Check List the journal of biodiversity data

NOTES ON GEOGRAPHIC DISTRIBUTION

Check List 15 (5): 753–758
https://doi.org/10.15560/15.5.753

PENSOFT

First record of *Fritzschia* Cham. (Melastomataceae, Marcetieae) in the state of Bahia, Brazil

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Abstract

Fritzschia Cham. is mainly distributed in the Brazilian Cerrado and, until now, was known from the Federal District and the states of Minas Gerais, Goiás, and Mato Grosso do Sul. We present the first record of the genus in the state of Bahia, reporting *Fritzschia sessilis* (DC.) M.J.R.Rocha & P.J.F.Guim., a taxon previously considered endemic to Minas Gerais state.

Keywords

Campo rupestre, *Comolia*, Espinhaço Range, *Microlicia*, Serra Geral de Licínio de Almeida, taxonomy, Wallacean shortfall.

Academic editor: Marcelo Trovó | Received 25 April 2019 | Accepted 26 August 2019 | Published 13 September 2019

Citation: Silva DN, Rocha MJR, Jesus JC, Guimarães PJF (2019) First record of *Fritzschia* Cham. (Melastomataceae, Marcetieae) in the state of Bahia, Brazil. Check List 15 (5): 753–758. https://doi.org/10.15560/15.5.753

Introduction

Melastomataceae Juss. is a pantropical family (Renner 1993) presenting about 170 genera and approximately 5400 species (Renner 1993; Goldenberg et al. 2015). The Neotropical region concentrates about two-thirds of the species diversity of Melastomataceae (Renner 1993), which is the sixth largest family of this region (Ulloa Ulloa et al. 2017). Brazil holds the largest diversity of this family in the Neotropical region (Ulloa Ulloa et al. 2017), encompassing more than 1400 species of Melastomataceae (Flora do Brasil 2019), which is the fifth most diverse family from this country (BFG 2015). In Brazil, the family is distributed throughout the territory, mainly in the biomes Amazonia, Cerrado, and Atlantic Forest (Goldenberg et al. 2012). In Cerrado, Melastomataceae is considered the fifth most diverse family (BFG 2015), with approximately 500 species (Flora do Brasil 2019). These species are subordinate to several genera that are typical of this biome (Goldenberg et al. 2012), and among them is *Fritzschia* Cham.

Fritzschia is a small genus composed of 11 species (Silva et al. 2019). *Fritzschia* was composed of four species: *F. anisostemon* Cham., *F. erecta* Cham., *F. integrifolia* Cham. (Chamisso 1834), and *F. furnensis* R.Romero & M.J.R.Rocha (Romero and Rocha 2017). Recently,

five species were transferred from *Comolia* DC. to *Fritzschia*, based on the molecular and morphological studies conducted by Rocha et al. (2016, 2018): *F. edmundoi* (Brade) M.J.R.Rocha & P.J.F.Guim., *F. lanceiflora* (Mart. & Schrank ex DC.) M.J.R.Rocha & P.J.F.Guim., *F. sertularia* (Schrank & Mart. ex DC.) M.J.R.Rocha & P.J.F.Guim., *F. sessilis* (DC.) M.J.R.Rocha & P.J.F.Guim., and *F. stenodon* (Naudin) M.J.R.Rocha & P.J.F.Guim.

After Rocha et al. (2018) expanded *Fritzschia* and subordinate it in the newly circumscribed tribe Marcetieae M.J.R.Rocha, P.J.F.Guim. & Michelang., Pacifico et al. (2018) and Romero et al. (2019) described two other species for the genus, *F. rupestris* R.Pacifico, Almeda & D.Nunes and *F. cordifolia* R.Romero, D.Nunes & M.J.R.Rocha, respectively. The species of *Fritzschia* have a restricted distribution to the Cerrado, occurring mainly in the campos rupestres of Espinhaço Range, where it is associated with sandy or hydromorphic soils or in areas alongside water courses (Rocha et al. 2018). Most of the *Fritzschia* species are endemic to the state of Minas Gerais, Brazil, except for *F. lanceiflora* that also occurs in the states of Mato Grosso do Sul (Pott et al. 2006) and Goiás, and in the Federal District (Rocha et al. 2018).

The state of Bahia presents a significant diversity of Melastomataceae species, with about 300 species (Flora do Brasil 2019), some of these recently described (Freitas et al. 2013; Pataro et al. 2013; Santos et al. 2013; Amorim et al. 2014; Goldenberg and Chagas 2014; Guimarães and Freitas 2015; Freitas and van den Berg 2016; Goldenberg et al. 2016; Meirelles et al. 2016; Bacci et al. 2018; Jesus et al. 2018; Romero and Woodgyer 2018). The Serra Geral de Licínio de Almeida (SGLA) extends through the western portion of the municipality of Licínio de Almeida, in the southwest of the state of Bahia (Campos et al. 2017), where Melastomataceae has been considered a species-rich family (Campos et al. 2017) with about 36 species (Jesus 2018). The SGLA is an ecotone between the Cerrado and Caatinga biomes with savannic and forest formations (Campos et al. 2017). This constitutes an ecological corridor connecting the southern and northern sectors of Espinhaço Range (Silva et al. 2008; Zappi 2008) where 24 new occurrences were recorded for the state of Bahia (Campos et al. 2017), and already revealed two new endemic species of *Microlicia* D.Don (Jesus et al. 2018). Thus, aiming to collaborate in increasing knowledge about the family Melastomataceae in the state of Bahia, northeast region of Brazil, we present the first record of the genus *Fritzschia*, coming from SGLA. Additionally, we provide a brief morphological description and a geographic distribution map of the species recorded in Bahia, *F. sessilis*.

Methods

The description provided here is based on specimens collected in the state of Bahia, Brazil. The morphological terminology used in the description follows Cogniaux (1885) with modifications from Radford et al. (1974). The herbaria acronyms follow the Index Herbariorum (Thiers 2019). The analyzed collections for the new records are deposited in the herbaria ALCB, K, MO, and SPF. The geographic distribution map was generated in the software ArcGis 10.5 (https://www.arcgis.com/features/index.html) from the geographic coordinates provided in the labels of the specimens analyzed, so far, in the taxonomic study of the genus *Fritzschia* (Silva 2018; Silva et al. in prep.).

Results

***Fritzschia sessilis* (DC.) M.J.R.Rocha & P.J.F.Guim.**
Figures 1, 2

New records. Brazil: Bahia. Licínio de Almeida, ca. 12 km from the city towards Brejinho das Ametistas, locality known as "garimpo", 14°32′04″S, 042°31′51″W, 800–900 m elev., 12-III-1994 (fl., fr.), N. Roque et al. 15029 (K000968123-online image!, MO, SPF); Serra Geral, Cachoeirão, next to the train track, at the entrance of the tunnel, 14°41′47″S, 042°33′02″W, 908 m elev., 26-II-2012 (fl., fr.), F.A. Santana et al. 118 (ALCB!).

Fritzschia sessilis is a species with wide distribution on the Espinhaço Range, now occurring in the states of Bahia and Minas Gerais (Fig. 3). The new records were in the campos rupestres of the SGLA with sandy soil, within the Cerrado biome, between 800–908 m of altitude. Licínio de Almeida is in southwestern Bahia (Fig. 3).

Identification. Erect shrub ca. 1.5 m tall. Branches quadrangular (when young) or circular (mature), covered by trichomes hirsute-glandular or not; internodes 6–14 mm long. Leaves cordiform, 8–17 × 5–9 mm, membranaceous, sessile, concolorous, green, 5-nerved, basal; base cordate; margin serrate ciliate-glandular in the middle-apical portion, flat; apex acute; surface abaxial and adaxial covered with trichomes hirsute-glandular; nerve central and first pair of nerves secondary callous, second pair of nerves secondary tenuous. Flowers 4-merous, solitary in the leaf axils; bracts oval-lanceolate, 2.5 × 1–1.3 mm; pedicel ca. 0.5 mm long; hypanthium oblong, ca. 2.9 × 2.5 mm, beige, 8-striated, with trichomes hirsute-glandular, ≤ 0.2 mm long, with triangular denticles on the torus and the hypanthium striae, 0.6–2 mm long; sepals 4, triangular, ca. 2 × 1.2 mm, margin ciliate-glandular, apex acute with glandular trichomes; petals 4, oblong, 12–14 × 4–6 mm, lilac, base attenuate, margin entire, apex acuminate; stamens 8, subisomorphic, glabrous, appendages ventral bilobate, anthers oblong-linear, rostrate; stamens antesepalous 4, ca. 12.4 mm long, filaments ca. 7 mm long, pedoconnective ca. 2.6 mm long, appendages ca. 0.7 mm long, anthers ca. 2.8 mm long; stamens antepetalous 4, ca. 10.9 mm long, filaments ca. 5.8 mm long, pedoconnective ca. 2.5 mm long, appendages ca. 0.5 mm long, anthers 2.6 mm long; style filiform, ca. 13 mm long, white; ovary oblong, ca.

Figure 1. *Fritzschia sessilis*. Specimen representing the first collection of the genus in the state of Bahia, Brazil. Voucher: N. Roque et al. 15029 (K).

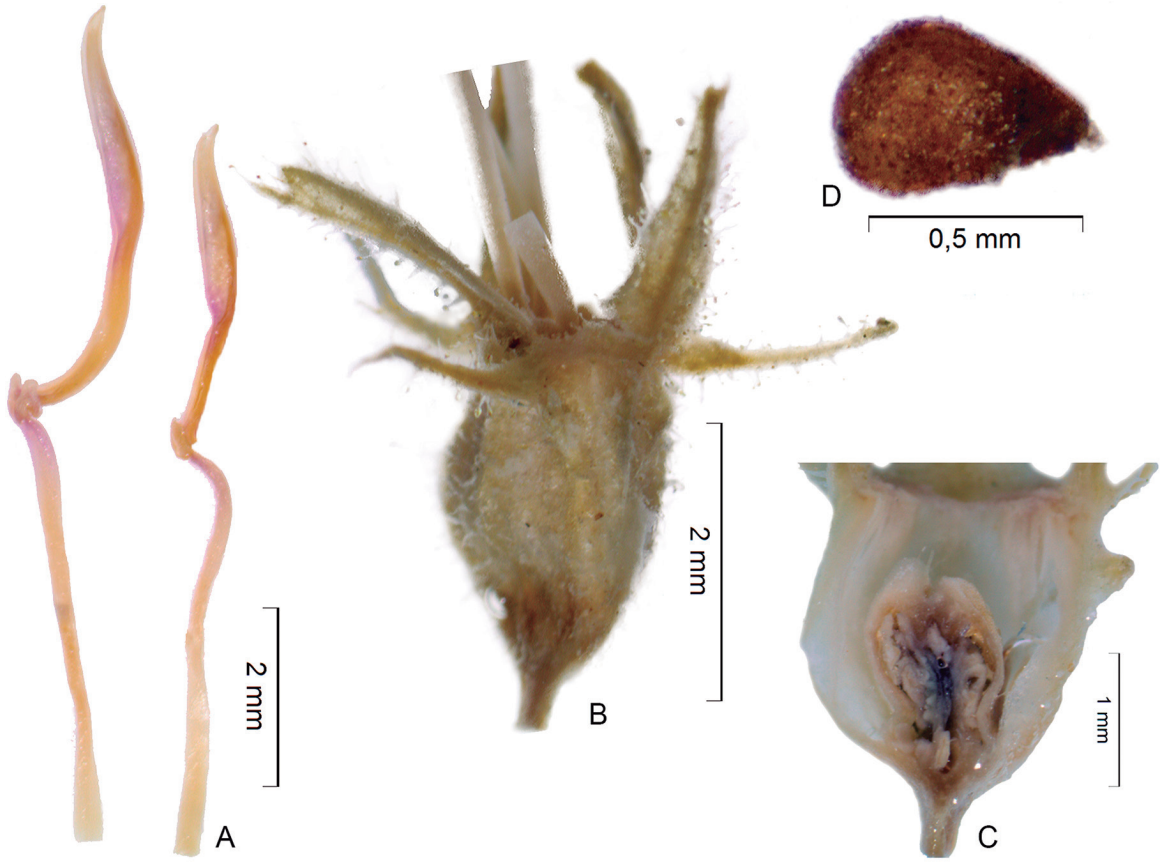

Figure 2. *Fritzschia sessilis*. **A.** Antesepalous (larger in length) and antepetalous (smaller) stamens. **B.** Hypanthium. **C.** Ovary (in longitudinal section). **D.** Seed. Voucher: F.A. Santana et al. 118 (ALCB).

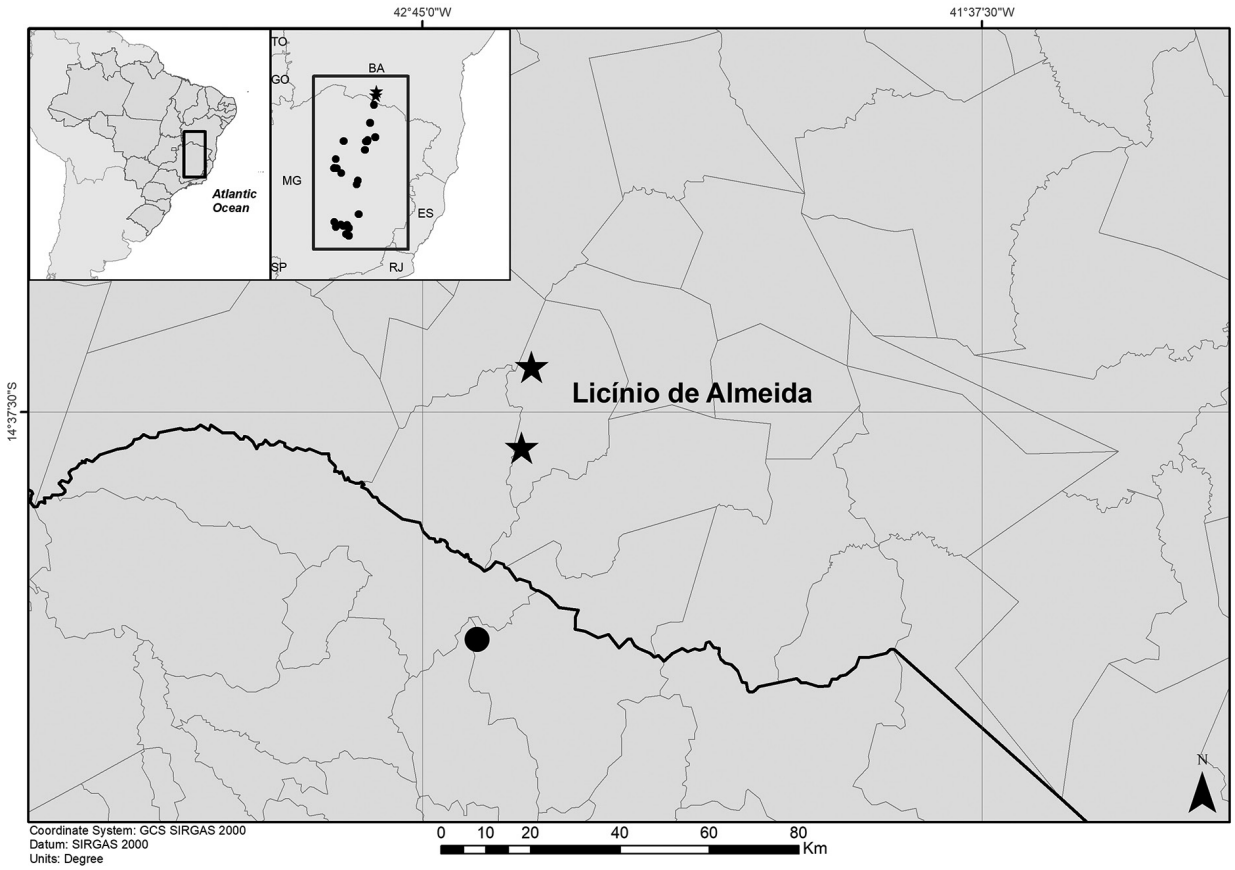

Figure 3. Map of geographic distribution of *F. sessilis* (black circles: previous points of occurrence; black star: first record of the genus in the state of Bahia, Brazil).

2.2 × 2.2 mm, apex with glandular trichomes, pluriovulate, 4-locular. Fruit capsule loculicide, oblong, ca. 3.6 × 2.9 mm, polyspermic. Seeds cochleate, ca. 0.6 × 0.5 mm.

Discussion

Fritzschia sessilis was described by Sprengel (1825) as *Melastoma sessile* Spreng., but Chamisso (1834) synonymized this binomial under *Microlicia viscidula* Cham. Naudin (1850) transferred this species to the genus established by him, *Tetrameris* Naudin, and named it *T. viscidula* (Cham.) Naudin. Also in the 19th century, Triana (1872) assigned *Melastoma sessile* in *Comolia*, more specifically in the section *Tricentrum* Triana, naming it as *C. sessilis* (Spreng.) Triana. Cogniaux (1885, 1888) followed the classification of Triana (1872) and established a variety and a new species, *C. sessilis* (Spreng.) Triana var. *microcarpa* Cogn. and *C. tetraquetra* Cogn., respectively, in two editions of Flora Brasiliensis. Reviewing the genus *Comolia*, Seco (2006) suggested *C. sessilis* var. *microcarpa* and *C. tetraquetra* as synonyms of *C. sessilis*. Only after phylogenetic studies in combination with morphology and geographic distribution (Rocha et al. 2016, 2018), *C. sessilis* was transferred to *Fritzschia* and combined as *F. sessilis* (Rocha et al. 2018).

To date, *Fritzschia sessilis* has been recorded in the state of Minas Gerais (Seco 2006), being considered endemic to Minas Gerais and occurring only in campos rupestres (Seco 2006; Romero and Rocha 2017; Rocha et al. 2018). A similar distribution was observed for *Microlicia maximowicziana* Cogn., also known only in Minas Gerais (Romero and Woodgyer 2014), but recently recorded in the SGLA (Campos et al. 2017). The new records of *F. sessilis* are an important for the estimating of the area of occupation and extent of occurrence of the species, as well as, more generally, increasing knowledge of the geographic distribution of the genus and tribe Marcetieae in Bahia, since the new collections represent the northernmost sites for the genus. In addition, these discoveries reinforce the great biological significance of the SGLA for the flora of Bahia (Taylor and Zappi 2004) and the need to establish a Conservation Unit, given the degree of threats to this flora (Campos et al. 2017).

Acknowledgements

We are grateful to Rafael da Silva Ribeiro (Núcleo de Computação Científica e Geoprocessamento do Jardim Botânico do Rio de Janeiro) for constructing the geographic distribution map, Vítor Hugo Maia (Pontifícia Universidade Católica do Rio de Janeiro) for the revision of English and previous reading of the manuscript, and the anonymous reviewers and Marcelo Trovó (Subject editor) for suggestions and comments on the manuscript. DNS is also grateful to Conselho Nacional de Desenvolvimento Científico e Tecnológico for the scientific initiation grant (PIBIC/CNPq-JBRJ, 126491/2018-6).

Authors' Contributions

DNS wrote the manuscript with the support of MJRR, JCJ, and PJFG. DNS and JCJ wrote the Identification section. PJFG edited the figures. All authors gave suggestions on the text and checked the final version of the manuscript.

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