and images in Diniz & Silva (2020), figures 24 a–l; 25 a–f; Machado & Romero (2020), figures 4 f–h; 7 h.

46. *Microlicia viminalis* (DC.) Triana (1873: 28) (Fig. k–l).

Subshrub, 0.2–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal sparsely covered with glandular trichomes, 0.1–1.5 mm long, white or cream. Leaf sessile, ascending, imbricate; blade 2.5–11 × 1–3.5 mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, cream-greenish or greenish, coriaceous, triangular-lanceolate or ovate-lanceolate, apex apiculate, apiculum 0.7–1.2 mm long, base attenuate, semi-amplexicaul, margin cream, entire, ciliate, flat, calose, 3–4 pairs of parallel veins, white or cream, frequently inconspicuous on the adaxial surface, main vein conspicuous on both surfaces, calose. Flower 5-merous, solitary, terminal or lateral; pedicel ca. 1 mm long, bract absent; hypanthium 3–5.5 × 1.5–3 mm, greenish, frequently with reddish stains, campanulate or suburceolate, bristle crown at the apex absent; sepal 3–5 × 1.5–3 mm, with the same color of the hypanthium, triangular, apex reddish, apiculate, apiculum 0.5–1 mm long; petal 7–

15 × 3–7 mm, pinkish, rarely white, obovate or obovate-oblong, apex truncate or acuminate, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong, tetrasporangiate; antesepalous stamen with filament 3.5–5.5 mm long, white or pinkish, pedoconnective 4–5.5 mm long, white or pinkish, ventral appendage 1–1.5 mm long, yellow, apex truncate or slightly bilobed, anther 3–4 mm long, pinkish or reddish, frequently with vinaceous stains, sometimes cream in the petal white flower, beak ca. 0.5 mm long; antepetalous stamen with filament 3–5 mm long, white or pinkish, pedoconnective 0.7–1 mm long, yellow, ventral appendage ca. 0.2 mm long, yellow, apex obtuse, anther 2.5–3 mm long, yellow, beak ca. 0.5 mm long; ovary 2–2.5 × ca. 1.5 mm, 3-locular, superior, glabrous; style 8–10 mm compr, pinkish or white. Capsule 3–6 × 3–5 mm, brown, globose, dehiscent from the apex, columella deciduous; seed 1.5 × 0.8 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Chapada da Contagem, 13 Aug 1964, fl., *H.S. Irwin et al. 5090* (US, online image); Fazenda Sucupira, 27 September 1999, fl., *B.M.T. Walter et al 4394* (UEC, online image). Brasília, Reserva Ecológica do IBGE, 14 Aug 1979, fl., *K. Kubitzki 79* (NY, online image); Parque Nacional de Brasília, 18 Aug 2006, fl., *E.B.A. Dias 8* (CEN, online image). Goiás: "In montosis arenosis ad Serra de Chrystaes, Cap Goyaz", s.d. fl., *J.B.E. Pohl 718* (NY, online image); "Cabeceira do rio Gama", 31 October 1894, fr., *A.F.M. Glaziou s.n.* (P, online image); "Vargem grande, dans le Serra da Balisa", 5 January 1895, fl., *A.F.M. Glaziou 21281* (P, online image); Rajadinha", 30 June 1895, fl., *A.F.M. Glaziou 21291* (R, online image). Alto Paraíso de Goiás, Chapada dos Veadeiros, 1600 m, 6 March 1973, fl., *W.R. Anderson 6497* (NY, online image); 25 July 1985, fl., *S. Romaniuc Neto et al. 299* (NY, online image); 56 km N, 1000 m, 30 November 1988, fr., *R.Kral et al. 75739* (HUFU, SP); GO-

118, 23 Aug 1993, fl., *S. Splett 53* (US, online image); Fazenda Água Fria, 14°04'21.7"S, 47°30'33.6"W, 1448 m, 19 July 2000, bot., fl., *C. Munhoz et al. 1767* (HUEG, HUFU); idem, 6 Aug 2000, bot, fl., *C. Munhoz et al. 1796* (HUEG, HUFU); idem, 16 Aug 2000, bot., fl., *C. Munhoz et al. 1841* (HUEG, HUFU). Cavalcante, 10 July 2011, fl., fr., *J.S. Silva 666* (CEN, online image). Cocalzinho de Goiás, Serra dos Pireneus, 17 September 1894, fl., *A.F.M. Glaziou 21285* (P, online image, R, online image); 15°47'20.1"S, 48°52'51.8"W, 1073 m, 24 April 2012, fr., *J.N. Nakajima et al. 5050* (HUFU); idem, 15°49'18"S, 48°42'35"W, 1337 m, 26 April 2012, fr., *J.N. Nakajima et al. 5095* (HUEG, HUFU, UPCB, online image); idem, 15°47'24.2"S, 48°52'53"W, 04 July 2012, bot., fl., *A.F.A. Versiane et al. 211* (HUFU); idem, 15°44'37.7"S, 48°51'55.2"W, 1104 m, 05 July 2012, bot., fl., fr., *R.A. Pacheco et al. 854* (UEC, HUFU, MBM); idem, 18°48'43.3"S, 48°46'33.8"W, 1 October 2012, bot., fl., fr., *R.A. Pacheco et al. 880* (HUFU, RB); Mosteiro budista Zen Eish Ji, 15°43'44.4"S, 48°57'50.1"W, 1029 m, 2 October 2012, fl., fr., *A.F.A. Versiane et al. 270* (HUFU); trilha para o Salto do Corumbá, 15°43'04.1"S, 48°57'49.7"W, 987 m, 03 October 2012, bot., fl., fr., *A.F.A. Versiane et al. 281* (HUEG, HUFU, UEPB, online image); lado esquerdo da BR-414, 15°50'48.9"S, 48°46'15"W, 1066 m, 3 October 2012, fl., fr., *A.F.A. Versiane et al. 296* (HUFU); Parque Estadual dos Pireneus, estrada para o Morro do Cabeludo, 3 October 2012, bot., fl., *A.F.A. Versiane et al. 300* (HUFU); idem, 15°46'19.8"S, 48°53'48"W, 1215 m, 4 October 2012, bot., fl., *A.F.A. Versiane et al. 320* (HUFU); idem, 15°49'58.3"S, 48°40'24.9"W, 1249 m, 4 October 2012, fl., fr., *A.F.A. Versiane et al. 332* (HUFU); idem, 18°18'34.7"S, 43°52'58.5"W, 1106 m, 10 December 2012, fr., *A.F.A. Versiane et al. 413* (HUFU, UB); Mosteiro budista Zen Eish Ji, 15°43'44.4"S, 48°57'50.1"W, 1029 m, 11 December 2012, fr., *A.F.A. Versiane et al. 435* (HUFU, RB); Fazenda Betel, 15°50'36.1"S, 48°46'18"W,

1158 m, 13 December 2012, fr., *A.F.A. Versiane et al. 481* (HUFU, MBM). Cristalina, 31 July 1985, fl., *S. Romaniuc* (MBM, online image); RPPN Linda Serra dos Topázios, Borda do rio, 18 July 2013, bot., fl., *A.L.F. Oliveira et al. 35* (HUFU); Serra dos Cristais, ca. de 10 km de Cristalina em direção à Luziânia, 10 September 1998, bot., fl., *V.C. Souza et al. 21452* (ESA, HUFU); Pirenópolis, Alto da Serra dos Pireneus, at base dos Três Picos, 18 Aug 1995, bot., fl., *M.B. Alcantara et al. 97, 99* (HUFU, UFG); Serra dos Pireneus, 7 October 2001, bot., fl., fr., *M.L. Santos 11* (HUEG, HUFU); idem, 7 October 2001, fl., *s. col. 49, 50* (HUEG, HUFU); idem, 15°48'25"S, 48°53'15"W, 1165 m, 15 Aug 2002, fr., *M.L. Fonseca et al. 3505* (HUFU, IBGE); idem, 27 Aug 2002, bot., fl., *M.L. Santos 159, 162* (HUEG, HUFU); idem, 6 September 2002, fl., fr., *M.L. Santos 163* (HUEG, HUFU); idem, 14 January 2006, fr., *J.C.Q. Faria Junior et al. 230* (HUEG, HUFU); idem, Fazenda Portal, 15°47'58"S, 48°53'44"W, 23 September 2008, fl., fr., *M.A. Silva et al. 6629* (HUFU, IBGE). São Jorge, Chapada dos Veadeiros National Park, 14°09'58"S, 47°49'35"W, 957 m, 26 February 2016, fr., *J.C. Fontelas et al. 296* (HUFU).

Microlicia viminalis is widely distributed in Minas Gerais, Goiás, Bahia, and Distrito Federal (Romero & Woodgyer 2015; Romero *et al.* 2020). In Goiás and Distrito Federal, occurs in *campo rupestre*, *campo limpo*, *campo sujo* and *cerrado*, in clayey or rocky soil, frequently in wet area. Due to its wide distribution is assigned as Least Concern (LC). Collected with flowers from July to October, and fruits in January, February, April, and from June to December, except in November.

Microlicia viminalis can be easily recognised by the much-branched habit, glandular trichomes covering branch, leaf blade, hypanthium and sepal, imbricate leaf, discolorous and coriaceous blade, semi-amplexicaul at the base, apiculate at the apex, white or cream and callose margin and veins, with 3–4 pairs of parallel veins. Also, it differs in having

hypanthium and sepal with reddish stains. *Microlicia viminalis* is quite variable regarding the color of the floral structures, since in the flower with pinkish petal, the filament, pedoconnective, and anther in the antesepalous stamen are also pinkish, while in the rare flowers with white petal, these structures are white.

Illustration and images in Diniz & Silva (2020), figures 24 m–x, 26 a–e; Romero (2003a), figures 1–8.

47. *Microlicia xylopodifera* Fontelas & R.Romero (2020: 115).

Subshrub, 0.1–0.2 m tall, much-branched, branch slender, xylopodium present. Branch, leaf blade, hypanthium and sepal densely covered with spherical yellowish glands, glandular and setose trichomes, 0.2–1.5 mm long, cream. Leaf sessile, ascending or horizontal, not imbricate; blade 2.5–11 × 1–3.5 mm, with the same size in main and lateral branch, discolorous, darker on the adaxial surface, greenish, chartaceous, ovate or ovate-lanceolate, apex acute, with a terminal glandular trichome, base rounded or slightly cordate, margin serrate-ciliate, flat, not calose, 1 pair of basal acrodromous veins, frequently inconspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 0.7–1 mm long, bract absent; hypanthium 3.5–4.5 × 1.5–2 mm, greenish, urceolate, bristle crown at the apex absent; sepal 1–2 × 1–1.5 mm, with the same color of the hypanthium, triangular, apex acute, with a terminal glandular trichome; petal 5–10 × 2.5–5 mm, pink, obovate, obovate-oblong or oblong, apex acute, a dense crown of glandular trichomes at the apex of flower bud, and concentrated at the apex of the petal during anthesis, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, ovate-oblong, polysporangiate;

antesepalous stamen with filament 2.5–3.5 mm long, pinkish, sometimes yellow, pedoconnective 2–3 mm long, pinkish, sometimes yellow, ventral appendage 1.5–2 mm long, yellow, apex truncate or rounded, rarely obtuse, anther 1.5–2 mm long, vinaceous, beak 0.3–0.5 mm long; antepetalous stamen with filament ca. 3 mm long, pinkish, sometimes yellow, pedoconnective ca. 1 mm long, pinkish, sometimes yellow, ventral appendage ca. 0.3 mm long, yellow, apex acute, anther ca. 1.5 mm long, yellow, beak ca. 0.3−0.5 mm long; ovary ca. 2.5 × 1.5 mm, 3-locular, superior, glabrous; style ca. 6 mm compr, pinkish. Capsule ca. 2 × 2 mm, brownish, globose, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, brownish.

Specimens examined—BRAZIL. Goiás: Alto Paraíso de Goiás, ca. 30 km ao norte da Chapada dos Veadeiros, 1000 m elev., 16 March 1969, bot., fl*., H.S. Irwin et al. 24490* (NY); ca. 19 km ao norte da Chapada, 1250 m, 20 March 1971, bot., *H.S. Irwin et al. 32788* (NY, US); ca. 40 km N, 1250 m elev., 24 March 1971 fl., fr., *H.S. Irwin et al. 33108* (CAS, online image, NY, UEC, US, online image); 8 km ao norte, 1500 m, 6 March 1973, bot., fl., *W.R. Anderson 6433* (NY, US); ca. 29 km ao norte, 1800 m, 9 March 1973, bot., fl., *W.R. Anderson 6742* (NY, US); idem, 1500 m, 16 March 1973, bot., fl., *W.R. Anderson 7162* (NY, US).

Microlicia xylopodifera is endemic to Chapada dos Veadeiros, occurring in *cerrado rupestre* and *campo limpo*, in sandy soil, between 1000 and 1800 m elevation (Fontelas & Romero 2020). *Microlicia xylopodifera* is assigned as Endangered (E) (see Fontelas & Romero 2020). Collected with flowers and fruits in March.

Microlicia xylopodifera can be easily recognised by the robust xylopodium, much-branched habit, spherical yellowish glands, setose and glandular trichomes covering branch, leaf blade, hypanthium and sepal. Furthermore, it differs in having a dense crown

of glandular trichomes at the apex of flower bud, and concentrated at the apex of the petal during anthesis (Fontelas & Romero 2020). *Microlicia xylopodifera* resembles *M. ordinata*, *M. ramosa*, and *M. vestita* (see Fontelas & Romero 2020).

Images in Fontelas & Romero (2020), figures 3 a–i.

48. *Microlicia sp.*

Subshrub or shrub, 0.4–1 m tall, much-branched, branch slender, xylopodium not observed. Branch, leaf blade, hypanthium and sepal dense to sparsely covered with spherical translucent glands, glandular and setose trichomes, 0.1–0.3 mm long, white. Leaf with petiole up to 0.3 mm long, horizontal or slightly ascending, not imbricate; blade 4–20 × 1.5–12 mm, with a larger size in the main branch, concolorous, greenish, chartaceous, elliptic, apex acuminate, with a terminal glandular trichome, base rounded or attenuate, margin serrate, glandular-ciliate, flat, not calose, 1−2 pairs of basal acrodromous veins, conspicuous on both surfaces, main vein conspicuous on both surfaces, not calose. Flower 5-merous, solitary, terminal or lateral; pedicel 1.5–2 mm long, bract absent; hypanthium 2.5–3 × 1.5–2 mm, greenish, campanulate, sometimes oblong-campanulate, bristle crown at the apex absent; sepal 3–6 × ca. 0.5 mm, with the same color of the hypanthium, subulate, apex aristate, arista ca. 0.3 mm long, white; petal 10–14 × ca. 7 mm, pinkish, obovate or obovate-oblong, apex acuminate, with a terminal glandular or setose trichome, margin entire, glabrous; stamen 10, dimorphic, anther bicolorous, oblong, polysporangiate; antesepalous stamen with filament 2.5–3 mm long, magenta, pedoconnective ca. 1.5−2 mm long, magenta, ventral appendage ca. 1 mm long, yellow, apex truncate, retuse or slightly bilobed, anther ca. 2 mm long, pinkish, beak ca.

0.4 mm long; antepetalous stamen with filament 3–3.5 mm long, magenta, pedoconnective ca. 1 mm long, yellow or white, ventral appendage 0.3–0.5 mm long, yellow, apex retuse, anther ca. 2 mm long, beak ca. 0.4 mm long; ovary ca. 2.5 × 1.5 mm, 3-locular, superior, glabrous; style 5–8 mm long, pinkish. Capsule 4–5 × 3–3.5 mm, brown, globose, dehiscent from the apex, columella deciduous; seed ca. 0.6 × 0.3 mm, cream.

Specimens examined—BRAZIL. Distrito Federal: Brasília, 18 February 2000, fl., *E.S.G. Guarino et al. 26* (HUFU); Jardim Botânico de Brasília, 17 June 2010, fl., fr., *V.F. Paiva et al. 726* (HUFU); 24 March 2011, fl., fr., *L.Q. Silva et al. 10* (HUFU); 14 April 2015, fl., fr., *P.O. Rosa et al. 1434* (HUFU); ARIE da Granja do Ipê, 2 June 2015, fl., fr., *P.O. Rosa et al. 1558* (HUFU). Goiás: Serra do Facão, 7 April 2008, fl., *A.A. Arantes et al. s.n.* (HUFU); 1 June 2008, fl, *A.A. Arantes et al. 1023* (HUFU).

Microlicia sp. was collected in Goiás and Distrito Federal, in *cerrado*, *campo sujo* and *campo limpo*, wet or dry, at ca. 1100 m elevation. Collected with flowers in February, March, April, and June, and fruits in March, April and June.

The collections determined as *Microlicia sp*. resembles *M. tomentella* Naudin, endemic to Minas Gerais (Romero *et al.* 2020), in having branch, leaf blade, hypanthium and sepal covered with spherical glands, glandular and setose trichomes, elliptic leaf blade, campanulate hypanthium, dimorphic stamen with bicolorous anther. However, *M. tomentella* differs by its glandular emergences along the main vein on the abaxial surface of the leaf blade, which are characteristic and visible due to the reddish head (in dry material). Furthermore, it differs in having triangular sepal, obovate or obovate-oblong and tetrasporangiate anther.

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FIGURE 1. Map of the state of Goiás and Distrito Federal showing the main conservation units.

FIGURE 2. Phytophysiognomies in the state of Goiás. **A**. *Borda de mata.* **B-C**. *Campo sujo.* **D-E**. *Cerrado rupestre*. **F.** *Cerrado s.s.* (Photos*:* Ana Flávia Alves Versiane, Jean Corrêa Fontelas, Rosana Romero).

FIGURE 3. *Microlicia campanulata.* **A.** Flowering branch. **B.** Leaf adaxial surface. **C.** Leaf abaxial surface. **D.** Flower bud. **E.** Petal. **F.** Small stamen, antepetalous. **G.** Large stamen, antesepalous. **H.** Gynoecium. **I.** Mature capsule with hypanthium and sepal. (A–I from the holotype *F. Almeda et al. 9454*, HUFU, photographed and prepared by Jean Corrêa Fontelas).

FIGURE 4. Field images of *Microlicia* species in Goiás State. **A.** *Microlicia cataphracta.* **B.** *Microlicia chrysoglandulosa*. **C.** *Microlicia clavillosa*. **D.** *Microlicia consimilis*. **E.** *Microlicia cryptandra*. **F.** *Microlicia fasciculata*. **G.** *Microlicia flavipetala*. **H.** *Microlicia helvola*. **I.** *Microlicia insignis*. **J.** *Microlicia melanostagma.* **K.** *Microlicia melanostagma.* **L.** *Microlicia neopyrenaica.* (Photos: A–C, L: Maurício Mercadante; D, F, H: Ana Flávia Alves Versiane; E, J–K: Rosana Romero; G, I: Jean Corrêa Fontelas).

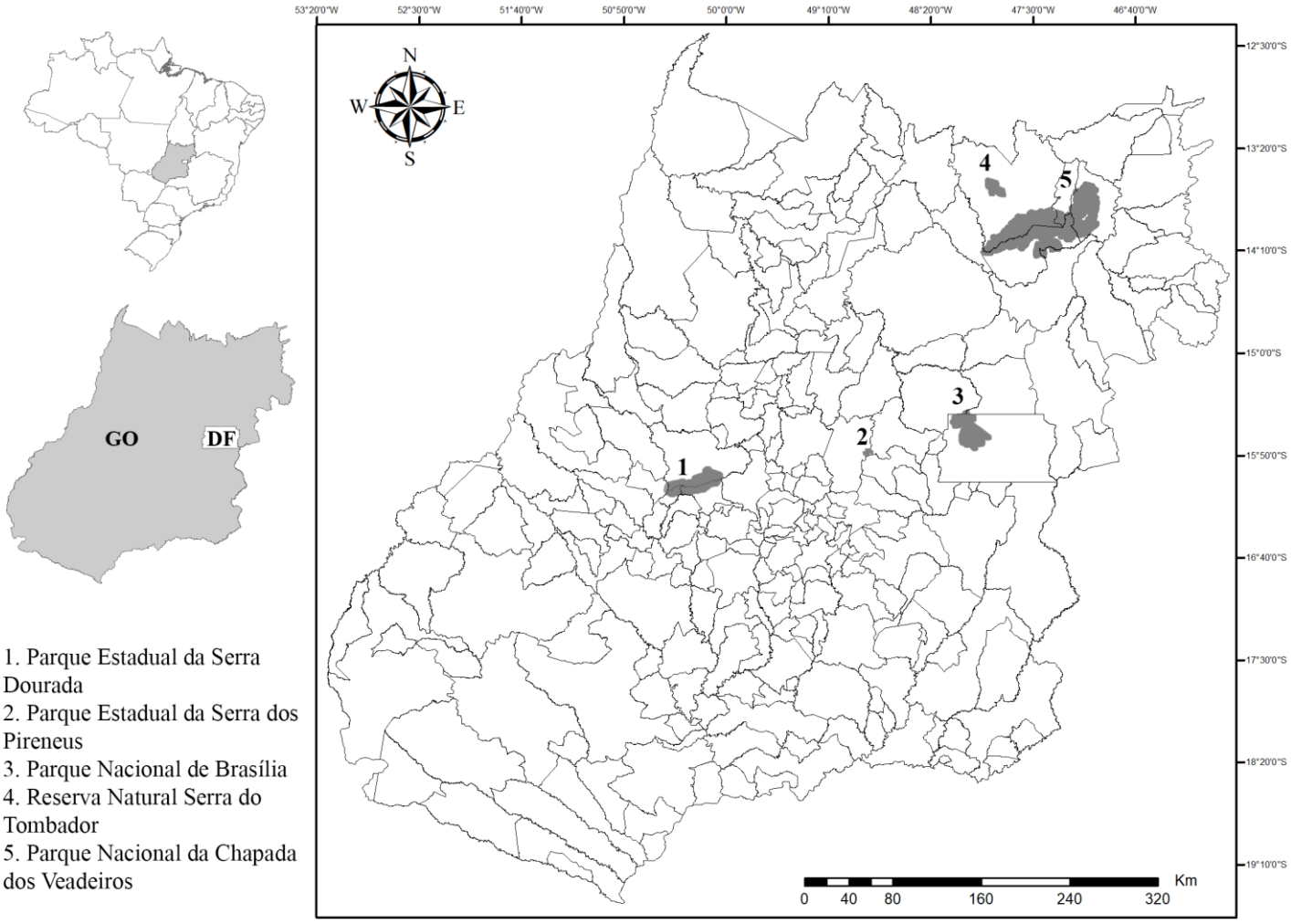
FIGURE 5. *Microlicia denudata.* **A.** Flowering branch. **B.** Leaf abaxial surface. **C.** Leaf adaxial surface. **D.** Flower bud. **E.** Petal. **F.** Large stamen, antesepalous. **G.** Small stamen, antepetalous. **H.** Gynoecium. **I.** Mature capsule with hypanthium and sepal. (A–I from *H.L. Zirondi et al. 8*, HUFU, photographed and prepared by Jean Corrêa Fontelas).

FIGURE 6. *Microlicia macedoi.* **A.** Flowering branch. **B.** Leaf abaxial surface. **C.** Leaf adaxial surface. **D.** Flower bud. **E.** Petal. **F.** Small stamen, antepetalous. **G.** Large stamen, antesepalous. **H.** Gynoecium. **I.** Mature capsule with hypanthium. (A–I from *M.L. Fonseca et al. 1100*, IBGE, photographed and prepared by Jean Corrêa Fontelas).

FIGURE 7. *Microlicia melanostagma.* **A.** Flowering branch. **B.** Leaf abaxial surface. **C.** Flower bud. **D.** Petal. **E.** Small stamen, antepetalous. **F.** Large stamen, antesepalous. **G.** Gynoecium. **H.** Mature capsule. (A–I from *F. Almeda et al. 9427*, UEC, photographed and prepared by Jean Corrêa Fontelas).

FIGURE 8. Field images of *Microlicia* species in Goiás State. **A.** *Microlicia parviflora.* **B.** *Microlicia phlogiformis*. **C.** *Microlicia pohliana*. **D.** *Microlicia polystemma*. **E.** *Microlicia psammophila*. **F.** *Microlicia ramosa*. **G.** *Microlicia ramosa*. **H.** *Microlicia serpylifolia*. **I.** *Microlicia suberosa*. **J.** *Microlicia vestita.* **K.** *Microlicia viminalis.* **L.** *Microlicia viminalis.* (Photos: A–G, K: Maurício Mercadante; H, J, L: Ana Flávia Alves Versiane; I: Rosana Romero).

FIGURE 1.



1. Parque Estadual da Serra Dourada
2. Parque Estadual da Serra dos Pireneus
3. Parque Nacional de Brasília
4. Reserva Natural Serra do Tombador
5. Parque Nacional da Chapada dos Veadeiros

FIGURE 2.

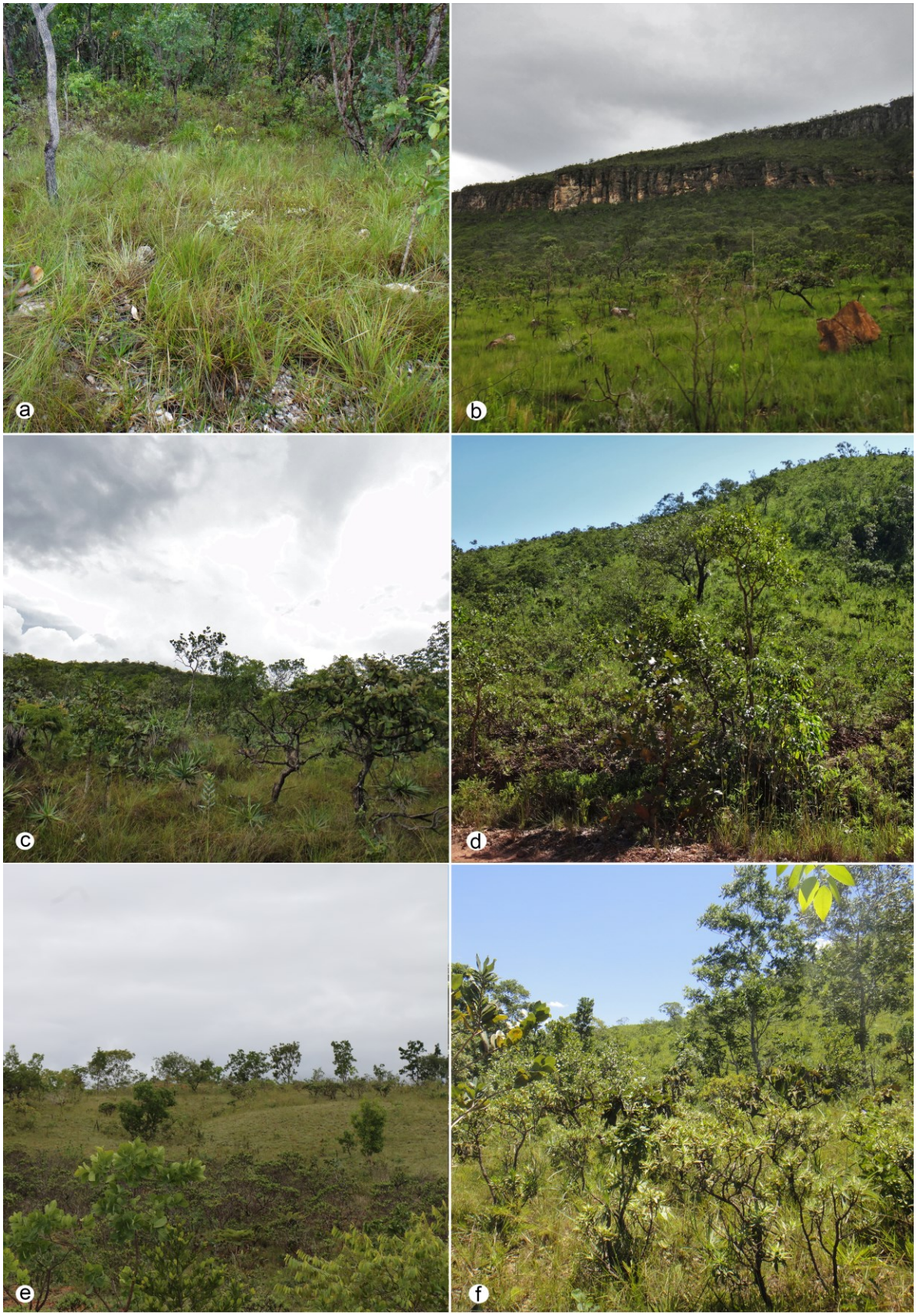


FIGURE 3.

FIGURE 4.

FIGURE 5.

FIGURE 6.

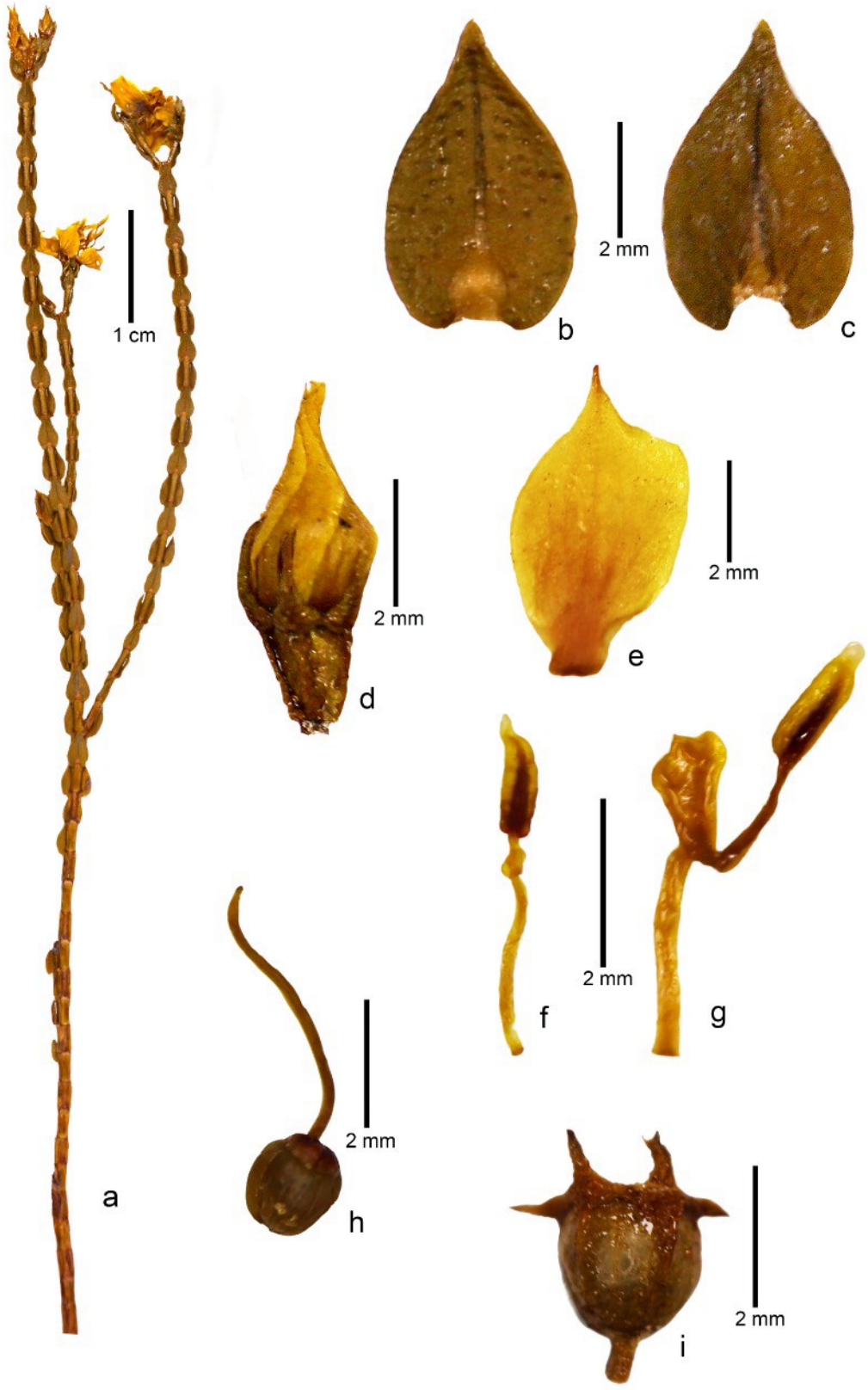
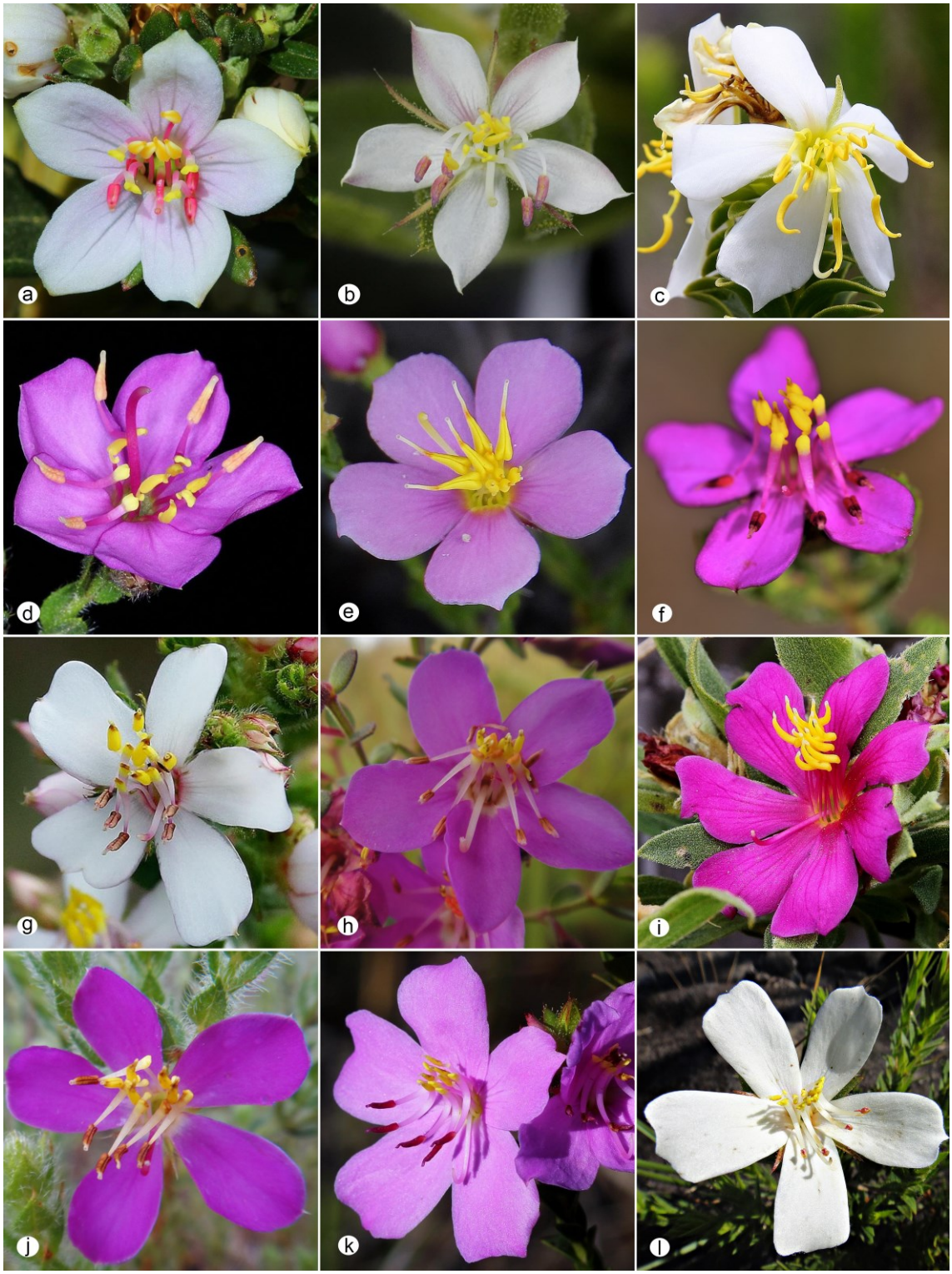


FIGURE 7

FIGURE 8



APPENDIX 1. Two new species of *Microlicia* D.Don (Microlicieae, Melastomataceae) from Goiás state, Brazil.*

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* Manuscrito elaborado de acordo com as normas da Revista Brittonia

Abstract. Microlicia acicularis and **Microlicia attenuata**, endemic from the state of Goiás, are described, illustrated, and the preliminary conservation status for both species is provided. *Microlicia acicularis* can be recognized by pale-greenish hypanthium, white petal, dimorphic, concolorous, yellow stamen, and polysporangiate anther. The branch, leaf, hypanthium, and sepal are covered only by spherical, golden glands. The leaf is imbricate, with an acicular, discolorous blade, and revolute at the margin. *Microlicia attenuata* differs in having few glandular trichomes in the branch, and spherical golden glands, sparsely distributed on the abaxial surface of the leaf blade, hypanthium, and sepal, while the adaxial surface is glabrous. In addition, it has lanceolate or obovate-lanceolate leaf blade, semi-amplexicaul at the base, white petal, and yellow stamen, with polysporangiate anther.

Keywords: Cavalcante, Chapada dos Veadeiros, endemism, taxonomy.

Resumo. Microlicia acicularis e **Microlicia attenuata**, endêmicas do estado de Goiás, são descritas, ilustradas e o estado de conservação preliminar para ambas espécies é fornecido. *Microlicia acicularis* pode ser reconhecida por apresentar hipanto verde-claro, pétala branca, estame dimórfico, concolor, amarelo e antera poliesporangiada. O ramo, folha, hipanto e sépala são cobertos apenas por glândulas esféricas douradas. A folha é imbricada, com lâmina acicular, discolor, e revoluta na margem. *Microlicia attenuata* pode ser reconhecida por apresentar poucos tricomas glandulares no ramo e glândulas esféricas douradas, esparsas na face abaxial da lâmina foliar, hipanto e sépala, enquanto a face adaxial é glabra. Além disso, apresenta lâmina foliar lanceolada ou obovado-lanceolada, semiamplexicaule na base, pétala branca e estame amarelo, com antera poliesporangiada.

The state of Goiás is situated within the Cerrado biome, considered one of the world's biodiversity hotspots (Myers et al., 2000; Mittermeier et al., 2005). It has distinct vegetation, with grassland, forest, and savanna formations providing a variety of physiognomies and a large floristic diversity (Ribeiro and Walter, 2008). Melastomataceae is well-represented in the state, with 26 genera and 171 species (Goldenberg et al., 2020) present in different physiognomies of the biome. With 48 species registered for Goiás *Microlicia* D.Don is one of the largest genera, occurring mainly in the campo rupestre, campo, limpo, campo sujo, cerrado s.s., and cerrado rupestre (Fontelas & Romero, in prep.)

A recent molecular study recognized *Microlicia* as a monophyletic genus with *Chaetostoma* DC., *Lavoisiera* DC., *Stenodon* Naudin, and *Trembleya* DC. nested within it (Versiane et al., 2021). In the new circumscription of *Microlicia*, its species are generally characterized by solitary flowers or in dichasia, reduced to one flower, with five to six occasionally nine petals, a superior or semi-inferior ovary with three to six locules, and capsule dehiscing longitudinally from the apex to the base (basipetal) or from the base to the apex (acropetal) (see Versiane et al., 2021).

The recognition of *Microlicia* species has been a huge challenge due to the high degree of homoplasies in the genus (Versiane et al. 2021). It possibly explains the tenuous distinction between several species and the difficulty of identifying them as new species (Romero & Woodgyer, 2014). In the course of preparing a treatment of *Microlicia* for the state of Goiás, some collections from herbaria were recognized as two taxonomic novelties. These new species are here described, illustrated, and compared with other morphologically similar species. A distribution map and comments on the preliminary conservation status of each species are also provided.

Materials and methods

The descriptions of the two new species were based on the morphological analysis of specimens of *Microlicia* deposited at CEN, HUFU, UB, UFG, and US herbaria (acronyms according to Thiers, 2021). All specimens seen on the online platform *species*Link (https://www.splink.org.br/) were referred to here with barcode numbers. For general morphological terminology, we followed Radford et al. (1986) and for the indumentum, we followed Wurdack (1986). The color of the leaf blade, petal, stamen, and style of *Microlicia acicularis* were observed in the living plant, while *M. attenuata* were based on dry material.

According to georeferenced data from the cited collections, the extent of occurrence (EOO) and area of occupancy (AOO) were calculated using GEOCAT (Bachman et al., 2011). The preliminary conservation status was based on the IUCN guidelines and criteria (IUCN Standards and Petitions Committee, 2019). The map was built employing the digital elevation models inferred by IBGE (2020) (https://mapas.ibge.gov.br) using ArcMap 10.5.

Results

Microlicia acicularis Fontelas, D.O.Diniz & R.Romero, **sp. nov.** Type: Brazil. Goiás: Alto Paraíso de Goiás, 31 July 1994, [bud, fl], *C. Munhoz et al. 185* (holotype: UFG; isotypes: HUFU, UB) (Fig. 1. A−I)

Diagnosis: The new species can be recognized by the branch, leaf blade, hypanthium,

and sepal covered only with spherical, golden glands. The leaf is imbricate, with acicular and discolorous blade, and revolute at the margin. It also differs in the pale-greenish hypanthium, white petal, dimorphic and concolorous stamen, with polysporangiate anther.

Subshrub 0.1−0.6 m tall, erect, much-branched. Stem terete, glabrous. Branch fastigiate, slender; younger branch greenish, quadrangular, covered sparsely by spherical glands, sometimes deciduous glands; older branch brownish, becoming terete, glabrescent and leafless with age. Leaf sessile, ascending, imbricate, internode 1.5−3.5 mm long; blade 3−4 × 0.3−1 mm, discolorous, adaxial surface darker than the abaxial surface, sometimes reddish at the apex, chartaceous, acicular, base attenuate, apex apiculate, apiculum ca. 0.2 mm long, frequently deciduous, margin revolute, glabrous, 1-veined, both surfaces sparsely covered by spherical glands. Flower 5-merous, solitary, terminal or lateral, pedicel 0.5−2 mm long; hypanthium 2−3.5 × 1.5−2.5 mm, pale-greenish, campanulate, with sparse spherical glands, 10-striate; sepal 2.5−4 × 1−2 mm, greenish, triangular, with sparse spherical glands, apex acute or apiculate, apiculum ca. 0.2 mm long, frequently deciduous; petal 8−11 × 4−6 mm, white, obovate-elliptic, apex acute or acuminate, margin flat, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, polysporangiate; larger (antesepalous) stamen 5, filament 3.5−4.5 mm long, pedoconnective 3.2−5 mm long, ventral appendage 0.8−1.2 mm long, truncate at the apex, anther 1.8−2.2 mm long including beak, beak ca. 0.3 mm long; smaller (antepetalous) stamen 5, filament 3.5−4.5 mm long, pedoconnective 1.5−2 mm long, ventral appendage 0.2−0.3 mm long, truncate at the apex, anther 1−2 mm long including beak, beak ca. 0.2 mm long; ovary 1.3−2.2 × 1−1.7 mm, 3-locular, superior, oblong,

glabrous; style 5−8.5 mm long, yellow, terete, curved at the apex, stigma punctiform. Capsule 4−7 × 2.5−4 mm, brownish, globose, oblong, dehiscing into 3 valves from the apex, hypanthium totally covering the capsule, columella deciduous ; seed 0.4−0.8 × 0.2−0.3 mm, golden, oblong, testa foveolate.

Distribution, habitat, and conservation status—Microlicia acicularis is currently known only from the Chapada dos Veadeiros, Goiás, Brazil, occurring in cerrado rupestre, close to streams, growing over cracks in rocks or ravines, at ca. 1,180 m elevation (Diniz & Silva, 2020) (Fig. 2). *Microlicia acicularis* has a restricted extent of occurrence (EOO = 50 km²) and area of occupancy (AOO = 12 km²) and, following the IUCN categories and criteria (IUCN, 2019), we suggest assessing it as Critically Endangered species [CR B1ab (i,ii) + 2ab (iii)]. Populations of *M. acicularis* were found inside and outside the boundaries of the Chapada dos Veadeiros National Park. Therefore, we hope that, at least inside the conservation unit, this species is protected. Areas surrounding the park are currently being altered by the expansion of soybean farms, intensive extraction of plants for craftwork, and the devastation of forests on mesotrophic soils (Felfili et al. 2007).

Phenology—Flowers and fruits have been collected in May, June and July, and fruits in August.

Etymology—The specific epithet "*acicularis*" refers to the narrow leaf blade shape with a pointed and stiff apex.

Notes—Microlicia acicularis is similar to *M. scoparia* (A.St.-Hil.) DC., which is endemic to Minas Gerais state (Romero et al. 2020), in having branch, leaf, hypanthium and sepal covered only by spherical glands, ascending leaf, campanulate hypanthium, and

dimorphic stamen. However, *M. scoparia* differs in having linear-triangular or narrow-lanceolate leaf blade (*vs.* acicular in *M. acicularis*) flat margin (*vs.* revolute), narrow-triangular sepal (*vs.* triangular), greenish hypanthium and sepal, frequently with vinaceous stains (*vs.* pale-greenish, without stains), purple petal (*vs.* white), vinaceous anther in the antesepalous whorl and yellow in the antepetalous one (*vs.* all yellow stamens). In addition, in *M. scoparia* the capsule is partially covered by the hypanthium, while *M. acicularis* has a capsule entirely covered by the hypanthium. Collections from Alto Paraíso de Goiás were recently identified as *M. scoparia*, probably due to the morphological similarity between these two species (see Diniz & Silva 2020).

Microlicia acicularis also resembles *M. chrysoglandulosa* R.Romero, Versiane, Fontelas & D.O.Diniz-Neres, which is endemic to Chapada dos Veadeiros (Romero et al. 2017), for both species have branch, leaf, hypanthium and sepal covered with spherical glands, sessile, ascending, and narrow (0.3−1.3 mm wide) leaf blade, pedicellate flower, campanulate hypanthium, triangular sepal, and concolorous, yellow stamen. However, *M. chrysoglandulosa* has not imbricate leaf (*vs.* imbricate in *M. acicularis*), concolorous blade (*vs.* discolorous), flat margin (*vs.* revolute), main vein densely covered with spherical, golden glands on the abaxial surface (*vs.* absent), pink or white petal and yellow at the base (*vs.* entirely white), and tetrasporangiate anther (*vs.* polysporangiate). For more details of *M. acicularis* and morphologically similar species, check Figure 3 and Table 1. A beautiful illustration of the new species, as well as field images are presented by Diniz & Silva (2020), as *M. scoparia*.

Additional specimens examined. **BRAZIL. Goiás:** Alto Paraíso de Goiás: Chapada dos Veadeiros, Cachoeira do São Bento, 14°07'S, 47°31'W, 30 May 1994, [bud, fl], *S.*

Bridgewater et al. S226 (US [US01899863-online image]); Chapada dos Veadeiros, 24 June 1994, [fl], *V. Gomes-Klein et al. 2455* (HUFU); após o Rio Preto em direção ao morro Peito de Moça, 14º03'34.3"S, 47º38'24.5"W, 1,181 m, 19 Aug 2015, [fr], *D.O. Diniz et al. 545* (UFG!); proximidades do Morro do Japonês, 25 June 2016, [fl, fr], *M.J. Silva et al. 7490*, *7491*, *7492*, *7493* (UFG).

Microlicia attenuata Fontelas & R.Romero, **sp. nov.** Type: Brazil. Goiás: Cavalcante, trilha para Cachoeira Santa Bárbara, 20 April 2003, [bud, fl, fr], *J.F.B. Pastore et al. 511* (holotype: CEN, isotype: HUFU) (Fig. 4 A−H)

Diagnosis: The new species can be recognized by few glandular trichomes in the branch and spherical, golden glands sparsely distributed on the abaxial surface of the leaf blade, hypanthium, and sepal, while the adaxial surface is glabrous. In addition, the leaf blade is lanceolate or obovate-lanceolate, semi-amplexicaul at the base, the petal is white, and the stamen is yellow, with polysporangiate anther.

Subshrub, stature not informed, erect, much-branched. Stem terete, glabrous. Branch brownish, slender; younger branch quadrangular, with few glandular trichomes ca. 0.3 mm long; older branch becoming terete, glabrescent and leafless with age. Leaf sessile, ascending or slightly horizontal, not imbricate, internode 1−3.5 mm long; blade 3.5−4.5 × 1.5−2 mm, concolorous, greenish, chartaceous, lanceolate or obovate-lanceolate, apex acute, with a terminal setose trichome ca. 0.3 mm long, base attenuate, semi-amplexicaul, margin slightly revolute or flat, serrate, glandular-ciliate, adaxial surface glabrous, abaxial surface densely covered by spherical golden glands, 3-veined, veins suprabasal.

Flower 5-merous, solitary, terminal or lateral, pedicel ca. 0.5 mm long; hypanthium 2−2.5 × 1.5−2 mm, pale, campanulate, with sparse, spherical golden glands, surface smooth, 10-estriate; sepal ca. 2.5 × 1−1.5 mm, greenish, triangular, apex acute, with a terminal setose trichome ca 0.3 mm long, with sparse, spherical golden glands; petal ca. 7 × 3.5 mm, white, obovate, apex acute, margin entire, glabrous; stamen 10, dimorphic, concolorous, yellow, anther oblong, polysporangiate; larger (antesepalous) stamen 5, filament ca. 3.5 mm long, pedoconnective ca. 4 mm long, ventral appendage ca. 1.5 mm long, truncate or obtuse at the apex, anther ca. 2.5 mm long including beak, beak ca. 0.3 mm long; smaller (antepetalous) stamen 5, filament ca. 4 mm long, pedoconnective ca. 0.5 mm long, ventral appendage inconspicuous, ca. 0.2 mm long, anther ca. 2 mm long including beak, beak ca. 0.2 mm long; ovary ca. 1.5 × 1 mm, superior, 3-locular, pyriform, glabrous; style ca. 5 mm long, white, terete, curved at the apex; stigma punctiform. Capsule 4−5 × 3−3.5 mm, brownish, oblong, dehiscing into 3 valves from the apex, hypanthium partially covering the capsule, columella deciduous; seed ca. 0.6 × 0.3 mm, brownish, oblong, testa foveolate.

Distribution, habita,t and conservation status—Microlicia attenuata is currently known from a single locality in Cavalcante, Goiás, Brazil. It was collected on the trail to Santa Bárbara waterfall, in campo úmido, at ca. 1,050 m elevation. (Fig. 2). Due to the existence of a single collection made 18 years ago in a non-conservation unit, that receives a large number of tourists, we recommend that it be considered as Critically Endangered [CR D], according to the categories and criteria of IUCN (2019).

Phenology—Flowers and fruits have been collected in April.

Etymology—The specific epithet "*attenuata"* refers to the base of the leaf blade characteristically attenuated.

Notes—Microlicia attenuata resembles *M. longirostrata* R.Romero, Fontelas & Versiane, which is also endemic to Goiás (Romero et al. 2019), in having branch with glandular trichomes, the leaf abaxial surface, hypanthium and sepal covered by spherical glands, lanceolate leaf blade, slightly revolute or flat margin, triangular sepal, and yellow stamen with polysporangiate anther. However, *M. longisrostrata* differs in having oblong or oblong-campanulate hypanthium (*vs.* campanulate in *M. attenuata*), pink petal covered by spherical glands on abaxial surface (*vs.* white, glabrous) and anther of the antesepalous stamen with a long beak (2–2.5 mm long) (*vs.* short, ca. 0.3 mm long). *Microlicia attenuata* also resembles *M. ramosa* Pilger, which is endemic to Goiás (Romero et al. 2020). Both species have slender branch, spherical glands covering branch, leaf, hypanthium, and sepal, and sessile leaf, acute at the apex, obovate petal, triangular sepal, and dimorphic stamen with polysporangiate anther. However, *M. ramosa* differs in having setose trichomes in the branch, both surfaces of the leaf blade, hypanthium and sepal (*vs.* absent in *M. attenuata*), ovate or ovate-lanceolate leaf blade (*vs.* lanceolate or obovate-lanceolate), oblong-urceolate and greenish hypanthium with vinaceous stains (*vs.* campanulate, entirely pale), and magenta petal (*vs.* white). For more details of *M. attenuata* and morphologically similar species, check Table 2.

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TABLE 1. Comparative features of *Microlicia acicularis* and relatives.

Character	*M. acicularis*	*M. chrysoglandulosa*	*M. scoparia*
Leaf blade shape	Acicular	Linear-lanceolate	Linear-triangular or narrow-lanceolate
Leaf blade margin	Revolute	Flat	Flat
Glands on main vein (abaxial surface of the leaf blade)	Absent	Present	Absent
Leaf blade color	Discolorous	Concolorous	Concolorous
Hypanthium and sepal color	Pale-greenish	Green	Greenish, frequently with vinaceous stains
Petal color	White	Pink or white with yellow base	Purple
Anther, number of sporangia	Polysporangiate	Tetrasporangiate	Tetrasporangiate
Stamen color	Concolorous	Concolorous	Bicolorous
Distribution	Goiás	Goiás	Minas Gerais
Vouchers	*C. Munhoz et al. 185* (UFG)	*A.I.M.R. Machado et al. 166* (HUFU)	*J.C. Fontelas et al. 20* (HUFU)

TABLE 2. Comparative features of *Microlicia attenuata* and relatives.

Character	*M. attenuata*	*M. longirostrata*	*M. ramosa*
Indumentum of branch, leaf, hypanthium and sepal	Spherical glands	Glandular trichomes and spherical glands	Setose trichomes and spherical glands
Leaf blade shape	Lanceolate or obovate-lanceolate	Lanceolate	Ovate or ovate-lanceolate
Hypanthium shape	Campanulate	Oblong or oblong-campanulate	Oblong-urceolate
Hypanthium color	Pale	Green	Greenish with vinaceous stains
Petal color	White	Pink	Magenta
Petal indumentum	Glabrous	Glandular trichomes on abaxial surface	Glabrous
Stamen color	Concolorous (yellow)	Concolorous (yellow)	Bicolorous (pink and yellow)
Antesepalous stamen beak (mm)	Ca. 0.3	2–2.5	0.3–1
Vouchers	*J.F.B. Pastore et al. 511* (HUFU)	*G.P. Silva et al. 6424* (HUFU)	*A.F.A. Versiane 559* (HUFU)

FIG. 1. *Microlicia acicularis*. **A.** Flowering branch. **B.** Leaf abaxial surface. **C.** Leaf adaxial surface. **D.** Flower bud. **E.** Petal. **F.** Small stamen, antepetalous. **G.** Large stamen, antesepalous. **H.** Gynoecium. **I.** Mature capsule with hypanthium. (A–I from the paratype *V.L.C. Klein et al. 2455*, HUFU, photographed and prepared by Jean Corrêa Fontelas).

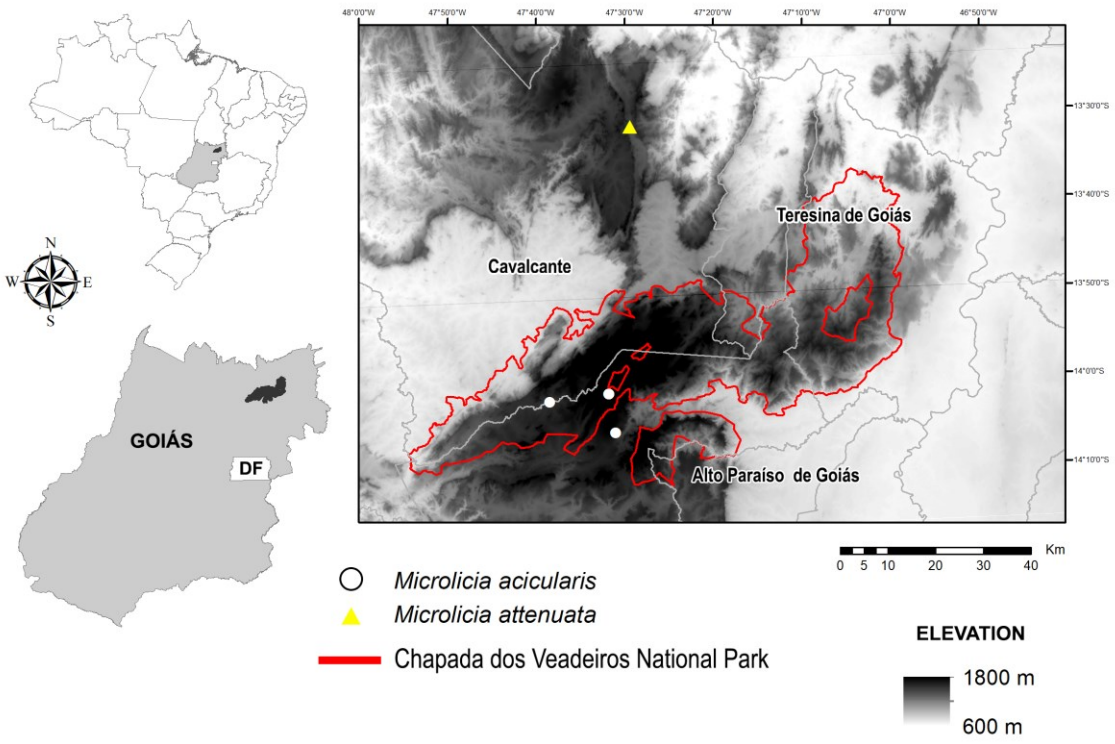
FIG. 2. Geographical distribution for *Microlicia acicularis* and *M. attenuata* in the state of Goiás, Brazil.

FIG. 3. Field images of *Microlicia acicularis.* **A.** Habitat. **B.** Flower. (Photos by Danielle de Oliveira Diniz)

FIG. 4. *Microlicia attenuata*. **A.** Flowering branch. **B.** Flower. **C.** Leaf, abaxial surface (left), adaxial surface (right). **D.** Hypanthium and sepals. **E.** Petal.**F.** Small stamen, antepetalous (left), large stamen, antesepalous (right). **G.** Gynoecium. **H.** Mature capsule with hypanthium (A–H from the isotype *J.F.B. Pastore et al. 511,* HUFU, illustrated by Klei Souza).

FIGURE 1.

FIGURE 2.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Cavalcante
Teresina de Goiás
Alto Paraíso de Goiás
0 5 10 20 30 40
Km
Microlicia acicularis
Microlicia attenuata
Chapada dos Veadeiros National Park
ELEVATION
1800 m
600 m

FIGURE 3.

FIGURE 4.