



A new species of *Microlicia* and a checklist of Melastomataceae from the mountains of Capitólio municipality, Minas Gerais, Brazil

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Abstract

Microlicia furnensis, a new endemic species from *campos rupestres* of Capitólio municipality, Minas Gerais state, Brazil, is described and illustrated. The new species is characterized by its cream petals with pale pink blotches at the apex, sessile or subsessile leaves and golden glandular trichomes and short pale trichomes covering the leaves, pedicels, hypanthium and the calyx lobes. It resembles *M. confertiflora*, *M. isophylla* and *M. flava*, the latter also occurring in Capitólio, Minas Gerais state. A list of species of Melastomataceae from the mountains of Capitólio municipality is also provided.

Key words: *campos rupestres*, endemic, Furnas, Microlicieae, Serra da Canastra

Resumo

Microlicia furnensis, uma nova espécie endêmica dos campos rupestres das serras do município de Capitólio, Minas Gerais, é descrita e ilustrada. A nova espécie caracteriza-se por apresentar pétalas creme com manchas rósea-claro no ápice, folhas sésseis ou subsésseis e tricomas glandulares dourados e tricomas setosos, curtos recobrimdo as folhas, pedicelo, hipanto e lacínias do cálice. Assemelha-se a *M. confertiflora*, *M. isophylla* e *M. flava*, esta última também com ocorrência em Capitólio, estado de Minas Gerais. Uma listagem das espécies de Melastomataceae das serras do município de Capitólio é fornecida.

Introduction

The Serra da Canastra National Park, Minas Gerais, covering an area of 200,000 hectares (Fig. 1), was created to preserve the sources of the rio São Francisco, one of the most important river basins in Brazil, as well as the flora and fauna characteristic of open grasslands (*campo limpo*), savannas (*cerrado*) and highland rocky fields (*campo rupestre*) vegetation in the southeastern region of the country (IBDF 1981). The region is part of the “Complexo Cristalino”, also known as the Southern Plateau of Minas Gerais (Moreira & Camelier 1977), and has a distinct flora of Melastomataceae from the Espinhaço Range (Romero & Martins 2002; Silva & Romero 2008).

The park is located between 46°15' and 47°00'W and between 20°00' and 20°30'S (IBAMA 2005) and only an area with 71,525 hectares, known as Chapadão da Canastra, is officially protected by law. The remaining area known as Chapadão da Babilônia, with c. 130,000 hectares, has not been legally regularized yet, and is currently unprotected. The mountain ranges in the municipality of Capitólio make up part of this area and, despite their rich and diverse vegetation, have been intensively altered by agro-pastoral and mining activities in the last 50 years. These mountain ranges are included in the Cerrado biome comprising forest, savanna and grassland physiognomies, where the most common formations are the *campo rupestre* and *campo limpo*.

Floristic studies carried out over the last 15 years in this part of Minas Gerais state (Nakajima & Semir 2001; Romero & Martins 2002; Farinaccio & Mello-Silva 2004; Scudler 2004; Pontes & Mello-Silva 2005; Filardi et al. 2007; Carvalho-Silva & Guimarães 2009; Hemsing & Romero 2010; Morokawa et al. 2013), suggest that the region has a high number of endemic species from different families of Angiosperms (Romero & Goldenberg 1999; Romero & Nakajima 1999; Assis 2002; Romero & Martins 2003; Romero & Guimarães 2005; Cavalcanti 2007; Batista & Bianchetti 2010; Chautems et al. 2010; Feres 2010; Dutra & Garcia 2013; Farinaccio 2013). Melastomataceae is considered one of the most representative families in *campos rupestres* of this region with more than a hundred species

(Romero & Martins 2002; Silva & Romero 2008), from which at least five are endemic (Romero & Goldenberg 1999, Romero 2000, Romero & Martins 2003, Romero & Guimarães 2005).

In order to improve floristic studies in this important mountain range, collections were made in Capitólio municipality throughout 2005 and 2006, and specimens deposited in the HUFU herbarium (acronym according to Thiers 2014). Identification of Melastomataceae specimens collected during that period revealed the occurrence of 51 species distributed in 15 genera (Appendix 1) and, in addition to the nine species of *Microlicia*, a new species was found. It is described and illustrated here, and compared with its morphologically closest species.

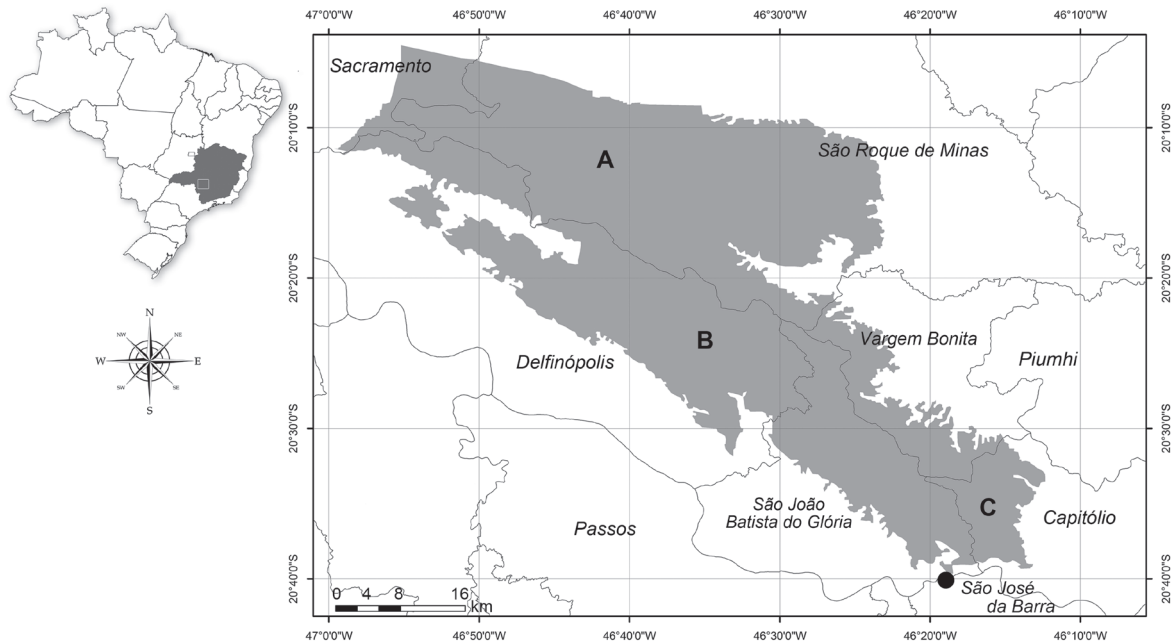


FIGURE 1. Map showing the location of the Serra da Canastra National Park in Minas Gerais (in grey). **A.** Chapadão da Canastra. **B–C.** Chapadão da Babilônia. **C.** Study area in the municipality of Capitólio. •Furnas hydroelectric power station.

Description

Microlicia furnensis R. Romero, *spec. nov.* (Fig. 2 A–M).

Type:—BRAZIL. Minas Gerais: estrada Capitólio-Passos, 500 metros do trevo de Furnas, ca. 15 km em direção a serra, 1 October 2005, fl. fr., R. Romero *et al.* 7267 (holotype HUFU!; isotypes BHCBI!, SPFI!, KI!, RB!).

Erect shrub 0.5–0.7 m tall, much branched. Young branches quadrangular, 4-winged, densely covered with spherical golden glandular trichomes and pale trichomes, older branches becoming terete, glabrous and leafless with age. Leaves horizontal to ascending, lax, smooth, concolorous, pale green (when dry); petiole absent or 0.1–0.5 mm long; blade elliptic-lanceolate to oval-lanceolate, 3–5 × 1–1.5 mm, apex acute or obtuse, base attenuate, rarely rounded, margin entire, rarely irregularly undulate, sometimes sparsely ciliate, pale trichomes 0.15–0.25 mm long, 3-nerved, basal to shortly suprabasal (up to 1 mm), sometimes with an additional tenuous marginal pair, midrib evident, both surfaces smooth, with spherical golden glandular trichomes, abaxial surface with pale, sparse trichomes or these lacking. Flowers solitary, lateral and terminal, 5-merous, zygomorphic due to the position of stamens and style; pedicel 1–1.5 mm long, with spherical golden glandular trichomes and sparse pale trichomes. Hypanthium oblong to oblong-campanulate, 1.7–2.3 × 1–1.5 mm, green, with sessile, spherical golden glandular trichomes and pale, sparse trichomes or these lacking; calyx lobes foliaceous, oblong to oblong-triangular, 2.4–3 × c. 1 mm, with sessile, spherical golden glandular trichomes, apex acute. Petals oblong, 5–5.5 × 2.5–3 mm, cream with pinkish blotches at the apex, apex acute to acute-acuminate, margin entire. Stamens 10, dimorphic, yellow, thecae tetrasporangiate; large stamens 5, filaments 2.7–3.2 mm long, thecae oval-oblong, c. 1.5 mm long (including beak), beak 0.2–0.4 mm long, connective prolonged 2–2.5 mm, ventral appendage 0.9–1.2 mm long, expanded and truncate; small stamens 5, filaments 2.3–3 mm long,

thecae oval-oblong, c. 1.5 mm long (including beak), beak 0.2–0.3 mm long, connective prolonged 0.7–1 mm, ventral appendage 0.2–0.3 mm long, obtuse. Ovary ovoid to pyriform, c. 2 × 1.5 mm, superior, 3-locular, glabrous; style 3.5–5 mm long, stigma punctiform. Capsule 3–3.5 × 2–2.5 mm, brown, subglobose, dehiscent into 3 valves from the apex, hypanthium covering the entire ovary and peeling off as the fruit matures. Seeds 0.4–0.5 × 0.2–0.3 mm, half slightly curved to one side, brownish, numerous, testa areolate and foveolate.

Habitat and Distribution:—*Microlicia furnensis* occurs exclusively in *campos rupestres* from the mountains of Capitólio municipality, in the southwestern region of Minas Gerais state.

Conservation Status:—To date *M. furnensis* is known only from a few populations in a restricted area which, due to the intensive extraction of rocks for commercial purposes, have been heavily altered. Since this species habitat has been destructed, it is assigned to the critically endangered (CR) category, Criteria B2, b (iii) (IUCN 2001).

Phenology:—*Microlicia furnensis* was collected in flower and in fruit in December, January and February.

Etymology:—The specific epithet was chosen since this species has restricted occurrence in the *campos rupestres* close to the Furnas hydroelectric power station, known for one of the largest reservoirs in Brazil. Also, it is an attempt to draw the Brazilian government's attention to the floristic richness of these mountains.

Additional specimens examined:—BRAZIL Minas Gerais: Capitólio: Chapadão de Furnas, 20°37'12"S–46°16'33"W, 1175 m, 24 January 2002, fl. fr., R. Romero 6199 (HUFU, SP). Região da Represa de Furnas, 9 December 2005, fl. fr., R. Romero et al. 7468 (HUFU, UEC). Estrada para Cachoeira Feixo da Serra, Rio Turvo, região da Represa de Furnas, 15 February 2006, fl. fr., R. Romero et al. 7528 (HUFU, P, SP).

Discussion

The most distinguishing characteristic of *Microlicia furnensis* is the flowers with cream petals with pinkish blotches at the apex, since is the only species occurring in Minas Gerais that has this kind of petal color. *Microlicia furnensis* bears some similarity to *M. flava* R. Romero (2000: 142), which is also endemic to *campos rupestres* from this region (Romero 2000); both are subshrubs 0.5–7 m in height, with the same type of branching, 4-winged branches, small leaves which are not imbricate and yellow dimorphic stamens. However, in *M. flava* the petals are yellow-gold, the branches, leaves, hypanthium and calyx lobes are covered by an indumentum frequently with only sessile glandular trichomes, giving the plant a glutinous appearance. Also, the sessile leaves have crenulate margins, a pair of inconspicuous veins and the sessile glandular trichomes on the lamina are sunken, the leaves therefore appearing slightly rugose (Fig. 2 N–Q). *Microlicia furnensis* and *M. isophylla* De Candolle (1828: 120) are much branched, with glandular trichomes mixed with simple, sparse trichomes, small leaves, long calyx lobes, a well-developed pedicel and dimorphic stamens. However, *M. isophylla* petals are magenta, the stamens bicolorous and the hypanthium cylindrical with triangular-subulate calyx lobes, with an acute apex (Romero 2013a). *Microlicia confertiflora* Naudin (1845: 176) also has quadrangular branches covered with glandular trichomes and frequently with pale trichomes and sessile, small, and ascending leaves. However, the leaves are ovate to ovate-oblong, the base is rounded, but sometimes cordate, with an entire, not ciliate margin (Romero 2013b). The flower has magenta petals and bicolorous stamens.

Microlicia furnensis, together with *M. flava* R. Romero (2000: 142), *Svitramia integerrima* R. Romero & A.B. Martins (2003: 403), *S. petiolata* R. Romero & A.B. Martins (2003: 408), *S. wurdackiana* R. Romero & A.B. Martins (2003: 410), *Tibouchina rubrobracteata* R. Romero & P.J.F. Guimarães (2005: 210) and *Comolia* sp. nov. are endemic to the southwestern part of Minas Gerais state, occurring exclusively in *campo rupestre* vegetation.

The flora of the mountains of Capitólio is highly threatened due to abusive extraction of rocks to produce “pedra mineira”, a type of stone used in building constructions, as well as the establishment of pastures, related to frequent fires in the region. These activities have contributed to the degradation of *campos rupestres* vegetation, and reinforce the need for preservation by the government.

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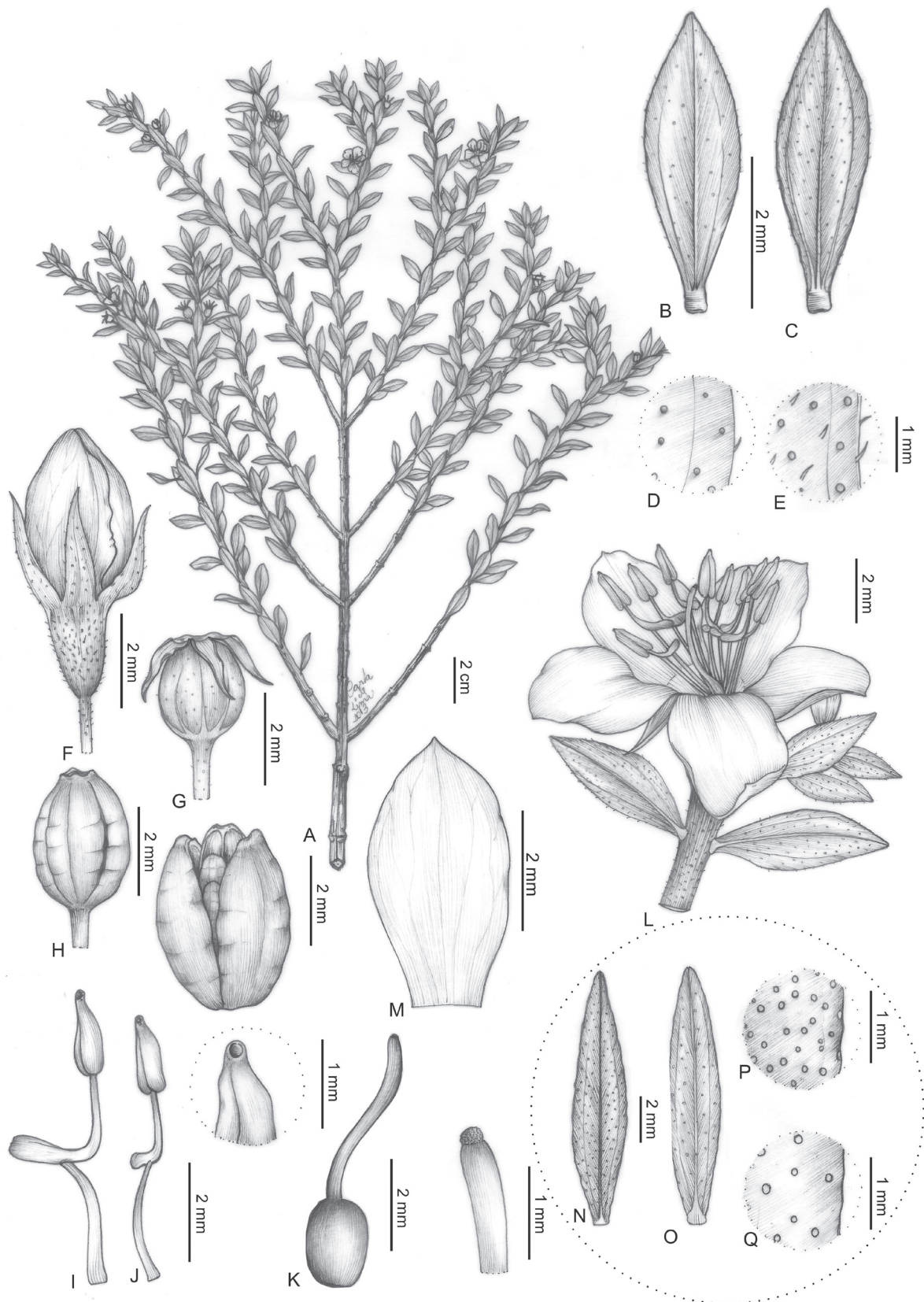


FIGURE 2. A–M *Microlicia furnensis* (R. Romero *et al.* 7267). A. Branch. B. Leaf adaxial surface. C. Leaf abaxial surface. D. Leaf adaxial surface, showing the glandular trichomes. E. Leaf abaxial surface, showing the glandular and pale trichomes. F. Floral bud. G. Capsule enclosed by the persistent hypanthium. H. Capsule dehiscent into 3 valves from the apex. I. Lateral view of a large stamen. J. Lateral view of a small stamen and detail of the anther apex. K. Gynoecium, and detail of stigma. L. Flower. M. Petal. N–Q *Microlicia flava* R. Romero (Romero *et al.* 7518). N. Leaf adaxial surface. O. Leaf abaxial surface. P. Leaf adaxial surface, showing the glandular trichomes. Q. Leaf abaxial surface, showing the glandular trichomes.

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APPENDIX 1: List of the species of Melastomataceae from the mountains of Capitólio municipality, Minas Gerais state, Brazil. The vouchers are in herbarium HUFU.

Taxon	Voucher
<i>Cambessedesia espora</i> De Candolle (1828: 111)	J.N. Nakajima et al. 3920
<i>Cambessedesia hilariana</i> (Kunth 1823: 147) De Candolle (1828: 111)	R. Romero et al. 7371
<i>Chaetostoma armatum</i> (Sprengel 1825: 308) Cogniaux (1883: 31)	R. Romero et al. 7509
<i>Clidemia hirta</i> (Linnaeus 1753: 390) David Don (1823: 309)	J.N. Nakajima et al. 4114
<i>Clidemia urceolata</i> De Candolle (1828: 158)	R. Romero et al. 7247
<i>Comolia</i> sp. nov.	R. Romero et al. 8036
<i>Lavoisiera imbricata</i> (Thunberg 1817: 10) De Candolle (1828: 103)	R. Romero et al. 8029
<i>Leandra aurea</i> (Chamisso 1834: 47) Cogniaux (1886: 142)	R. Romero et al. 7363
<i>Leandra coriacea</i> Cogniaux (1888: 608)	J.N. Nakajima et al. 3918
<i>Leandra lacunosa</i> Cogniaux (1886: 138)	R. Romero et al. 8023
<i>Leandra melastomoides</i> Raddi (1820: 386)	R. Romero et al. 7434
<i>Leandra rigida</i> Cogniaux (1886: 134)	P.H. Bernardes et al. 362
<i>Macairea radula</i> (Bonpl. in Humboldt & Bonpland 1823: 108) De Candolle (1828: 109)	J.N. Nakajima et al. 3900
<i>Miconia albicans</i> (Swartz 1788: 70) Steudel (1841: 139)	R. Romero et al. 8006
<i>Miconia cinnamomifolia</i> (De Candolle 1828: 194) Naudin (1851: 168)	P.H. Bernardes et al. 17
<i>Miconia cubatanensis</i> Hoehne (1922: 139)	R. Romero et al. 7714
<i>Miconia cyathanthera</i> Triana (1873: 127)	J.N. Nakajima et al. 3933
<i>Miconia ferruginata</i> De Candolle (1828: 181)	R. Romero et al. 7746
<i>Miconia ligustroides</i> (De Candolle 1828: 194) Naudin (1851: 167)	R. Romero et al. 7539
<i>Miconia pepericarpa</i> De Candolle (1828: 182)	J.N. Nakajima et al. 4178
<i>Miconia sellowiana</i> Naudin (1851: 206)	J.N. Nakajima et al. 3567
<i>Miconia theaezans</i> (Bonpl. in Humboldt & Bonpland 1816: 18) Cogniaux (1888: 419)	R. Romero et al. 7465
<i>Microlicia canastrensis</i> Naudin (1845: 174)	R. Romero et al. 7725
<i>Microlicia cordata</i> (Sprengel 1820: 301) Chamisso (1834: 390)	R. Romero et al. 7543
<i>Microlicia fasciculata</i> Martius ex Naudin (1845: 180)	R. Romero et al. 8017
<i>Microlicia flava</i> R. Romero (2000: 142)	R. Romero et al. 7855
<i>Microlicia inquinans</i> Naudin (1845: 172)	R. Romero et al. 7767
<i>Microlicia euphorbioides</i> Martius (1829: 107)	R. Romero et al. 7531
<i>Microlicia polystemma</i> Naudin (1845: 179)	P.O. Rosa et al. 631
<i>Microlicia serpyllifolia</i> David Don (1823: 302)	R. Romero et al. 7485
<i>Microlicia trembleyaeformis</i> Naudin (1845: 172)	R. Romero et al. 7550
<i>Ossaea congestiflora</i> (Naudin 1852: 344) Cogniaux (1888: 553)	R. Romero et al. 7958
<i>Pterolepis repanda</i> (De Candolle 1828: 141) Triana (1873: 39)	E.K.O. Hattori et al. 482
<i>Rhynchanthera grandiflora</i> (Aublet 1775: 414) De Candolle (1828: 107)	R. Romero et al. 7811
<i>Siphanthera cordata</i> Pohl ex De Candolle (1828: 121)	P.H. Bernardes et al. 234
<i>Siphanthera dawsonii</i> Wurdack (1959: 8)	R. Romero et al. 3418
<i>Svitramia hatschbachii</i> Wurdack (1973: 1)	R. Romero et al. 8035
<i>Svitramia petiolata</i> R. Romero & A.B. Martins (2003: 408)	J.N. Nakajima et al. 3905
<i>Svitramia pulchra</i> Chamisso (1834: 446)	J.N. Nakajima et al. 4455
<i>Svitramia wurdackiana</i> R. Romero & A.B. Martins (2003: 410)	R. Romero et al. 7181
<i>Tibouchina aegopogon</i> (Naudin 1849: 153) Cogniaux (1885: 383)	R. Romero et al. 7973
<i>Tibouchina candolleana</i> (De Candolle 1828: 129) Cogniaux (1885: 339)	R. Romero et al. 7832
<i>Tibouchina fothergillae</i> (De Candolle 1828: 108) Cogniaux (1885: 320)	P.H. Bernardes et al. 247
<i>Tibouchina frigidula</i> (De Candolle 1828: 127) Cogniaux (1885: 328)	R. Romero et al. 7699
<i>Tibouchina gracilis</i> (Bonpl. in Humboldt & Bonpland 1823: 138) Cogniaux (1885: 386)	L.S. Kinoshina et al. 58
<i>Tibouchina herbacea</i> (De Candolle 1828: 137) Cogniaux (1885: 408)	R. Romero et al. 7636
<i>Tibouchina heteromalla</i> (David Don 1823: 295) Cogniaux (1885: 335)	E.K.O. Hattori et al. 479
<i>Tibouchina minor</i> Cogniaux (1885: 390)	R. Romero et al. 8012
<i>Tibouchina stenocarpa</i> (De Candolle 1828: 130) Cogniaux (1885: 344)	P.H. Bernardes et al. 69
<i>Trembleya parviflora</i> (David Don 1823: 323) Cogniaux (1883: 127)	R. Romero et al. 7812
<i>Trembleya phlogiformis</i> De Candolle (1828: 126)	E.K.O. Hattori et al. 489