Braz. J. Bot (2017) 40(2):427–437
DOI 10.1007/s40415-016-0347-y

ORIGINAL ARTICLE

Contributions to the floristic and vegetation knowledge of Espinhaço Septentrional, Bahia, Brazil

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Received: 8 January 2016 / Accepted: 1 December 2016 / Published online: 30 December 2016

Abstract The Espinhaço range is a mountain chain that extends from the municipality of Ouro Preto in Minas Gerais to the Chapada Diamantina region in Bahia, eastern Brazil. The Serra Geral of Licínio de Almeida (SGLA) is located in the Espinhaço Septentrional in southwestern Bahia, and its biodiversity is still poorly known. In order to contribute to a better understanding of floristic diversity and the vegetation of SGLA, we have compiled a checklist of its flowering plants and characterized the phyto-physiognomy of the different plant formations. A total of 811 species in 410 genera and 97 families are recorded in our study. Based on floristic composition and ecological parameters, we recognize five plant formations as follows: (1) deciduous forest, (2) semi-deciduous forest, (3) "Cerrado" *s.str.*, (4) rocky fields ("Campos Rupestres"), and (5) rocky Caatinga ("Caatinga Rupestre"). Our results indicate that the SGLA is a transitional area between the "Cerrado" and "Caatinga" domains and constitutes an ecological corridor that links the northern and southern portions of the Espinhaço Range supported by 24 new occurrences recorded for the state of Bahia.

Keywords Floristic inventory · Phyto-physiognomy · Serra Geral · Rocky "Caatinga"

Introduction

The Espinhaço range (ER) is a system of mountain ranges in eastern Brazil, which extends from the cities of Serra do Ouro Branco, Ouro Preto (Minas Gerais) to Jacobina (Bahia), where it is referred to as Chapada Diamantina. This mountain system is 1100 km long (north–south direction, S10°00′–20°35′, W40°10′–44°30′), and 50 to 100 km wide with altitudes of 800 to a maximum of 2033 m at Pico Barbado in Abaíra, Bahia (Alkmim 2012; Guimarães et al. 2012; Giulietti et al. 1987).

The Serra Geral of Licínio de Almeida (SGLA) range, located in the Espinhaço Septentrional in southwestern Bahia, is an integral part of this system and along with the surrounding mountains, connects the Minas Gerais Mountains to Chapada Diamantina in Bahia, acting as a potential ecological corridor between these two portions of the Espinhaço (Silva et al. 2008; Zappi 2008).

The biodiversity of SGLA is poorly known (MMA 2007) because the majority of the floristic and ecological research have been limited to the southern Espinhaço, Minas Gerais (Giulietti et al. 1987; Rapini et al. 2002; Pirani et al. 2003; Forzza et al. 2013; Zappi et al. 2014) and the Chapada Diamantina (Bahia) ranges (Harley 1995; Zappi et al. 2003; Harley and Giulietti 2004; Roque et al. 2016).

Recent floristic studies performed in SGLA show that this range contains a highly diverse flora and several

Electronic supplementary material The online version of this article (doi:10.1007/s40415-016-0347-y) contains supplementary material, which is available to authorized users.

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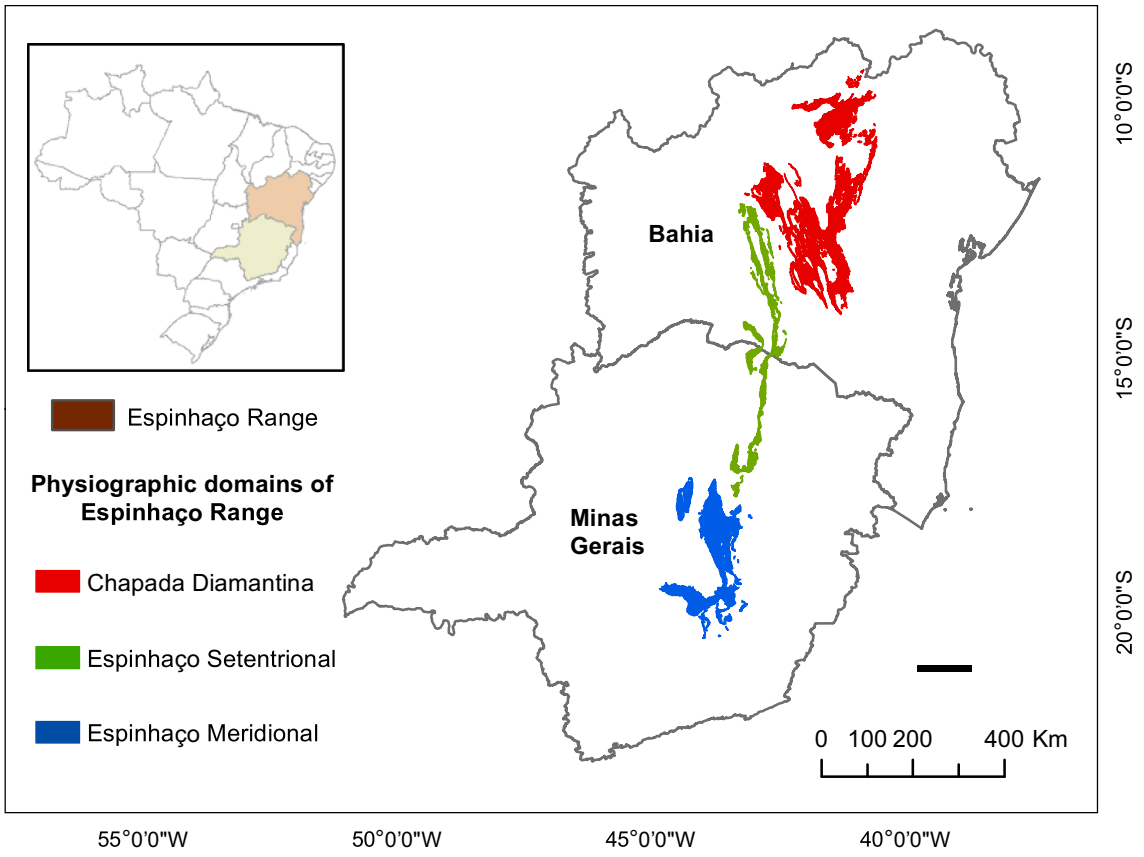

Fig. 1 Physiographic domains in the Espinhaço range

vegetation formations (Roque and Santana 2014; Alves et al. 2015; Hurbath et al. 2016). This botanical diversity is attributed to the varied substrates found in the area and its position between two main phyto-geographical areas, i.e., the "Cerrado" and "Caatinga" domains (Silva et al. 2008; IBGE 2012). Despite of the extreme biological importance (Taylor and Zappi 2004), this region is subject to deforestation and extractive practices and it is located outside legally protected areas.

This paper aims to increase the knowledge of biodiversity in the Espinhaço Septentrional, a region whose biodiversity has been long neglected, by compiling a checklist of flowering plants and by characterizing the phyto-physiognomies of SGLA.

Materials and methods

Study area – Based on the geology of the region, the Espinhaço Range is divided into two disjunct physiographic areas: the Chapada Diamantina in north-central Bahia and the Serra do Espinhaço that extends from Minas Gerais to southwestern Bahia (Danderfer and Dardenne 2002). Furthermore, and based on litho-geophysical structural analysis and the morphology of the substrate, Saadi (1995) considered the Serra do Espinhaço to contain two well-differentiated compartments, the Espinhaço Meridional in southern central Minas Gerais and the Espinhaço Septentrional in northern Minas Gerais and southwestern Bahia (Fig. 1). The Espinhaço Septentrional of Bahia contains three ranges (i.e., Serra do Boqueirão, Serra do Estreito and Serra Geral) formed from meta-sedimentary and meta-volcanic rocks with deposits of manganese (Guimarães et al. 2012).

The SGLA extends over a long and narrow area in the western portion of the Licínio de Almeida municipality in Bahia (S14°25′–14°50′, W42°35′–42°30′) (Fig. 2). The altitudes vary from 700 to 1230 m, and the climate is predominantly semi-arid or sub-humid to dry, with median temperatures ranging from 20 °C to 22 °C and annual rainfalls of 700 to 900 mm, with rainy season between December and March, but more predominant in January. The SGLA is part of the Rio de Contas river basin system, containing numerous seasonal rivers and the headwaters of Rio do Antonio, an important river in the area (SEDIR 2007).

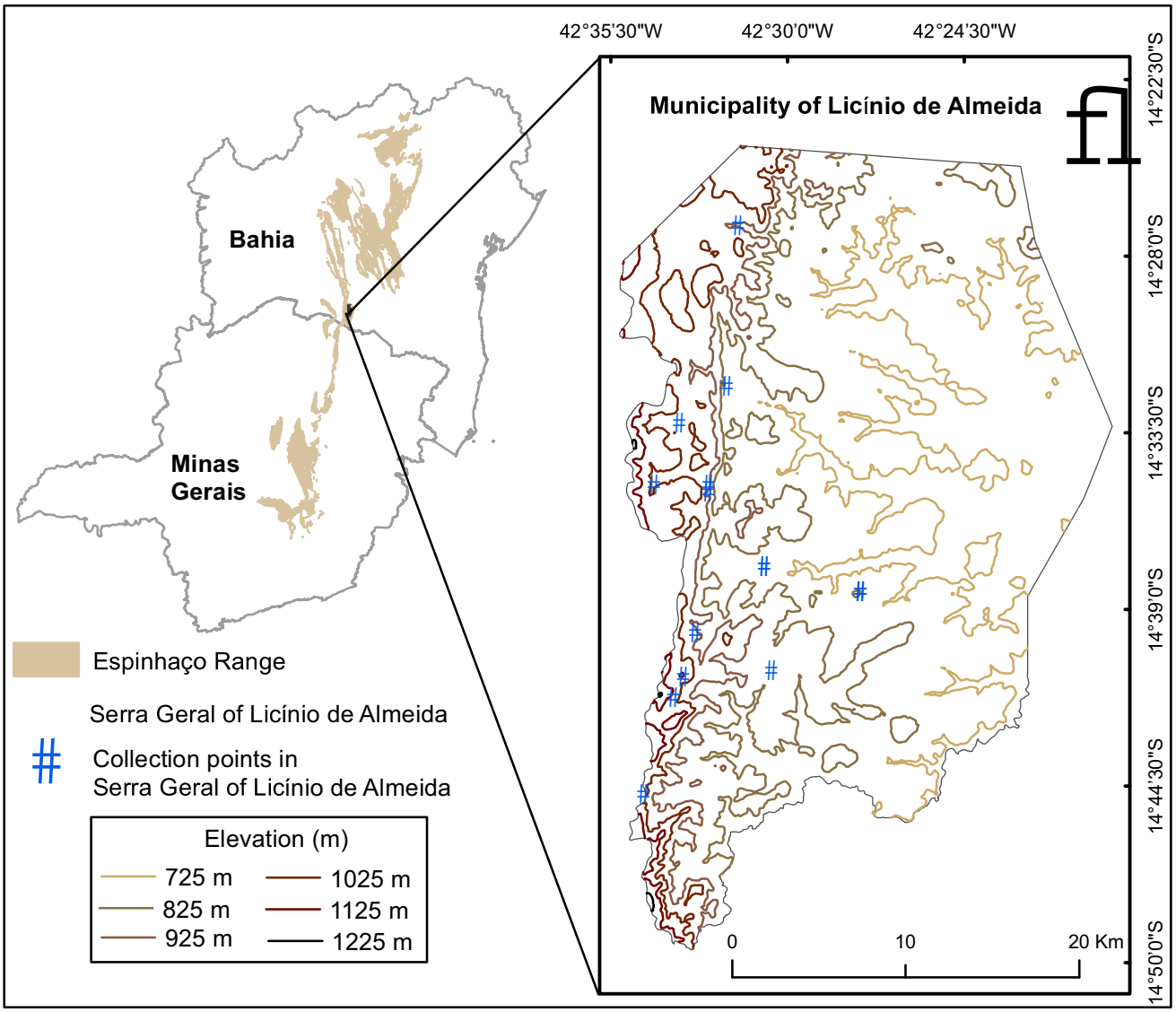

Fig. 2 Serra Geral of Licínio de Almeida (SGLA) within Espinhaço Septentrional. Collection points carried out between 2011 and 2014 are detached

Checklist of flowering plants species – The present checklist of flowering plants from SGLA is mostly based on data generated during 19 field trips that took place between July 2011 to May 2015, undergraduate or master projects (Santana 2013; Azevedo 2014; Stadnik 2016; Borges et al. 2016; Hurbath et al. 2016), the collections at the ALCB herbarium, and records from SpeciesLink database (SpeciesLink 2016). From the latter, we only considered specimens identified by taxonomic specialists. By compiling a list of species and their respective distributions, we were able to recognize various vegetation formations and to characterize their main floristic components. The checklist here presented follows the nomenclatural concepts of BFG (2015) and Tropicos.org (2016).

Phyto-physiognomy – The definitions adopted for the different phyto-physiognomies follow Coutinho (2006), who bases his classification on morphological features of the plant communities. The phyto-physiognomies (or vegetation types) adopted for this study follow the physiognomic-ecological system proposed by IBGE (2012), which is based on the physiognomic structure (determined by the prevailing life forms) and ecological parameters (climate, humidity, temperature, and substrate) observed in the area. Forest classification follows IBGE (2012), the "Cerrado" *s.str.* is based on Coutinho (1978), the rocky fields ("Campo Rupestre") follows Giulietti et al. (1987), while the rocky Caatinga

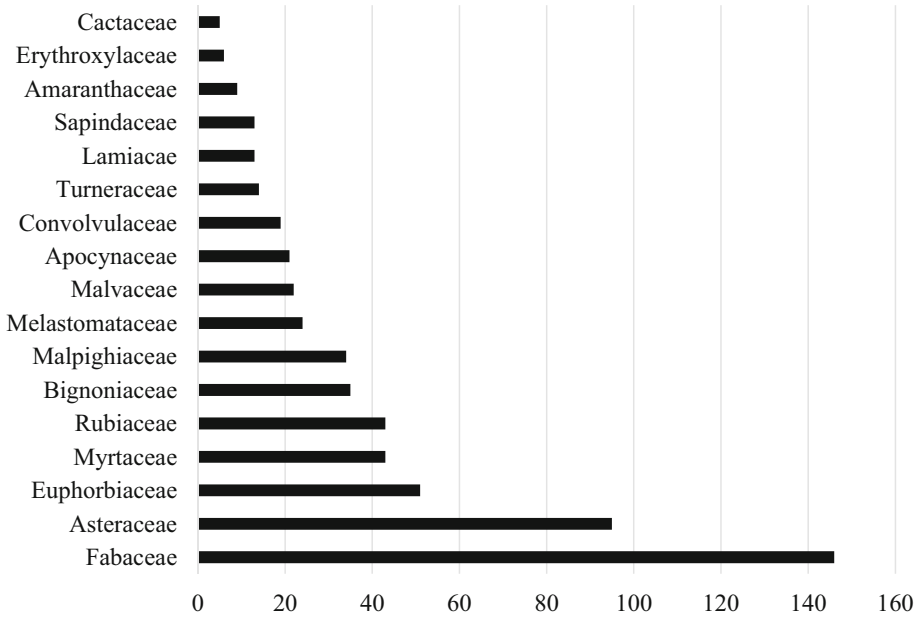

Fig. 3 Richest families of flowering plants at SGLA

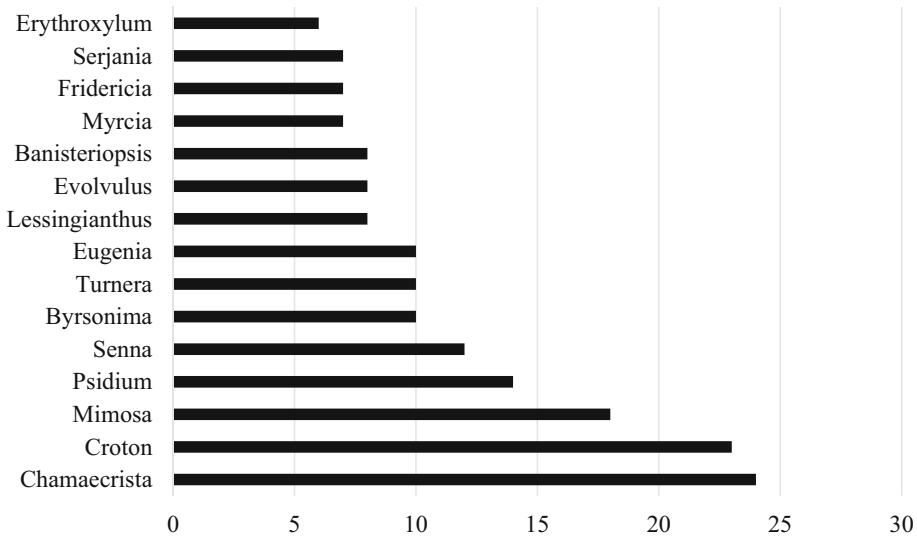

Fig. 4 Richest genera of flowering plants at SGLA

("Caatinga Rupestre") is here recognized as a new plant formation present in the studied area.

The physiognomic aspects of the vegetation were recorded by a photographic camera, and geo-referencing was done through a GPS GARMIN MAP 62 s. Average height, vegetation aspects (twisted branches, xeromorphic features such as spines, leafless, indumentum), frequency of genera and families, seasonality, percentage of exposed rocks, elevation, and proximity to streams were measured and analyzed in the field. Soil types were described according to CPRM (2008). The maps here provided were generated with ArcMap (version 10).

Results

Checklist of species – We recorded 811 species, 410 genera and 97 families of flowering plants at SGLA (Table 1 in electronic supplementary material), in which Fabaceae (146 spp.), Asteraceae (95 spp.), Euphorbiaceae (51 spp.), Myrtaceae and Rubiaceae (43 spp. each) are the most diverse families (Fig. 3). The most diverse genera are *Chamaecrista* (24 spp.), *Croton* (23 spp.), *Mimosa* (18 spp.), *Psidium* (14 spp.) and *Senna* (12 spp.) (Fig. 4).

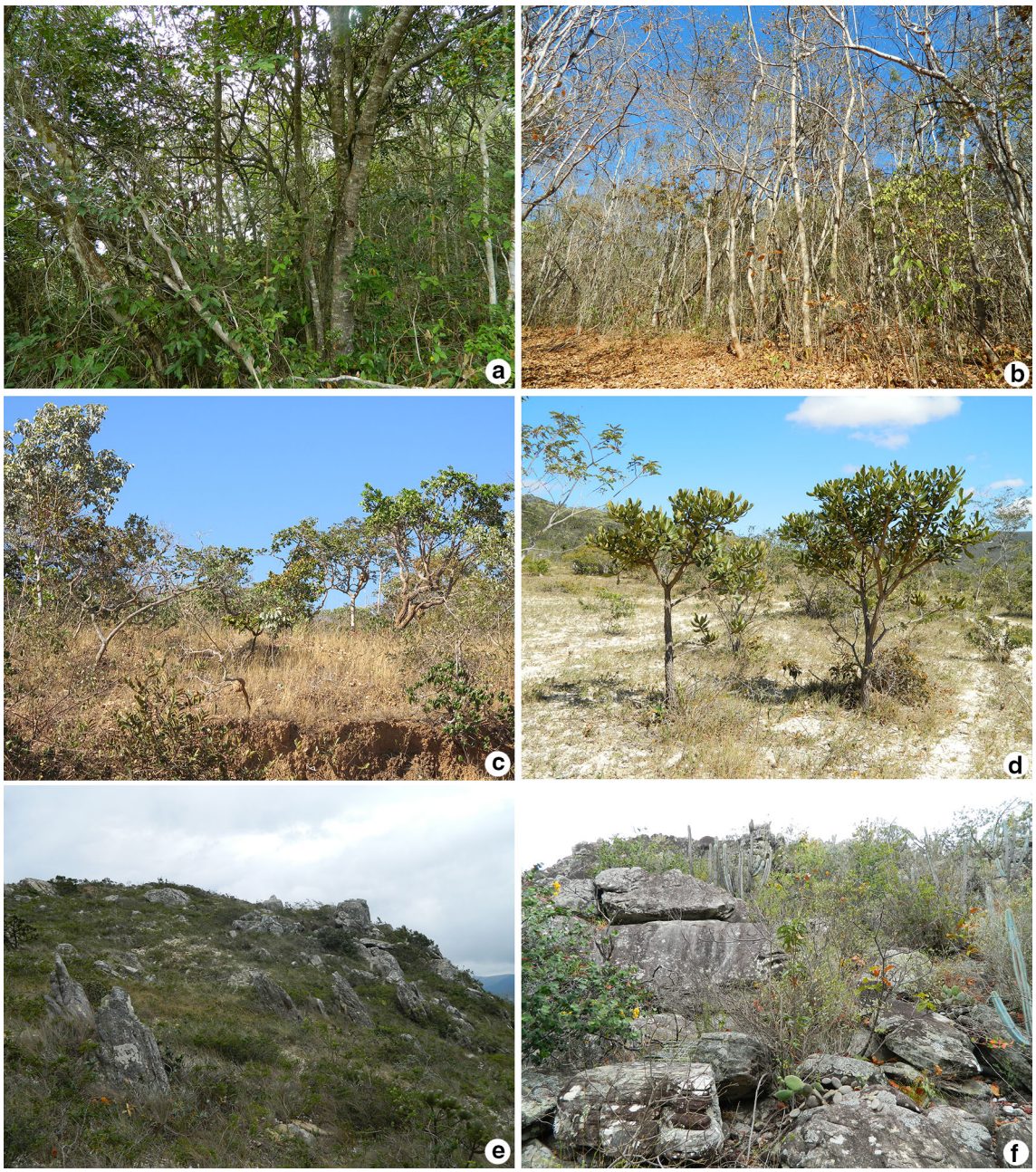

Fig. 5 **a–f** Phyto-physiognomies recorded at SGLA localities. **a** semi-deciduous forest (trail do Cachoeirão); **b** deciduous forest (Xaxá); **c** "Cerrado" *s.str.* (Pedra-Preta); **d** "Cerrado" with spaced shrubs (Cascarrento); **e** rocky fields (Riacho de Areia); **f** rocky "Caatinga" (Garimpo das Ametistas)

Phyto-physiognomy in SGLA – Based on the floristic studies and ecological-physiognomic aspects, we recognize five plant formations classified as forests (semi-deciduous and deciduous forests) or as savannas ("Cerrado" *s.str.*, rocky fields and rocky "Caatinga").

Semi-deciduous (Fig. 5) and deciduous (Fig. 6) forests contain trees that form a canopy at about 15 m of height and occur at elevations of 800 to 1100 m in dystrophic neosol and latosol or eutrophic eurisol. These forests are easily recognized by the percentage of deciduous tree species, and their occurrence is determined by patterns of local humidity.

In general, semi-deciduous forests have low deciduousness (20 to 50% loss of leaves) due to their proximity to streams (IBGE 2012). In SGLA, these forests can be found at Saco da Onça, along the trails to Cachoeirão and Cachoeira das Sete Quedas. The following species were recorded only for this formation: *Chamaecrista fagonioides*

(Vogel) H.S. Irwin & Barneby, *Chrysophyllum rufum* Mart., *Condylocarpon isthmicum* (Vell.) A.DC., *Croton tricolor* Klotzsch ex Baill., *Eugenia sonderiana* O. Berg, *Forsteronia thyrsoidea* (Vell.) Müll.Arg., *Heteropterys laurifolia* (L.) A. Juss., *Hymenaea martiana* Hayne, *Jacaranda mimosifolia* D. Don, *Langsdorffia hypogaea* Mart., *Mimosa tenuiflora* (Willd.) Poir., *Myracrodruon urundeuva* Allemão, *Niedenzuella multiglandulosa* (A. Juss.) W.R. Anderson, *Plinia cauliflora* (Mart.) Kausel, *Psychotria capitata* Ruiz & Pav., and *Simarouba amara* Aubl. Species such as *Alchornea glandulosa* Poepp. & Endl., *Cariniana cf. estrellensis* Raddi & Kuntze, *Cestrum axillare* Vell., *Dasyphyllum vagans* (Gardner) Cabrera, *Erythrina verna* Vell., *Hydrolea spinosa* L., *Marcgravia coriacea* Vahl, and *Tripodanthus acutifolius* (Ruiz & Pav.) Tiegh. were recorded only in the proximity of streams.

When leaf shedding is present in more than 50% of the species, the forest is classified as deciduous and it can be found at Fazenda Xaxá locality. The main species occurring in deciduous forest in SGLA are *Acalypha multicaulis* Müll. Arg., *Astraea lobata* (L.) Klotzsch, *Calliandra bahiana* Renvoize, *Dioclea violacea* Mart. ex Benth., *Galipea ciliata* Taub., *Gymnanthes* sp., *Leucochloron limae* Barneby & J.W.Grimes, *Mimosa arenosa* (Willd.) Poir., *Nectandra reticulata* (Ruiz & Pav.) Mez, *Odontocarya duckei* Barneby., *Pombalia atropurpurea* (A.St.-Hil.) Paula-Souza, and *Serjania paludosa* Cambess.

"Cerrado" *s.str.* (Fig. 5c) has a homogenous cover of shrubs and small trees up to 7 m in height, with twisted and irregular branching, occurring at elevations of 900–1100 m on dystrophic latosol and neosol in the localities of São Domingos, Pedra Preta and Cascarrento. The most common species found in this vegetation are *Annona crassiflora* Mart., *Aspidosperma tomentosum* Mart., *Aspilia eglerii* J.U. Santos, *Caryocar brasiliense* Cambess., *Chamaecrista sophoroides* (Mart. ex Benth.) H.S. Irwin & Barneby, *Dalbergia miscolobium* Benth., *Enterolobium gummiferum* (Mart.) J.F.Macbr., *Eugenia dysenterica* (Mart) DC., *Euphorbia setosa* (Boiss.) Müll. Arg., *Inga marginata* Willd., *Kielmeyera coriacea* Mart. & Zucc., *Lessingianthus psilophyllus* (DC.) H. Rob., *Ouratea oleifolia* (A.St.-Hill) Engl, *Moquiniastrum polymorphum* (Less.) G. Sancho, *Tachigali paniculata* Aubl., *Tetrapterys ramiflora* A. Juss., and *Vochysia elliptica* Mart. Occasionally, trees and shrubs are widely spaced (Fig. 5d) which seem to be the result of substrate variation (nutrient, texture, etc.) or of historical disturbances caused by human activities (Fig. 6g–i).

Rocky fields (Fig. 5e) occur on shallow soils over rocky outcrops, at elevations over 1000 m, where herbs and shrubs are dominant in dystrophic neosols. Representative localities with this type of vegetation can be found at Saco da Onça, Cascarrento, Cachoeirão and Riacho de Areia. The following species are restricted to this vegetation: *Actinocephalus bongardii* (A.St.-Hil.) Sano, *Agrianthus myrtoides* Mart., *Aldama bracteata* (Gardner) E.E. Schill. & Panero, *Aldama oblongifolia* (Gardner) E.E. Schill. & Panero, *Arrojadoa rhodantha* (Gürke) Britton & Rose, *Aspilia floribunda* (Gardner) Baker, *Begonia grisea* A.DC., *Byrsonima dealbata* Griseb., *Chamaecrista fodinarum* H.S.Irwin & Barneby, *Hyptis crenata* Pohl ex Benth., *Lepidaploa barbata* (Less.) H. Rob., *Lessingianthus linearis* (Spreng.) H. Rob., *Lessingianthus laevigatus* (Mart. ex DC.) H. Rob., *Mandevilla tenuifolia* (J.C. Mikan) Woodson, *Minaria decussata* (Mart.) T.U.P. Konno & Rapini, *Proteopsis argentea* Mart. & Zucc. ex Sch.Bip., *Pseudolaelia vellozicola* (Hoehne) Porto & Brade, *Rhynchospora setigera* (Kunth) Boeckeler, *Syngonanthus caulescens* (Poir.) Ruhland, *Syagrus harleyi* Glassman, and *Trichogonia hirtiflora* (DC.) Sch.Bip. ex Baker (Fig. 6j–m).

Rocky "Caatinga" (or "Caatinga Rupestre") (Fig. 5f) is a distinct vegetation recorded for Garimpo das Ametistas and Riacho Fundo. It shows xeromorphic aspects and rocky outcrops, with shallow soils and predominance of herbs and shrubs (rarely trees) up to 3 m tall, occurring at elevations of 750–1000 m. Like the rocky fields, this vegetation contains numerous rocky outcrops; however, its floristic composition and lower elevations differentiates it from those of rocky fields (above 1000 m). The most common species recorded for this formation are *Alvimiantha tricamerata* Grey-Wilson, *Anteremanthus piranii* Roque & F.A. Santana, *Aristolochia pohliana* Duch., *Cereus albicaulis* (Britton & Rose) Luetzelb., *Chresta harleyi* H. Rob., *Eugenia pistaciifolia* DC., *Euphorbia attastoma* Rizzini, *Jacquemontia chrysanthera* Buril, *Kielmeyera rubriflora* Cambess., *Melocactus ernestii* Vaupel, *Microlicia sp. nov, Neoglaziovia variegata* (Arruda) Mez, *Pilosocereus pachycladus* F. Ritter, *Tacinga inamoena* (K.Schum.) N.P. Taylor & Stuppy, *Turnera simulans* Arbo, and *Wunderlichia mirabilis* Riedel ex Baker (Fig. 7a–m). Typical "Caatinga" (sensu Rizzini 1997) was not recorded for SGLA, reinforcing Rizzini's hypothesis that "Caatinga" occurs only below 600 m.

Fig. 6 **a–m** Species found in seasonal forests: **a** *Jacaranda mimosifolia* D. Don; **b** *Gymnanthes* sp.; **c** *Erythrina verna* Vell.; **d** *Marcgravia coriacea* Vahl; **e** *Langsdorffia hypogaea* Mart.; **f** *Augusta longifolia* (Spreng.) Rehder. Species registered in "Cerrado" *s.str.*: **g** *Tetrapterys ramiflora* A.Juss.; **h** *Caryocar brasiliense* Cambess.; **i** *Eugenia dysenterica* (Mart) DC. Species recorded in rocky fields: **j** *Proteopsis argentea* Mart. & Zucc. *ex* Sch.Bip.; **l** *Actinocephalus bongardii* (A.St.-Hil.) Sano; **m** *Minaria decussata* (Mart.) T.U.P. Konno & Rapini. Photos by L. Campos (**a**, **f**, **g**, **i**, **j**) and N. Roque (**b**, **c**, **d**, **e**, **h**, **l**, **m**)


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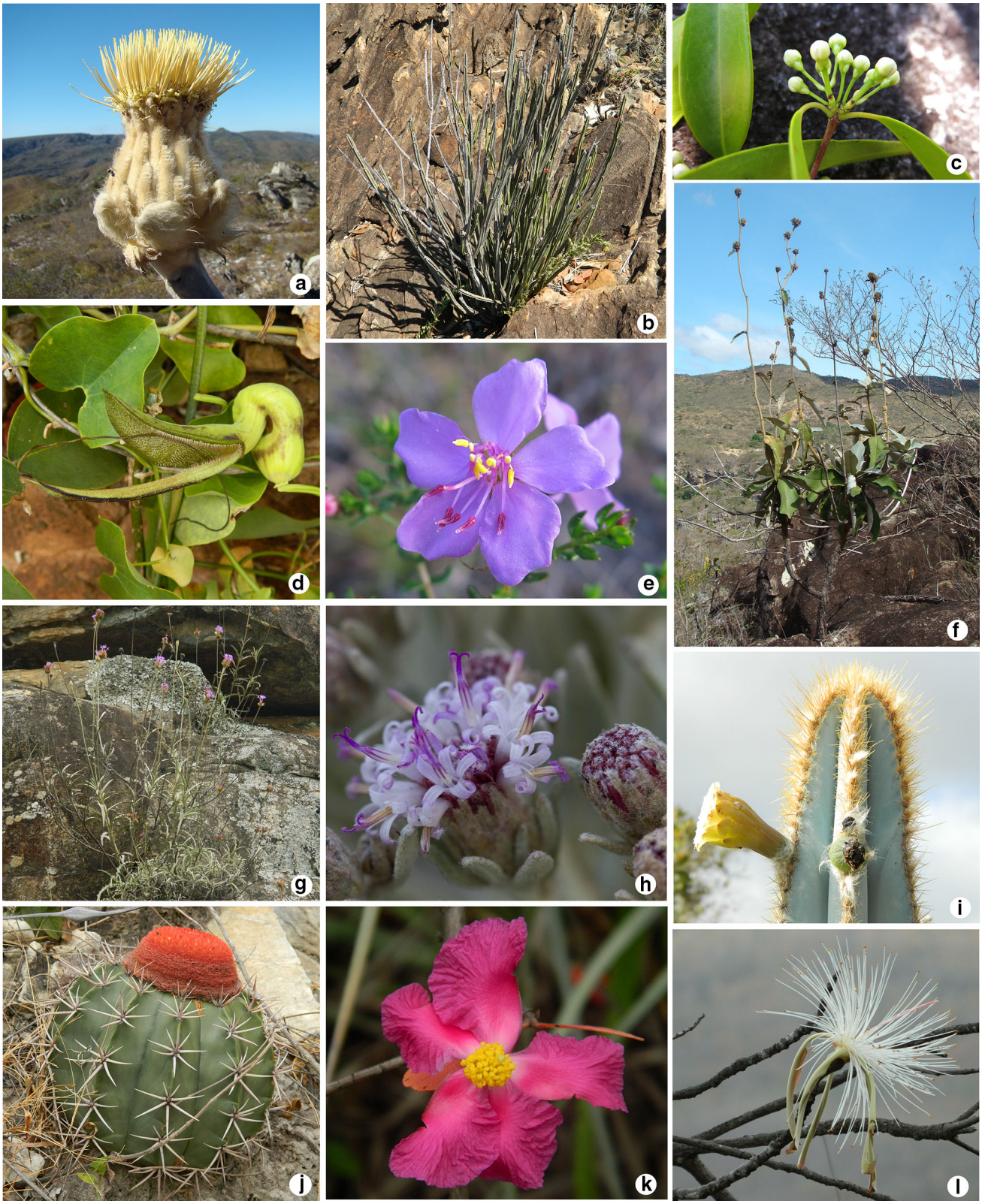

Fig. 7 **a–m** Species registered in rocky "Caatinga": **a** *Wunderlichia mirabilis* Riedel *ex* Baker; **b** *Euphorbia attastoma* Rizzini; **c** *Eugenia pistaciifolia* DC.; **d** *Aristolochia pohliana* Duch.; **e** *Microlicia* sp. nov.; **f** *Lychnophora* sp. nov.; **g** *Chresta harleyi* H. Rob.; **h** *Anteremanthus piranii* Roque & F.A. Santana; **i** *Pilosocereus pachycladus* F. Ritter; **j** *Melocactus ernestii* Vaupel; **l** *Kielmeyera rubriflora* Cambess.; **m** *Pseudobombax simplicifolium* A. Robyns. Photos by F. Hurbath (**e**), J. Coelho (**a**), L. Campos (**a**, **b**, **d**, **g**, **i**, **j**, **l**, **m**) and N. Roque (**f**, **h**)

Table 1 Comparing ten families with the highest number of species in four floristic surveys in the Espinhaço Range. % Flora top 10: Percentage of the 10 most representative families in floristic surveys in relation to the total flora

Catolés (Zappi et al. 2003) 1050–2033 m alt.		Pico das Almas Ca. (Stannard 1995) 1958 m alt.		SGLA (Present study) 700–1100 m alt.		Grão Mogol (Pirani et al. 2003) 650–1299 m alt.		Serra do Cipó (Giulietti et al. 1987) 700–1670 m alt.	
Family	Spp.	Family	Spp.	Family	Spp.	Family	Spp.	Family	Spp.
Asteraceae	179	Asteraceae	132	Fabaceae	146	Fabaceae	104	Asteraceae	169
Fabaceae	161	Melastomataceae	67	Asteraceae	95	Astereaceae	82	Fabaceae	168
Melastomataceae	105	Orchidaceae	46	Euphorbiaceae	51	Melastomataceae	43	Poaceae	161
Orchidaceae	76	Cyperaceae	45	Myrtaceae	43	Rubiaceae	42	Orchidaceae	68
Rubiaceae	60	Rubiaceae	44	Rubiaceae	43	Poaceae	41	Rubiaceae	63
Eriocaulaceae	55	Fabaceae	43	Bignoniaceae	35	Euphorbiaceae	38	Melastomataceae	63
Myrtaceae	53	Poaceae	38	Malpighiaceae	34	Myrtaceae	34	Euphorbiaceae	46
Verbenaceae	49	Lamiaceae	32	Melastomataceae	23	Cyperaceae	34	Malpighiaceae	45
Euphorbiaceae	48	Xyridaceae	31	Malvaceae	22	Orchidaceae	30	Myrtaceae	43
Poaceae	48	Myrtaceae	30	Apocynaceae	21	Eriocaulaceae	26	Verbenaceae	43
% Flora top 10	48.7%		48.6%		63.2%		45.9%		54.6%
Total	1.713		1.044		811		1.032		1.590

Discussion

Fabaceae is the largest family (146 spp.) recorded in the SGLA, with *Chamaecrista*, *Mimosa,* and *Senna* as the most species-rich genera (Fig. 4). Among these, *Chamaecrista fodinarum*, *Chamaecrista sophoroides*, *Chamaecrista tragacanthoides* (Benth.) H.S. Irwin & Barneby var. *rasa* H.S. Irwin & Barneby, and *Chamaecrista rotundata* (Vogel) H.S. Irwin & Barneby var. *interstes* H.S. Irwin & Barneby are reported as new records for the state of Bahia (Azevedo 2014).

Asteraceae showed high diversity with 95 species, 13 of which are new records for Bahia (Alves et al. 2015). *Aldama bracteata*, *Aldama oblongifolia, Aspilia floribunda*, *Lessingianthus laevigatus, Lychnophora ramosissima* Gardner, *Proteopsis argentea and Trichogonia hirtiflora* were collected in rocky field vegetation (959–1040 m alt.), while *Aspilia eglerii*, *Eremanthus polycephalus* (DC.) Macleish, *Lepidaploa barbata*, *Lessingianthus psilophyllus, Riencourtia oblongifolia* Gardner, and *Mikania obtusata* DC. were found in the "Cerrado" *s.str.*, (895–970 m alt.).

Euphorbiaceae was the third major family in SGLA with most species occurring in "Cerrado" *s.str.,* and few species recorded from seasonal forests (*Acalypha multicaulis*, *Alchornea glandulosa,* and *Gymnanthes* sp.). According to Hurbath et al. (2016), *Euphorbia attastoma*, *Manihot caerulescens*, *Sebastiana brevifolia,* and *S. catingae* are restricted to rocky "Caatinga" and *Acalypha multicaulis, Euphorbia attastoma, E. setosa* and *Stillingia trapezoides* are registered for the first time in the state of Bahia.

Myrtaceae is represented by 43 species which predominantly occur in rocky fields and "Cerrado" *s.str.*, with only three species (*Campomanesia guaviroba*, *Eugenia sonderiana* and *Plinia cauliflora*) occurring in seasonal forests. *Psidium* with 14 species is significantly diverse when compared to floristic inventories carried out on the Espinhaço Range (Kawasaki 1989, 2004; Stannard 1995; Zappi et al. 2003) and *Calyptranthes clusiifolia* O. Berg is a new record for the state of Bahia (Stadnik 2016). Rubiaceae was also well-represented in the study area with 43 species, of which *Declieuxia passerina* Mart. & Zucc. ex Schult. & Schult. f. and *Galianthe peruviana* (Pers.) E.L. Cabral are new records for the state of Bahia (Borges et al. 2016).

Bignoniaceae, Malpighiaceae, Malvaceae and Apocynaceae are among the top 10 families in the SGLA, while Orchidaceae, Poaceae, Cyperaceae, Eriocaulaceae and Xyridaceae, although highly diverse in the Espinhaço Range, are only mildly diverse in SGLA (Giulietti et al. 1987; Stannard 1995; Pirani et al. 2003; Zappi et al. 2003) (Table 1). Genera such as *Microlicia*, *Cambessedesia*, *Stachytarpheta*, *Hyptis*, *Syngonanthus*, *Actinocephalus*, *Xyris,* and *Vellozia*, which are well-represented in the rocky field vegetation in the Espinhaço Range, only have a small number of species in SGLA. Probably the lower altitudes and few patches of rocky fields, when compared to other areas of the Espinhaço Range, may partially explain these results.

Most Bignoniaceae in SGLA occur in the "Cerrado" *s.str.*, as well as the ubiquitous genus *Byrsonima* with ten species in this area. *Turnera* with ten species, and

Evolvulus and *Lessingianthus with* eight species each, are also well-represented in the "Cerrado". Although the SGLA is surrounded by "Caatinga" domain (MMA 2007), patches of "Cerrado" *s.str.* and transitional areas between "Cerrado", other types of forest are also found there (Tabarelli and Vicente 2002). Following IBGE (2012), the transitional areas registered in SGLA were classified as ecotones. These can be seen in the São Domingo locality where species such as *Pereskia bahiensis* Gürke and *Ziziphus joazeiro* Mart., commonly associated with "Caatinga" vegetation, are found in the "Cerrado" *s.str.* of SGLA.

Rocky "Caatinga" (or *"caatinga rupestre"*) has been recognized in the Espinhaço Septentrional in the municipalities of Licínio de Almeida, Jacaraci, Caetité in Bahia, and in Botumirim and Grão Mogol in Minas Gerais in transitional areas between "Cerrado" and Caatinga domains. Species such as *Chresta harleyi, Wunderlichia mirabilis, Melocactus ernestii,* and *Euphorbia attastoma* are widely represented in this vegetation. *Anteremanthus hatschbachii* H. Rob. and *Lychnophora markgravii* G.M. Barroso are restricted to the state of Minas Gerais, while *Anteremanthus piranii* and a new species of *Lychnophora* are found only in the state of Bahia. The only two known species of *Anteremanthus* are endemic to this phyto-physiognomy. In addition, the two species of *Lychnophora* which are restricted to this vegetation seem to be distinctive enough as to be considered a new genus of Asteraceae (Loeuille, comm. pers.), therefore contributing to higher generic diversity of the "Caatinga Rupestre". We believe that further studies on this vegetation, including climate, geology and soil interactions, will allow us to confirm the recognition of "Caatinga Rupestre" as a new type of vegetation for the Espinhaço Range.

According to Harley (1995), the Espinhaço Septentrional could provide a partial barrier to migration of species from the south to the Chapada Diamantina, and vice versa. However, the results of our inventory indicate that SGLA might play an important role as an ecological corridor connecting the southern and northern sectors of Espinhaço Range, as previously suggested by Silva et al. (2008) and Zappi (2008). Species presenting wide distributions through the Espinhaço Range (including the SGLA) are supportive of this hypothesis (Giulietti et al. 1987). Examples of these include *Aeschynomene vogelii* Rudd, *Bulbophyllum involutum* Borba, Semir & F. Barros, *Calliandra asplenioides* (Nees) Renvoize, *Comanthera aurifibrata* (Silveira) L.R. Parra & Giul., *Diplusodon quintuplinervius* (Nees) Koehne, *Esenbeckia irwiniana* Kaastra, *Gomphrena mollis* Mart., *Gomphrena scapigera* Mart., *Heteropterys arenaria* G. Mariz, *Micranthocereus albicephalus* (Buining & Brederoo) F. Ritter, *Mimosa filipes* Mart., *Pavonia viscosa* A.St.-Hil., *Richterago discoidea* (Less.) Kuntze, *Stachytarpheta crassifolia* Schrad., and *Waltheria cinerescens* A.St.-Hil.

The study of the SGLA's biodiversity has only recently started, while its natural habitats have been degraded through deforestation and extractive practices (amethyst, manganese, granite). This preliminary study highlighting the importance of this region can contribute to the preservation of the Espinhaço Range and the need for designating this area as a Conservation Unit.

Acknowledgements The authors thank J. C. Jesus, R. S. Alves, G. O. Ramos, A. Santana, A. K. A. Santos, R. F. Almeida, A. M. Amorim, L. P. Queiroz and D. Cardoso for providing species identifications; and Mark T. Strong (Smithsonian) for proofreading the introductions. This work was supported by REFLORA (Proc. 563541/2010-5), PRONEM (PNE 1642/2011), SiB-Br (Proc. 504208/2012-8), and INCT-HVFF projects. N. R. thanks the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq 309213/2013-4) for the fellowship grant.

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