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Inventory

Novelties to the vascular Flora of the Ibitipoca Mountains, Minas Gerais, Brazil

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Abstract: The Ibitipoca Mountains occur in southeastern Minas Gerais state, Southeast Brazil, and includes a mosaic of different vegetation types, as part of the Atlantic Forest domain. Such heterogeneity results in the occurrence of several ecotones in the region, considered essential buffer zones for maintaining biodiversity and structure among adjacent ecosystems. Given the importance of these environments for biodiversity conservation, floristic surveys are important to catalogue plant richness in natural areas, where species and landscapes have been destroyed, especially over the last decades. To contribute to increase the knowledge on the vascular Flora in the Ibitipoca Mountains, a floristic inventory was undertaken in private properties located in the boundaries of "Parque Estadual do Ibitipoca" (Ibitipoca State Park). Relevant findings of the present study include: characterization of the different vegetation types, 17 new records for the Flora of Minas Gerais, collection of 288 species never recorded in the state park (80% dissimilarity – especially due to the occurrence and size of different phytophysiognomies between these areas) and presence of 31 threatened species. In addition, discussions about conservation efforts and public policies are presented.
Keywords: *Atlantic Forest; conservation; floristics; Ibitipoca State Park; new records.*

Novidades para a Flora vascular da Serra do Ibitipoca, Minas Gerais, Brasil

Resumo: A Serra do Ibitipoca ocorre no sudeste do estado de Minas Gerais, sudeste do Brasil, e inclui um mosaico de diferentes tipos de vegetação, como parte do domínio da Mata Atlântica. Tal heterogeneidade é resultado da ocorrência de diversos ecótonos na região, considerados áreas de amortecimento essenciais para manutenção da biodiversidade e estrutura de ecossistemas adjacentes. Dada a importância destes ambientes

para conservação da biodiversidade, inventários florísticos são importantes para catalogar a riqueza de plantas em áreas naturais, onde espécies e paisagens têm sido destruídas, especialmente nas últimas décadas. Para contribuir com o aumento do conhecimento sobre a Flora vascular na Serra do Ibitipoca, um inventário florístico foi conduzido em áreas privadas adjacentes ao Parque Estadual do Ibitipoca. As descobertas mais relevantes do presente estudo incluem: caracterização dos diferentes tipos de vegetação, 17 novos registros para a Flora de Minas Gerais, coleta de 288 espécies nunca registradas para o parque (80% de dissimilaridade – especialmente devido à ocorrência e tamanho de diferentes fitofisionomias entre as áreas) e presença de 31 espécies ameaçadas. Além disso, discussões sobre esforços para conservação e políticas públicas são apresentadas.
Palavras-chave: *Mata Atlântica; Conservação; florística; Parque Estadual do Ibitipoca; novos registros.*

Introduction

Biodiversity role in sustaining the integrity of ecosystems, creating micro-climates for life to occur, protecting soils, regulating hydrological cycles and providing services to people is well known in the scientific community (Naeem et al., 1994; Myers, 1996; Balvanera et al., 2006). In this context, species inventories, i.e., the process of cataloging plant species in a given area, is significantly important for conservation of natural landscapes, especially nowadays as deforestation and extinction rates are increasing faster than man's ability to name life organisms (Jayakumar et al., 2011; Mota et al., 2017).

With more than 39,000 plant species, the Brazilian territory stands as the greatest country in terms of plant richness and includes high endemism levels (Forzza et al., 2012; BFG, 2021; Flora e Funga do Brasil, 2024). In addition, Brazil includes six phytogeographic domains, two of which (Atlantic Forest and "Cerrado") are considered hotspots for world conservation (Myers et al., 2000). These domains are subdivided into several vegetation types, so most of their areas comprise a mosaic of phytophysiognomies (IBGE, 2012). Brazil has been a signatory of the Global Strategy for Plant Conservation (GSPC - cbd.int/gspc/targets.shtml) and concluded Target 1 aiming an online Flora for all-knowing plants (BFG, 2018; BFG, 2021). However, it has failed to protect its Flora and phytophysiognomies inside conservation units or through restoration projects (Mello et al., 2021).

Taking this context into account, conservation units are essential to guarantee preservation and restoration of plant biodiversity, enabling sustainability of ecosystems and thus providing ecological services to nature and people (Naughton-Treves et al., 2005). As for plant composition, conservation units play an important role because, as a public policy, they determine areas where plant communities cannot be damaged, especially protecting endangered, rare and/or endemic species (Press et al., 1996; Margules & Pressey, 2000; Fonseca & Venticinque, 2018). However, only 67% of threatened plant species have at least one record inside protected areas in Brazil (Ribeiro et al., 2018), and predictions showed that most angiosperms and the great majority of endemic species do not occur in conservation units (Oliveira et al., 2017).

An interesting case concerns the vascular Flora of Ibitipoca State Park, located in the Ibitipoca Mountains, neighbor of the Mantiqueira mountain chains, southeastern Minas Gerais state, Brazil. About 1,230 vascular plant species, grouped into 526 genera and 127 families, were found in Ibitipoca State Park (Salino et al., 2013; Forzza et al., 2013a). Further, in the areas around the limits of this park (buffer zone), 519 vascular plant species were recorded, belonging to 300 genera and 105 families (Valente et al., 2013). The park is part of the Atlantic domain and is inserted in a matrix of Seasonal Semideciduous Forest. However, seven phytophysiognomies were there recognized, ranging from dense forests to shrubby savannas or cloud grasslands (Oliveira-Filho et al., 2013), so the region concerning the park and its buffer zone can be seen as an ecotone. Forzza et al. (2013a) pointed out that 48% of the species collected in the buffer zone were not found in the Ibitipoca park, suggesting that its limits should be expanded to guarantee full protection of its Flora, especially including rare or threatened species. The endemic taxa in the park correspond to 2% of its Flora, while threatened ones correspond to 6%, mainly Orchidaceae and Bromeliaceae (Forzza et al., 2013a). In addition, about 330 species from the park can be considered rare, as they were collected only once (Forzza et al., 2013a).

Ibitipoca State Park was founded in an area historically occupied by coffee cultivations, subsequently replaced by livestock during the XX century, which is the main land use nowadays in adjacent areas (IEF, 2007). Also, this region is mountainous and dominated by hills with acuminate peaks, steep slopes and rocky outcrops, where agricultural productivity is low (Paula, 2022).

This combination of factors leads to fragmentation of natural areas that surround the park and consequently compromises its biodiversity, structure and connectivity (Joly et al., 2014). This is the case on the surrounding areas of the Ibitipoca State Park, mostly formed by private properties, severely fragmented and dominated by livestock, although there have been recent attempts to restore vegetation by facilitating natural regeneration. Even though these sites are considered degraded, a mosaic of phytophysiognomies was observed in the limits around Ibitipoca park (Valente et al., 2013), so efforts towards its conservation and restoration could benefit the preservation and connectivity expansion of Ibitipoca State Park. In other words, areas that could function as additional buffer zones are actually found to be degraded (Almeida-Rocha & Peres, 2021).

Considering the heterogeneous vegetation surrounding Ibitipoca State Park and its presumable influence on the conservation of this natural park, the present study aimed to catalog the vascular Flora in private properties around the park, to identify their phytophysiognomies and to compare the results with previous studies in the park (Forzza et al., 2013b), showing differences in species composition and vegetation structure. Analyses to compare richness between the park and adjacent areas were also applied, aiming to discuss the importance of expanding buffer zones in conservation units and to provide useful information for creating ecological corridors in Ibitipoca Mountains and adjacent areas.

Material and Methods

1. Study area

The study area corresponds to 19 collection points located in private properties among the municipalities of Bias Fortes, Lima Duarte and Santa Rita do Ibitipoca, southeastern Minas Gerais state, southeastern Brazil (Figure 1). This mountainous region has peaks ranging from 850 to 1784 meters from sea level (considering the extend of the study area). These mountains and cliffs present deep valleys which were carved as a result of the hydrography in the region (Nummer et al., 2012).

The landscape around Ibitipoca State Park is dominated by quartzite rocks and soils are mostly Oxisol and Cambisol derived from shales and gneisses, but sometimes intercalated with Neosol derived from quartzite or Neosol litholics (Rocha, 2013).

According to Rodela & Tarifa (2002), climate in the region is mesothermal highland tropical, with cold and dry winter season, and rains over the summer. During the rainy season, precipitation may be higher than 200 mm monthly from September to March, and lower than 100 mm in the months between April and August, with annual precipitation varying from 1562 to 2248 mm. Temperatures range from 12–15ºC from April to August and 18–22ºC from September to March (Rodela & Tarifa, 2002).

2. Plant collection

The first step before plant collection was, based on map areas and satellite images from surrounding areas of Ibitipoca State Park, recognizing different vegetation types to guarantee as much representativeness as possible. Therefore, expeditions were oriented based on these localities. After selecting the sampling sites, trails were chosen and opened based on preliminary visual evaluation in each collection point, aiming to include all different microenvironments, such as forest edges, underwood and vegetation near water courses, as well as considering different successional stages. After that, walks through these trails were undertaken, so plant specimens were collected. Plant sampling stopped when previously collected species started to repeat often. This procedure represents a standard approach of Taxonomists, although the methodology has never been discussed in the literature. Such approach is similar to what is proposed in Walter & Guarino (2006), but differs in not using time as a parameter to determine when sampling efforts ceased, and in not selecting random walks.

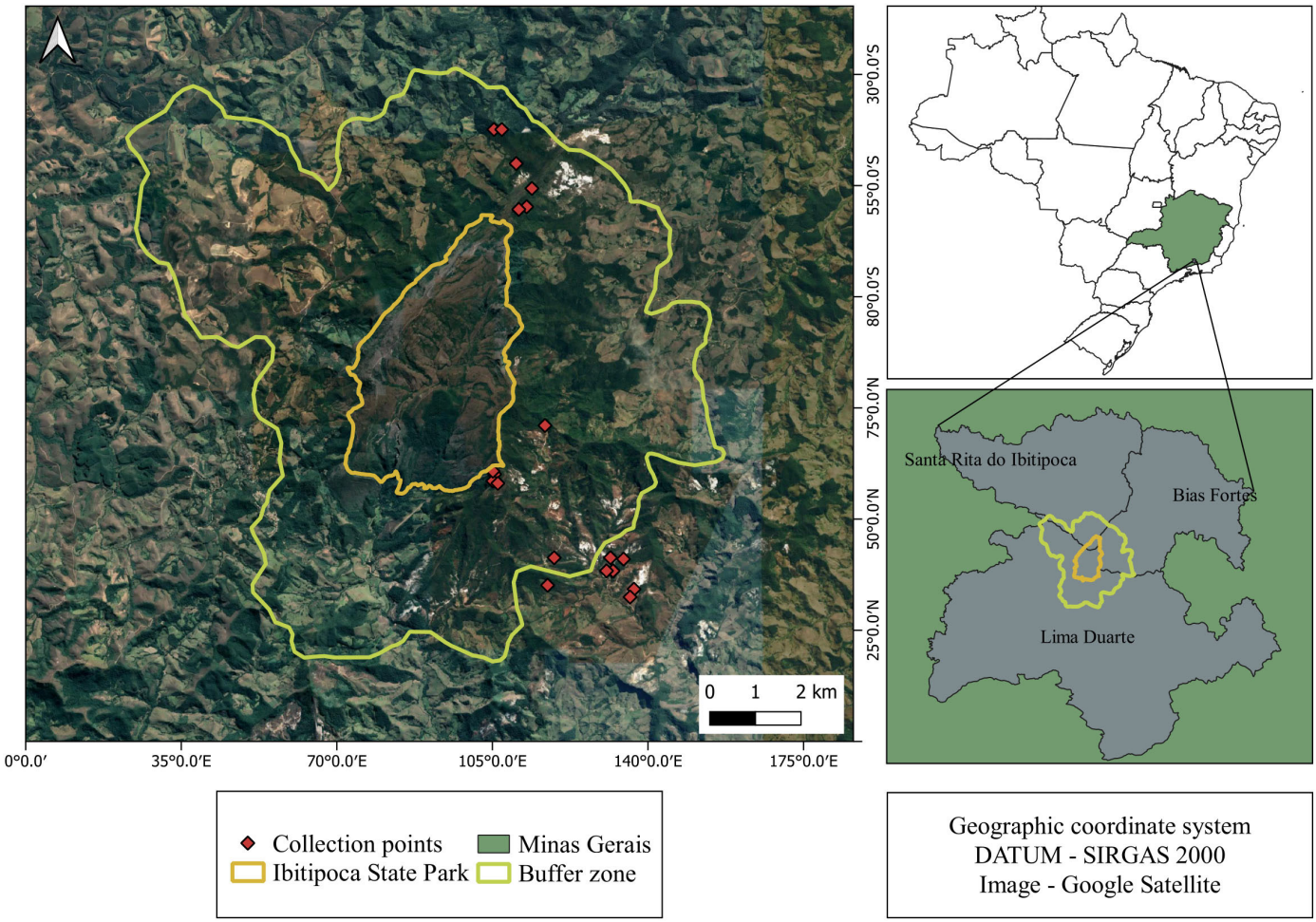

Figure 1. Study area map, including collection points.

Species list was produced based on collected samples bearing reproductive structures of vascular plants, gathered from September 18th to 29th, 2022. Plants were collected and processed similarly to what is described in Fidalgo and Bononi (1989). Specimens were incorporated in RB Herbarium, with duplicates sent to ESA and UEC (acronyms according to Thiers, 2023).

3. *Plant identification and species list*

Plants were identified based on morphological comparison with specimens deposited mainly in RB and other virtual herbaria (http://reflora.jbrj.gov.br/reflora/herbarioVirtual/). In addition, local floras (Forzza et al., 2013b) and specific literature for some of the taxonomic groups were consulted, especially descriptions and keys provided by Flora & Funga do Brasil (http://floradobrasil.jbrj.gov.br/reflora/listaBrasil/). In some taxonomic controversial cases, specialists were also consulted.

A species list for the vascular Flora was produced based on the reproductive plants collected during this work. Accepted species names were consulted in Flora & Funga do Brasil (http://floradobrasil.jbrj.gov.br/reflora/listaBrasil/), also used to access exclusive or new records to the Flora of Minas Gerais. Plant habits were classified according to Souza et al. (2013). Conservation status for each species was assessed in CNCFlora (2022) and COPAM-MG (1997).

4. *Floristic similarities*

Based on the floristic list provided by Salino et al. (2013) and Forzza et al. (2013a) for the vascular Flora of Ibitipoca State Park and by Valente et al. (2013) for the species included in the buffer zone of this park, similarity values were calculated to compare them with the list produced here. It is worth mentioning that the lists produced in 2013 have been taxonomically verified to accompany the most recent update of accepted species in Flora & Funga do Brasil (http://floradobrasil.jbrj.gov.br/reflora/listaBrasil/).

Jaccard similarity indexes for each of these three lists (State Park, its buffer zone and the present list) were calculated using R software version 4.1.3, function vegdist(), package vegan (Oksanen et al., 2022). This approach was applied as the data was binary.

Results

Field expeditions allowed the recognition of five phytophysiognomies in the study area, mainly based on the categories of IBGE (2012), with some adjustments: "Campo Rupestre" (Savanna Park in IBGE, 2012; not presented in Oliveira-Filho et al., 2013), High-montane Dense Ombrophilous Forest ("Floresta nebular" or cloud forest in Oliveira-Filho et al., 2013), Montane Dense Ombrophilous Forest ("Floresta nebular" or cloud forest in Oliveira-Filho et al., 2013), Seasonal Semideciduous Forest (not presented in Oliveira-Filho et al., 2013), and Open Sandy Field with dominance of *Eremanthus* Less. (Asteraceae) (not presented in Oliveira-Filho et al., 2013). This latter case is also not included in IBGE (2012) as it refers to a very specific and local condition, with no correspondence with the vegetations discussed in IBGE (2012). Vegetation types recorded in this study are illustrated in Figure 2.

The "Campo Rupestre" occurs in areas with quartzite rock outcrops and shallow sand deposits, where sometimes it is intercalated with open fields of *Eremanthus*, with altitudes varying from 1370 to 1495 meters. The vegetation comprises shrubs growing over the rocks or in deep cracks, and by an herbaceous layer. In this vegetation type, 149 species were recorded, belonging to 113 genera and 51 families (Table 1). The richest families within this vegetation were Asteraceae (17 species), Melastomataceae (14), Myrtaceae (9) and Rubiaceae (8).

Dense Ombrophilous Forests in the study area are distributed in patches over the region, mostly in areas where humid winds meet the slopes, causing more precipitation. Such vegetations were called High-montane Dense Ombrophilous Forests when above 1400 meters elevation (altitudes in this study varying from 1450 to 1490 meters), and Montane Dense Ombrophilous Forests below 1400 meters elevation (altitudes in this study varying from 980 to 1220 meters). In these two phytophysiognomies, 219 species, 157 genera and 60 families were recorded (Table 1). The most representative families in this vegetation were Rubiaceae (18 species), Solanaceae (13), Melastomataceae (13), Asteraceae (13), Poaceae (12), Orchidaceae (12), Bromeliaceae (12) and Myrtaceae (10), representing 47% of the total species.

Seasonal Semideciduous Forests are the main vegetation matrix in the study area. However, it is fragmented across the landscape, varying from small and isolated fragments or more continuous ones, occurring predominantly on Latosols and Cambisols, with altitudes varying from 930 to 1278 meters. The structure of these fragments is associated with land use, so that some are represented by secondary forests dominated by pioneer species and sometimes with occurrence of invasive grasses, contrasting with more conserved ones, which exhibit multilayered forests with high canopy, in addition to a well-preserved understory and more presence of epiphytes. Within this vegetation type, different successional stages could be recognized. Typical secondary forests, i.e., still in the early stages of regeneration, were observed. In such sites, pioneer species were dominant and canopy formed a continuous and low stratum. In addition, understory was dense and mainly dominated by vines and invasive grasses, evident signs of forest degradation. The most recorded tree species in these regeneration sites were *Athenaea* cf. *tomentosa* and *Solanum swartzianum* (Solanaceae), *Croton* spp. (Euphorbiaceae), *Luehea grandiflora* (Malvaceae), *Myrsine parvula* (Primulaceae) and *Schinus terebinthifolia* (Anacardiaceae).

Some other areas of Seasonal Semideciduous Forests, on the other hand, can be seen as more conserved due to their multilayered canopy, usually up to 30 meters high, and by the presence of a few tree indicators, such as *Aspidosperma australe* (Apocynaceae), *Callisthene major* (Vochysiaceae), *Cordia sellowiana* (Boraginaceae), *Ferdinandusa speciosa* (Rubiaceae), *Lamanonia ternata* (Cunoniaceae), *Tachigali friburgensis* and *Swartzia flaemingii* (Fabaceae), and *Virola bicuhyba* (Myristicaceae). *Euterpe edulis* (Arecaceae), a palm tree characteristic of conserved forests in the Atlantic domain, which is currently a vulnerable species, was found in some of these fragments. Its presence attracts the attention of illegal palm collectors, representing a threat to local animals that feed themselves from the palm fruits.

Nearly 270 species were collected within the boundaries of this vegetation, belonging to 185 genera and 75 vascular plant families (Table 1). The most representative families include: Asteraceae and Rubiaceae (each with 21 species), Melastomataceae (18), Fabaceae (17), Poaceae (16), Piperaceae (10) and Cyperaceae and Orchidaceae with nine species each, all representing 44.8% of the number of species in this area.

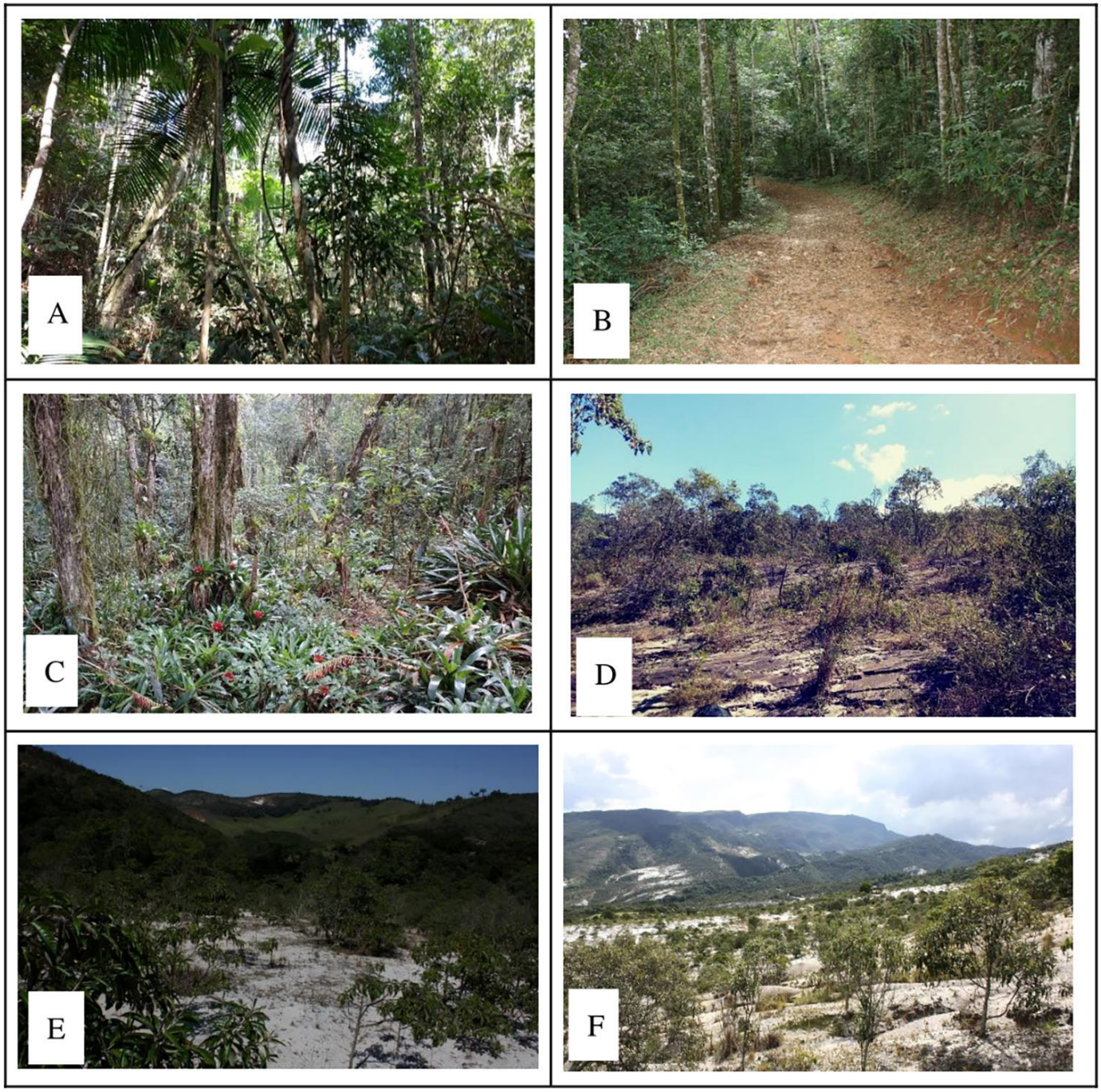

Figure 2. Phytophysiognomies recorded in the study area. A–Seasonal Semidecidous Forest; B–Montane Dense Ombrophilous Forest; C–High-montane Dense Ombrophilous Forest; D–"Campo Rupestre"; E-F–Open Sandy Field with dominance of *Eremanthus*.

Fields with prevalence of *Eremanthus* are regionally called "Candeal", a reference to the common name of the latter genus, with shrubs and treelets that dominate these areas, especially growing on quartzite Neosols. Shrubs predominate in this vegetation, varying from one to three meters tall, while subshrubs and herbs occur more sparsely, with altitudes ranging from 840 to 930 meters. This phytophysiognomy included 35 collected species, mostly Asteraceae (4 species), Poaceae (4), Myrtaceae (3), Malpighiaceae (3), Rubiaceae (2), Polygalaceae (2), Fabaceae (2), Euphorbiaceae (2) and Eriocaulaceae (2) (Table 1). However, variations of the typical Candeal in these areas were identified, where vegetation cover is composed of a continuous canopy with trees up to 5 meters tall, primarily Myrtaceae species.

Considering all visited sites, approximately 915 plant specimens were collected in this work. From this total, 576 species and morphospecies were identified, belonging to 324 genera and 104 families (Table 1). Angiosperms accounted for 94.8% of the total species, followed by ferns and lycophytes (4.8%) and gymnosperms (0.3%).

Table 1. Vascular plant species recorded in the present study. (Shr = shrub; Tre = tree; Arb = arborescent herb; HeTe = terrestrial herb; HeEp = epiphyte herb; Par = parasite; Vin = vine/Cr = "Campo Rupestre"; Hdo = High-montane Dense Ombrophilous Forest; Mdo = Montane Dense Ombrophilous Forest; Osf = Open Sandy Field with dominance of *Eremanthus* Less. (Asteraceae); Ssf = Seasonal Semideciduous Forest/* = non-native species/ʘ = first record in Minas Gerais;◊ = exclusive species to Minas Gerais). Conservation status according to COPAM (1997) and CNCFlora (2022).

Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Acanthaceae					
Aphelandra longiflora (Lindl.) Profice	Shr	Mdo	Machado - 62		
Justicia beyrichii (Nees) Lindau	HeTe | Shr	Mdo	Lima - 73 | Machado - 81		
Justicia citrina (Wawra) Costa-Lima & E.C.O.Chagas	Shr	Ssf | Mdo	Lima - 139 | Machado - 70		
Justicia monticola (Mart. ex Nees) Profice	HeEp | Vin	Hdo | Ssf	Soares-Silva - 337 | Machado - 20		
Mendoncia mollis Lindau	Vin	Ssf | Mdo	Lima - 93 | Lima - 212 | Völtz - 2540		
Odontonema barlerioides (Nees) Kuntze	Shr	Mdo	Machado - 64		
Ruellia elegans Poir.	HeTe | Shr	Mdo	Lima - 68 | Völtz - 2550 | Machado - 66		
Ruellia macrantha (Mart. ex Nees) Hiern	Shr | HeTe	Ssf	Völtz - 2474 | Machado - 108		
Thunbergia alata Bojer ex Sims*	Vin	Osf	Soares-Silva - 323		
Alstroemeriaceae					
Alstroemeria cunha Vell.	HeTe	Mdo | Hdo	Lima - 205 | Völtz - 2510		
Alstroemeria isabelleana Herb.	HeTe	Mdo	Lima - 80 | Lima - 85	EN	
Amaranthaceae					
Alternanthera brasiliana (L.) Kuntze	HeTe	Mdo | Ssf	Lima - 59 | Soares-Silva - 280 | Soares-Silva - 390 | Machado - 227		
Alternanthera martii R.E.Fr.	HeTe	Ssf | Osf	Soares-Silva - 311 | Völtz - 2499		
Hebanthe cf. *pulverulenta* Mart.	HeTe | Vin	Mdo	Lima - 60 | Völtz - 2549		
Anacardiaceae					
Schinus terebinthifolia Raddi	Tre	Ssf	Völtz - 2632		
Tapirira obtusa (Benth.) J.D.Mitch.	Tre	Ssf	Lima - 19		
Anemiaceae					
Anemia phyllitidis (L.) Sw.	HeTe	Mdo	Lima - 79		
Anemia raddiana Link	HeTe	Osf	Machado - 86		
Annonaceae					
Annona cf. *dolabripetala* Raddi	Tre	Mdo	Völtz - 2656		
Annona dolabripetala Raddi	Tre	Ssf	Lima - 1 | Soares-Silva - 358		
Guatteria australis A.St.-Hil.	Tre	Cr | Mdo	Lima - 125 | Soares-Silva - 456		
Guatteria pohliana Schltdl.	Shr | Tre	Ssf | Hdo	Soares-Silva - 479 | Machado - 44		
Guatteria sellowiana Schltdl.	Tre	Ssf	Völtz - 2661		
Xylopia sericea A.St.-Hil.	Tre	Ssf	Völtz - 2668		
Apiaceae					
Centella asiatica (L.) Urb.	HeTe	Ssf	Soares-Silva - 293		
Apocynaceae					
Aspidosperma australe Müll.Arg.	Tre | Shr	Ssf | Hdo	Lima - 8 | Lima - 38		
Aspidosperma olivaceum Müll.Arg.	Tre	Ssf | Mdo	Lima - 135 | Soares-Silva - 355		
Condylocarpon isthmicum (Vell.) A.DC.	Vin	Ssf	Machado - 8		
Ditassa bicolor Decne.	HeEp	Ssf	Soares-Silva - 348		
Ditassa conceptionis Fontella	Vin	Cr	Machado - 151		
Ditassa mucronata Mart.	Vin | HeEp	Ssf | Cr	Lima - 109 | Soares-Silva - 350 | Machado - 124 | Machado - 131		
Orthosia scoparia (Nutt.) Liede & Meve	Vin	Cr	Machado - 120		
Oxypetalum banksii R.Br. ex Schult.	Vin	Ssf	Machado - 28		
Oxypetalum lanatum Decne. ex E.Fourn.	Vin	Cr	Machado - 130		
Peplonia organensis (E.Fourn.) Fontella & Rapini	Vin	Cr	Machado - 121 | Machado - 139		
Prestonia coalita (Vell.) Woodson	Vin	Osf	Soares-Silva - 322		
Aquifoliaceae					
Ilex dumosa Reissek	Tre	Cr	Lima - 124		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Ilex subcordata Reissek◊	Tre	Cr	Völtz - 2580		
Ilex theezans Mart. ex Reissek	Tre	Cr	Lima - 122		
Araceae					
Anthurium minarum Sakur. & Mayo	HeTe | HeEp	Mdo | Hdo | Ssf	Lima - 154 | Lima - 189 | Soares-Silva - 353 | Soares-Silva - 410 | Völtz - 2508 | Völtz - 2636 | Völtz - 2639 | Völtz - 2640		
Anthurium scandens (Aubl.) Engl.	HeEp	Mdo	Völtz - 2529		
Asterostigma cf. *lombardii* E.G.Gonç.	HeTe	Mdo	Lima - 151		
Philodendron appendiculatum Nadruz & Mayo	HeEp	Mdo	Völtz - 2618		
Philodendron minarum Engl.	HeEp	Ssf	Lima - 226		
Philodendron propinquum Schott	HeEp	Ssf	Lima - 103		
Araliaceae					
Didymopanax angustissimus Marchal	Tre	Ssf | Hdo	Lima - 16 | Soares-Silva - 463		
Didymopanax vinosus (Cham. & Schltdl.) Marchal	Shr	Mdo	Machado - 218		
Hydrocotyle bradei Rossberg	HeTe	Cr	Soares-Silva - 434		CR
Hydrocotyle quinqueradiata (Urb.) Nery & Fiaschi	HeTe	Mdo | Ssf	Lima - 69 | Lima - 155 | Machado - 114		
Araucariaceae					
Araucaria angustifolia (Bertol.) Kuntze	Tre	Ssf	Völtz - 2662		EN
Arecaceae					
Euterpe edulis Mart.	Arb	Mdo	Völtz - 2519	VU	VU
Geonoma schottiana Mart.	Arb	Mdo | Ssf	Völtz - 2530 | Völtz - 2609 | Machado - 2		
Aspleniaceae					
Asplenium oligophyllum Kaulf.	HeEp	Hdo	Völtz - 2641		
Asplenium pseudonitidum Raddi	HeTe	Ssf	Lima - 224		
Asteraceae					
Achyrocline satureioides (Lam.) DC.	HeTe	Mdo | Ssf	Lima - 88 | Völtz - 2603		
Aspilia reticulata Baker◊	Shr	Cr	Lima - 186		VU
Aspilia subpetiolata Baker◊	Shr	Cr	Machado - 198	EN	
Austroeupatorium inulaefolium (Kunth) R.M.King & H.Rob.	Shr	Mdo	Soares-Silva - 484		
Baccharis cf. *serrulata* (Lam.) Pers.	HeTe	Ssf	Völtz - 2602 | Völtz - 2605		
Baccharis ligustrina DC.	Tre | Shr	Mdo | Cr	Soares-Silva - 459 | Machado - 193 | Machado - 216		
Baccharis pingraea DC.⊙	Shr	Osf | Hdo	Lima - 27 | Lima - 42		
Baccharis platypoda DC.	Tre | Shr	Cr	Völtz - 2574 | Machado - 209		
Baccharis serrulata (Lam.) Pers.	Shr | HeTe	Osf | Ssf	Lima - 30 | Soares-Silva - 477 | Machado - 235 | Machado - 237		
Bidens pilosa L.*	HeTe	Mdo	Lima - 61		
Bidens squarrosa Kunth*	Shr | Vin	Ssf	Soares-Silva - 316 | Machado - 7		
Chaptalia nutans (L.) Pol.	HeTe	Mdo | Ssf	Lima - 52 | Soares-Silva - 276 | Soares-Silva - 392		
Chromolaena hirsuta (Hook. & Arn.) R.M.King & H.Rob.⊙	HeTe	Mdo	Lima - 157		
Chromolaena squalida (DC.) R.M.King & H.Rob.	Shr | HeTe	Osf | Ssf | Cr	Lima - 31 | Lima - 144 | Lima - 187 | Soares-Silva - 282 | Soares-Silva - 420 | Völtz - 2470		
Conyza bonariensis (L.) Cronquist	HeTe	Ssf	Machado - 244		
Dasyphyllum flagellare (Casar.) Cabrera	Vin	Cr	Machado - 128	VU	
Elephantopus mollis Kunth	HeTe	Mdo | Ssf	Lima - 57 | Soares-Silva - 391		
Emilia fosbergii Nicolson*	HeTe	Ssf	Soares-Silva - 283		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Erechtites hieracifolius (L.) Raf. ex DC.	HeTe	Mdo	Lima - 62		
Eremanthus erythropappus (DC.) MacLeish	Tre	Hdo	Völtz - 2556 | Völtz - 2557		
Eremanthus sp.	Shr	Ssf	Völtz - 2467		
Grazielia intermedia (DC.) R.M.King & H.Rob.	Shr	Ssf | Cr	Völtz - 2491 | Machado - 196		
Lepidaploa salzmannii (DC.) H.Rob.	HeTe | Shr	Ssf | Mdo	Soares-Silva - 317 | Völtz - 2495 | Völtz - 2598 | Machado - 73		
Leptostelma maximum D.Don	HeTe	Ssf | Mdo	Soares-Silva - 401 | Machado - 250		
Lessingianthus cephalotes (DC.) H.Rob.	HeTe	Cr	Lima - 167		
Lessingianthus pycnostachyus (DC.) H.Rob.	Shr	Cr	Lima - 170 | Machado - 194	VU	
Mikania acuminata DC.	Vin	Cr	Machado - 149	VU	
Mikania additicia B.L.Rob.	Vin	Cr	Völtz - 2621		EN
Mikania camporum B.L.Rob.	Vin	Ssf	Machado - 11		
Mikania cf. *microdonta* DC.	Vin	Cr	Machado - 155		
Mikania lasiandrae DC.	Vin	Cr	Machado - 140 | Machado - 152		
Mikania obtusata DC.	Shr	Cr	Machado - 187		
Mikania ternata (Vell.) B.L.Rob.	Vin	Mdo | Ssf	Völtz - 2607 | Machado - 4		
Mikania sp.	Vin	Mdo | Ssf	Völtz - 2535 | Machado - 26		
Piptocarpha leprosa (Less.) Baker	Vin	Ssf	Machado - 6		
Stevia urticaefolia Thunb.	Shr | HeTe	Cr | Ssf	Lima - 160 | Soares-Silva - 415		
Trichogonia salviifolia Gardner	Shr | HeTe	Osf | Ssf	Lima - 26 | Soares-Silva - 287 | Soares-Silva - 379 | Völtz - 2501		
Trichogoniopsis adenantha (DC.) R.M.King & H.Rob.	Shr	Ssf	Soares-Silva - 387		
Trixis nobilis (Vell.) Katinas	Shr	Cr	Lima - 179		
Verbesina aff. *glabrata* Hook. & Arn.	Tre	Hdo	Lima - 117		
Verbesina floribunda Gardner	Tre	Mdo	Soares-Silva - 367	CR	
Wedelia subvelutina DC.	Vin | HeTe	Mdo | Ssf	Lima - 83 | Soares-Silva - 403 | Machado - 230		
Begoniaceae					
Begonia angularis Raddi	HeTe | Shr	Mdo | Cr	Lima - 65 | Soares-Silva - 442 | Völtz - 2551		
Begonia angulata Vell.	HeTe	Ssf	Soares-Silva - 393		
Begonia convolvulacea (Klotzsch) A.DC.	HeEp	Mdo	Völtz - 2522		
Begonia digitata Raddi	Shr	Mdo	Völtz - 2552 | Machado - 69		
Begonia fischeri Schrank	HeTe	Mdo	Machado - 261		
Begonia rufa Thunb.	HeTe	Hdo | Ssf	Lima - 36 | Soares-Silva - 408 | Völtz - 2512 | Machado - 106		
Bignoniaceae					
Cybistax antisyphilitica (Mart.) Mart.	Tre	Ssf	Völtz - 2582		
Fridericia leucopogon (Cham.) L.G.Lohmann	Vin	Osf | Ssf	Soares-Silva - 325 | Machado - 111		
Fridericia speciosa Mart.	Vin	Ssf	Machado - 18		
Sparattosperma leucanthum (Vell.) K.Schum.	Tre	Ssf	Lima - 21		
Blechnaceae					
Blechnum polypodioides Raddi	HeEp | HeTe	Ssf | Cr	Machado - 53 | Machado - 145 | Machado - 239		
Neoblechnum brasiliense (Desv.) Gasper & V.A.O. Dittrich	Arb	Ssf | Mdo	Lima - 92 | Machado - 266		
Salpichlaena volubilis (Kaulf.) J.Sm.	Vin	Ssf	Lima - 91		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Boraginaceae					
Cordia sellowiana Cham.	Tre	Ssf	Lima - 2 | Völtz - 2657		
Bromeliaceae					
Aechmea aff. *phanerophlebia* Baker	HeTe	Hdo	Lima - 191		
Alcantarea imperialis (Carrière) Harms	HeTe	Mdo	Lima - 150	EN	VU
Ananas comosus (L.) Merril	HeTe	Mdo	Lima - 210		
Billbergia alfonsijoannis Reitz	HeEp	Mdo	Völtz - 2538		
Nidularium ferdinandocoburgii Wawra	HeEp	Mdo	Völtz - 2615		
Pitcairnia flammea Lindl.	HeTe	Mdo	Lima - 209		
Tillandsia gardneri Lindl.	HeEp	Ssf	Machado - 30		
Tillandsia geminiflora Brongn.	HeEp	Ssf | Hdo | Cr	Lima - 110 | Soares-Silva - 335 | Völtz - 2622 | Machado - 19		
Tillandsia usneoides (L.) L.	HeEp	Hdo | Mdo	Soares-Silva - 339 | Völtz - 2532		
Vriesea bituminosa Wawra	HeEp	Hdo	Völtz - 2625		
Vriesea cacuminis L.B.Sm.◊	HeTe	Cr	Lima - 183 | Soares-Silva - 445	VU	EN
Vriesea guttata Linden & André	HeEp	Hdo	Völtz - 2626		
Vriesea heterostachys (Baker) L.B.Sm.	HeEp | HeTe	Mdo | Hdo	Völtz - 2524 | Machado - 116		
Vriesea longicaulis (Baker) Mez	HeEp	Mdo	Völtz - 2612		
Vriesea poenulata (Baker) Mez⊖	HeEp	Ssf	Lima - 216		
Wittrockia gigantea (Baker) Leme	HeTe	Hdo	Völtz - 2631		
Cactaceae					
Hatiora salicornioides (Haw.) Britton & Rose	HeEp	Hdo	Machado - 137 | Machado - 141		
Rhipsalis cf. *teres* (Vell.) Steud.	HeEp	Hdo	Machado - 147		
Rhipsalis lindbergiana K.Schum.	HeEp	Hdo	Soares-Silva - 341		
Rhipsalis sp.	HeEp	Hdo	Machado - 146		
Campanulaceae					
Lobelia hilaireana (Kanitz) E.Wimm.	HeTe	Hdo	Lima - 193	VU	EN
Siphocampylus cf. *duploserratus* Pohl	Shr	Mdo	Völtz - 2528		
Siphocampylus macropodus (Thunb.) G.Don	Shr	Ssf	Machado - 243		
Siphocampylus westinianus (Thunb.) Pohl	Shr	Mdo	Machado - 224		
Siphocampylus sp.	HeTe | Vin	Mdo | Ssf | Cr	Lima - 76 | Soares-Silva - 452 | Machado - 127		
Cannabaceae					
Trema micranthum (L.) Blume	Tre	Ssf	Machado - 158		
Caprifoliaceae					
Valeriana scandens L.	Vin	Hdo	Machado - 156		
Celastraceae					
Monteverdia subalata (Reissek) Biral	Tre	Mdo	Machado - 169		
Chloranthaceae					
Hedyosmum brasiliense Mart. ex Miq.	Tre	Mdo	Völtz - 2542		
Cleomaceae					
Tarenaya sp.	Shr	Hdo	Lima - 204		
Clethraceae					
Clethra scabra Pers.	Tre	Cr	Lima - 119		
Clusiaceae					
Clusia criuva Cambess.	Tre | Shr	Cr	Lima - 123 | Machado - 189		
Tovomita riedeliana Engl.⊖	Tre	Ssf	Lima - 3 | Machado - 49		
Commelinaceae					
Commelina erecta L.	HeTe	Cr	Machado - 138		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Commelina obliqua Vahl	HeTe	Mdo | Osf | Ssf	Lima - 58 | Soares-Silva - 304 | Machado - 105		
Dichorisandra hexandra (Aubl.) C.B.Clarke	HeTe | Vin	Mdo | Hdo	Lima - 70 | Völtz - 2548 | Völtz - 2628		
Tradescantia umbraculifera Hand.-Mazz.	HeTe	Hdo	Lima - 192 | Völtz - 2649		
Tripogandra diuretica (Mart.) Handlos	HeTe	Mdo | Ssf	Lima - 50 | Soares-Silva - 275 | Völtz - 2527 | Machado - 246		
Convolvulaceae					
Distimake macrocalyx (Ruiz & Pav.) A.R. Simões & Staples	Vin	Mdo	Völtz - 2645		
Evolvulus aurigenius Mart.	HeTe	Mdo | Cr	Lima - 156 | Lima - 168		
Ipomoea maurandioides Meisn.	Vin	Ssf	Soares-Silva - 347		
Ipomoea regnellii Meisn.	Vin	Mdo	Lima - 228		
Ipomoea syringifolia Meisn.	Vin	Ssf	Machado - 31		
Convolvulaceae sp.	Vin	Cr	Machado - 129		
Crassulaceae					
Kalanchoe cf. *fedtschenkoi* Raym.-Hamet & H.Perrier*	HeTe	Mdo	Lima - 149		
Cucurbitaceae					
Melothrianthus smilacifolius (Cogn.) Mart.Crov.	Vin	Ssf | Mdo	Lima - 211 | Völtz - 2536 | Machado - 27		
Cunoniaceae					
Lamanonia ternata Vell.	Tre	Cr	Lima - 130		
Lamanonia sp.	Tre	Ssf	Völtz - 2655		
Cyatheaceae					
Alsophila sp.	Arb	Ssf	Machado - 5		
Cyathea sp.	Arb	Mdo	Völtz - 2520		
Cyclanthaceae					
Asplundia brachypus (Drude) Harling	HeTe	Ssf | Mdo	Lima - 95 | Völtz - 2531		
Cyperaceae					
Bulbostylis cf. *juncoides* (Vahl) Kük. ex Osten	HeTe	Osf	Völtz - 2498		
Bulbostylis lagoensis (Boeckeler) Prata & M.G.López	HeTe	Ssf | Osf	Soares-Silva - 314 | Machado - 89		
Bulbostylis sp.	HeTe	Hdo	Lima - 195		
Cyperus haspan L.	HeTe	Ssf	Soares-Silva - 273		
Cyperus hortensis (Salzm. ex Steud.) Dorr	HeTe	Ssf	Völtz - 2595		
Cyperus laxus Lam.	HeTe	Mdo	Lima - 51		
Cyperus luzulae (L.) Retz.	HeTe	Ssf | Mdo	Soares-Silva - 277 | Machado - 253 | Machado - 265		
Cyperus sp.	HeTe	Osf | Ssf | Mdo	Soares-Silva - 310 | Soares-Silva - 411 | Machado - 95 | Machado - 259 | Machado - 260		
Eleocharis maculosa (Vahl) Roem. & Schult.	HeTe	Mdo	Machado - 255		
Fimbristylis ferruginea (L.) Vahl	HeTe	Hdo	Lima - 202		
Rhynchospora exaltata Kunth	HeTe	Ssf	Völtz - 2593		
Rhynchospora setigera (Kunth) Griseb.	HeTe	Hdo	Soares-Silva - 439		
Rhynchospora aff. *tenuis* Link	HeTe	Ssf	Völtz - 2594		
Scleria panicoides Kunth	HeTe	Hdo | Ssf | Osf	Lima - 190 | Soares-Silva - 294 | Machado - 94		
Scleria sp.	HeTe	Ssf	Machado - 104		
Cyperaceae sp.	HeTe	Mdo	Machado - 257		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Dilleniaceae					
Davilla rugosa Poir.	Vin	Osf | Mdo | Ssf	Soares-Silva - 327 | Völtz - 2533 | Machado - 10		
Doliocarpus glomeratus Eichler⊖	Vin	Ssf	Machado - 16		
Dioscoreaceae					
Dioscorea therezopolensis Uline ex R.Knuth	Vin | HeEp	Hdo | Cr	Soares-Silva - 343 | Soares-Silva - 344 | Machado - 14 | Machado - 126 | Machado - 144 | Machado - 148 | Machado - 154		
Dryopteridaceae					
Arachniodes denticulata (Sw.) Ching	HeTe	Ssf	Machado - 21		
Megalastrum connexum (Kaulf.) A.R.Sm. & R.C.Moran	HeTe	Mdo	Völtz - 2642		
Polybotrya speciosa Schott⊖	HeEp	Ssf	Lima - 225		
Elaeocarpaceae					
Sloanea hirsuta (Schott) Planch. ex Benth.	Tre	Ssf	Völtz - 2575		
Ericaceae					
Agarista eucalyptoides (Cham. & Schltdl.) G.Don	Shr	Osf	Völtz - 2481 | Völtz - 2565		
Gaultheria eriophylla (Pers.) Sleumer ex Burtt	Shr	Cr	Völtz - 2588		
Gaylussacia decipiens Cham.	Shr	Cr	Machado - 201		
Gaylussacia densa Cham.	Shr	Cr	Soares-Silva - 447		
Gaylussacia jordanensis Sleumer	Shr	Cr	Lima - 180		
Eriocaulaceae					
Comanthera caespitosa (Wikstr.) L.R.Parra & Giul.	HeTe	Osf	Soares-Silva - 309 | Völtz - 2504		
Comanthera nivea (Bong.) L.R.Parra & Giul.	HeTe	Osf	Völtz - 2518		
Paepalanthus acuminatus Ruhland◊	HeTe	Cr	Soares-Silva - 426		
Paepalanthus exiguus (Bong.) Körn.◊	HeTe	Hdo | Osf	Lima - 200 | Machado - 87		
Paepalanthus harmsii Ruhland◊	HeTe	Osf	Soares-Silva - 299	VU	
Paepalanthus manicatus Poulsen ex Malme	HeTe	Osf	Soares-Silva - 305		
Syngonanthus costatus Ruhland◊	HeTe	Hdo	Lima - 196 | Lima - 203		
Erythropalaceae					
Heisteria silvianii Schwacke	Tre	Mdo	Soares-Silva - 376		
Erythroxylaceae					
Erythroxylum gonocladum (Mart.) O.E.Schulz	Shr	Hdo | Cr	Lima - 44 | Völtz - 2587 | Machado - 183		
Erythroxylum vacciniifolium Mart.	Shr	Hdo	Lima - 43		
Euphorbiaceae					
Acalypha cf. *amblyodonta* (Müll.Arg.) Müll.Arg.	HeTe	Ssf	Machado - 234		
Acalypha gracilis Spreng.	HeTe | Shr	Mdo	Lima - 152 | Machado - 63		
Alchornea triplinervia (Spreng.) Müll.Arg.	Tre	Ssf | Osf	Lima - 12 | Machado - 35		
Bia sp.	HeTe | Shr	Mdo | Ssf	Lima - 74 | Völtz - 2496		
Croton cf. *echinocarpus* Müll.Arg.	Tre	Ssf	Lima - 136		
Croton lundianus (Didr.) Müll.Arg.	HeTe	Ssf	Soares-Silva - 286 | Soares-Silva - 395 | Machado - 98		
Croton sp.1	Tre	Mdo	Soares-Silva - 369		
Croton sp.2	Shr	Ssf	Soares-Silva - 481		
Croton sp.3	Tre	Ssf	Völtz - 2650		
Croton sp.4	Tre	Ssf	Völtz - 2651		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Dalechampia triphylla Lam.	Vin	Osf | Mdo | Cr	Soares-Silva - 326 | Völtz - 2546 | Machado - 12		
Gymnanthes klotzschiana Müll.Arg.	Shr	Mdo	Machado - 55		
Fabaceae					
Anadenanthera colubrina (Vell.) Brenan	Tre	Ssf	Völtz - 2567		
Ancistrotropis peduncularis (Kunth) A. Delgado	HeTe | Vin	Cr	Soares-Silva - 423 | Völtz - 2623		
Canavalia parviflora Benth.	Vin	Mdo	Völtz - 2606		
Centrosema coriaceum Benth.	Vin	Osf | Cr	Lima - 111 | Machado - 9		
Chamaecrista catharticoides (H.S.Irwin & Barneby) H.S.Irwin & Barneby◊	Tre	Cr	Völtz - 2578		
Chamaecrista desvauxii (Collad.) Killip	Shr	Ssf	Soares-Silva - 281		
Crotalaria paulina Schrank	HeTe	Mdo | Ssf	Lima - 64 | Soares-Silva - 321		
Ctenodon falcatus (Poir.) D.B.O.S.Cardoso, P.L.R.Moraes & H.C.Lima	HeTe	Ssf	Machado - 231		
Dalbergia villosa (Benth.) Benth.	Shr | Tre	Osf	Lima - 28 | Machado - 36		
Desmodium adscendens (Sw.) DC.*	HeTe	Ssf	Machado - 238		
Desmodium uncinatum (Jacq.) DC.	HeTe	Mdo	Lima - 53		
Galactia cf. *striata* (Jacq.) Urb.	HeTe	Ssf	Machado - 228		
Inga sessilis (Vell.) Mart.	Tre	Mdo | Ssf	Soares-Silva - 366 | Völtz - 2660 | Machado - 161		
Machaerium glabrum Vogel	Vin	Mdo	Völtz - 2537		
Machaerium hirtum (Vell.) Stellfeld	Shr	Ssf	Lima - 24		
Machaerium reticulatum (Poir.) Pers.	Vin	Ssf	Soares-Silva - 449		
Mimosa ourobrancoensis Burkart	HeTe	Cr	Soares-Silva - 424	VU	
Nissolia tomentosa (Gardner) T.M.Moura & Fort.-Perez	Vin	Mdo	Völtz - 2648		
Periandra mediterranea (Vell.) Taub.	Shr	Cr | Mdo	Soares-Silva - 444 | Machado - 222		
Senna macranthera (DC. ex Collad.) H.S.Irwin & Barneby	Tre	Cr | Ssf	Lima - 129 | Völtz - 2562 | Machado - 47		
Senna neglecta var. *oligophylla* (Benth.) H.S.Irwin & Barneby	Shr	Hdo | Cr	Lima - 39 | Völtz - 2581		
Senna pendula (Humb.& Bonpl.ex Willd.) H.S.Irwin & Barneby	Shr | Vin	Ssf | Mdo	Völtz - 2488 | Völtz - 2646 | Machado - 77		
Stryphnodendron polyphyllum Mart.	Tre	Ssf	Machado - 45		
Stylosanthes sp.	HeTe	Ssf	Machado - 247		
Swartzia flaemingii Raddi	Tre	Hdo | Ssf	Völtz - 2563 | Machado - 162		
Tachigali friburgensis (Harms) L.G.Silva & H.C.Lima	Tre	Ssf | Hdo	Lima - 5 | Völtz - 2559	EN	
Zornia curvata Mohlenbr.	HeTe	Ssf	Machado - 236		
Zornia sp.	HeTe	Ssf	Soares-Silva - 295		
Fabaceae sp.	HeTe	Ssf	Machado - 245		
Gentianaceae					
Calolisianthus speciosus (Cham. & Schltdl.) Gilg	HeTe	Cr	Soares-Silva - 425		
Calolisianthus sp. ined.	HeTe	Cr	Lima - 161		
Voyria aphylla (Jacq.) Pers.	HeTe	Ssf	Lima - 108		
Gesneriaceae					
Anetanthus gracilis Hiern	HeTe	Ssf | Cr	Lima - 99 | Soares-Silva - 436	EN	
Nematanthus strigillosus (Mart.) H.E.Moore◊	HeTe	Ssf	Soares-Silva - 422		
Sinningia tuberosa (Mart.) H.E.Moore	HeTe	Cr	Soares-Silva - 443	VU	VU

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Vanhouttea hilariana Chautems◊	HeTe | Shr	Cr	Soares-Silva - 433 | Völtz - 2586	EN	
Gesneriaceae sp.	Vin	Hdo	Soares-Silva - 336		
Hymenophyllaceae					
Hymenophyllum caudiculatum Mart.	HeEp	Mdo	Völtz - 2619		
Hymenophyllum fragile (Hedw.) C.V.Morton	HeTe	Ssf	Lima - 98		
Trichomanes pilosum Raddi	HeTe	Cr	Machado - 142		
Hypericaceae					
Vismia brasiliensis Choisy	Tre	Hdo	Machado - 39		
Vismia magnoliifolia Cham. & Schltdl.	Tre | Shr	Cr | Ssf	Lima - 127 | Völtz - 2460		
Vismia micrantha A.St.-Hil.	Tre	Hdo	Völtz - 2558		
Iridaceae					
Pseudotrimezia juncifolia (Klatt) Lovo & A.Gil	HeTe	Cr	Soares-Silva - 428 | Soares-Silva - 441	CR	
Sisyrinchium vaginatum Spreng.	HeTe	Cr	Soares-Silva - 431		
Juncaceae					
Juncus micranthus Schrad. ex Meyers	HeTe	Mdo	Machado - 263		
Lamiaceae					
Aegiphila integrifolia (Jacq.) Moldenke	Tre	Ssf	Machado - 160		
Cantinoa cf. *multiseta* (Benth.) Harley & J.F.B.Pastore	HeTe	Ssf	Soares-Silva - 396 | Völtz - 2604		
Cantinoa multiseta (Benth.) Harley & J.F.B.Pastore	HeTe	Ssf	Machado - 229		
Cantinoa sp.	Shr	Ssf	Lima - 143		
Eriope macrostachya Mart. ex Benth.	Shr	Hdo | Osf	Lima - 35 | Völtz - 2479		
Hyptis cf. *sinuata* Pohl ex Benth.	Shr	Mdo	Soares-Silva - 485		
Hyptis monticola Mart. ex Benth.	Shr | HeTe	Hdo | Cr	Völtz - 2592 | Machado - 185		
Hyptis radicans (Pohl) Harley & J.F.B.Pastore	HeTe	Ssf | Mdo	Soares-Silva - 274 | Soares-Silva - 406 | Völtz - 2547		
Marsypianthes chamaedrys (Vahl) Kuntze	HeTe	Ssf	Soares-Silva - 279		
Mesosphaerum sidifolium (L'Hér.) Harley & J.F.B.Pastore	HeTe	Ssf	Soares-Silva - 318 | Soares-Silva - 400		
Lamiaceae sp.	HeTe	Ssf	Machado - 241		
Lauraceae					
Nectandra membranacea (Sw.) Griseb.	Tre	Mdo	Soares-Silva - 362		
Nectandra oppositifolia Nees & Mart.	Tre	Ssf	Lima - 22		
Ocotea pulchella (Nees & Mart.) Mez	Shr | Tre	Hdo | Ssf | Osf | Cr	Lima - 40 | Lima - 137 | Soares-Silva - 383 | Völtz - 2484 | Völtz - 2584		
Lentibulariaceae					
Utricularia subulata L.	HeTe	Osf	Soares-Silva - 300		
Loranthaceae					
Struthanthus acuminatus (Ruiz & Pav.) Kuijt	Par | Vin	Ssf | Mdo	Lima - 94 | Lima - 219 | Lima - 220 | Lima - 227 | Soares-Silva - 451 | Machado - 17		
Lythraceae					
Cuphea carthagenensis (Jacq.) J.F.Macbr.	HeTe	Ssf	Soares-Silva - 315 | Soares-Silva - 319 | Völtz - 2601 | Machado - 232		
Cuphea ericoides Cham. & Schltdl.	HeTe	Cr	Lima - 164		
Cuphea thymoides Cham. & Schltdl.	HeTe	Hdo	Lima - 188		
Diplusodon myrsinites DC.◊	Shr	Cr	Lima - 176 | Machado - 203		
Diplusodon virgatus Pohl	Shr	Ssf	Völtz - 2493		
Lafoensia pacari A.St.-Hil.	Shr	Mdo	Machado - 219		
Magnoliaceae					
Magnolia ovata (A.St.-Hil.) Spreng.	Tre	Ssf	Lima - 133		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Malpighiaceae					
Banisteriopsis adenopoda (A.Juss.) B.Gates	Vin	Ssf	Machado - 32		
Banisteriopsis muricata (Cav.) Cuatrec.	Vin	Osf	Soares-Silva - 324 | Soares-Silva - 329		
Byrsonima cf. *ligustrifolia* A.Juss.	Tre	Hdo	Lima - 114		
Byrsonima variabilis A.Juss.	Tre | Shr	Osf	Soares-Silva - 378 | Völtz - 2478		
Heteropterys nitida (Lam.) DC.	Vin	Ssf	Machado - 112		
Heteropterys umbellata A.Juss.	Vin	Mdo	Machado - 226		
Niedenzuella multiglandulosa (A.Juss.) W.R.Anderson	Vin	Osf	Soares-Silva - 328		
Tetrapterys phlomoides (Spreng.) Nied.	Vin	Ssf	Machado - 113		
Malvaceae					
Luehea grandiflora Mart.	Tre	Ssf	Völtz - 2653		
Pavonia communis A.St.-Hil.	Shr	Ssf | Mdo	Lima - 145 | Machado - 268		
Pavonia viscosa A.St.-Hil.◊	Shr | HeTe	Ssf	Lima - 112 | Machado - 101		
Pseudobombax marginatum (A.St.-Hil., Juss. & Cambess.) A.Robyns	Tre	Mdo	Soares-Silva - 359		
Sida glaziovii K.Schum.	HeTe	Osf | Ssf	Völtz - 2516 | Machado - 109		
Sida linifolia Cav.	HeTe	Ssf	Völtz - 2600		
Sida planicaulis Cav.	HeTe	Mdo | Ssf	Lima - 82 | Soares-Silva - 394		
Triumfetta semitriloba Jacq.	HeTe | Shr	Mdo | Ssf	Lima - 84 | Soares-Silva - 399 | Völtz - 2492 | Machado - 61		
Melastomataceae					
Cambessedesia hilariana (Kunth) DC.	Shr	Cr	Lima - 175 | Machado - 200		
Chaetogastra minor (Cogn.) P.J.F.Guim. & Michelang.	HeTe	Cr	Lima - 166		
Chaetogastra sebastianopolitana (Raddi) P.J.F.Guim. & Michelang.	HeTe | Shr	Ssf | Mdo	Soares-Silva - 402 | Völtz - 2572 | Machado - 249		
Lavoisiera imbricata (Thunb.) DC.	Shr	Cr	Lima - 174		
Leandra carassana (DC.) Cogn.	Shr	Mdo	Machado - 213		
Leandra cf. *umbellata* DC.	Shr	Ssf	Völtz - 2461		
Leandra cf. *xanthocoma* (Naudin) Cogn.	Shr	Ssf	Lima - 146		
Leandra glabrata (Bunbury) Cogn.	Shr	Mdo	Machado - 79		
Leandra melastomoides Raddi	Shr	Mdo	Machado - 56 | Machado - 223		
Leandra pennipilis (O.Berg ex Triana) Cogn.◊	Shr	Ssf	Völtz - 2577		EN
Leandra xanthocoma (Naudin) Cogn.	HeTe	Ssf	Machado - 233		
Miconia buddlejoides Triana	Tre	Mdo	Machado - 171		
Miconia cinnamomifolia (DC.) Naudin	Tre	Mdo	Soares-Silva - 371		
Miconia corallina Spring	Shr	Cr	Machado - 186		
Miconia cubatanensis Hoehne	Shr	Cr	Machado - 188		
Miconia discolor DC.	Shr	Mdo	Machado - 75		
Miconia flammea Casar.	Tre | Shr	Cr | Hdo	Lima - 128 | Soares-Silva - 380 | Völtz - 2554 | Machado - 206		
Miconia latecrenata (DC.) Naudin	Shr | Tre	Ssf | Mdo	Soares-Silva - 473 | Völtz - 2468 | Völtz - 2573 | Völtz - 2659 | Machado - 74		
Miconia ligustroides (DC.) Naudin	Shr | Tre	Ssf	Völtz - 2465 | Machado - 46		
Miconia longicuspis Cogn.	Shr	Ssf	Soares-Silva - 474		
Miconia paniculata (DC.) Naudin	Shr | Tre	Mdo	Machado - 54 | Machado - 180		
Miconia pusilliflora (DC.) Naudin	Shr	Ssf	Soares-Silva - 475		
Miconia robusta Cogn.	Tre | Shr	Ssf | Hdo	Lima - 4 | Soares-Silva - 381		
Miconia setosociliata Cogn.	Tre	Ssf	Völtz - 2576		
Miconia theaezans (Bonpl.) Cogn.	Tre	Ssf | Mdo	Völtz - 2571 | Völtz - 2666		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Miconia tristis Spring	Shr	Ssf	Völtz - 2475		
Miconia valtheri Naudin	Tre | Shr	Ssf | Osf | Mdo	Lima - 7 | Völtz - 2472 | Völtz - 2486 | Machado - 78 | Machado - 217		
Microlicia isophylla DC.	Shr | HeTe	Ssf | Osf	Lima - 47 | Völtz - 2480 | Machado - 83		
Ossaea cf. *fragilis* Cogn.ʘ	HeTe	Ssf	Lima - 101		
Pleroma collinum (Naudin) Triana◊	Shr	Osf	Soares-Silva - 384 | Völtz - 2477		
Pleroma fissinervium Schrank et Mart. ex DC.	Tre	Ssf | Mdo	Lima - 11 | Soares-Silva - 373		
Pleroma fothergillii (Schrank et Mat. ex DC.) Triana	Shr	Ssf | Mdo	Völtz - 2568 | Machado - 71		
Pleroma foveolatum (Naudin) Triana	Tre	Cr	Völtz - 2585		
Pleroma frigidulum (Schrank et Mart. ex DC.) Triana	Shr	Cr	Lima - 159 | Lima - 163 | Machado - 190		
Pleroma heteromallum (D.Don) D.Don	Shr	Cr | Hdo	Lima - 181 | Völtz - 2591		
Siphanthera arenaria (DC.) Cogn.◊	HeTe	Hdo | Osf	Lima - 197 | Soares-Silva - 308 | Machado - 85		
Trembleya parviflora (D.Don) Cogn.	Shr	Osf | Cr	Völtz - 2483 | Machado - 207		
Meliaceae					
Cabralea canjerana (Vell.) Mart.	Tre	Ssf	Lima - 134		
Microteaceae					
Microtea celosioides Moq. ex Sennikov & Sukhor.	HeTe	Ssf	Machado - 103		
Monimiaceae					
Mollinedia aff. *triflora* (Spreng.) Tul.	Tre	Cr	Lima - 126		
Mollinedia elegans Tul.	Shr | Tre	Mdo	Machado - 68 | Machado - 168		
Moraceae					
Ficus mexiae Standl.	Tre	Ssf	Lima - 23		
Myristicaceae					
Virola bicuhyba (Schott ex Spreng.) Warb.	Tre	Ssf	Völtz - 2665		EN
Myrtaceae					
Eugenia capparidifolia DC.◊	Tre	Cr	Soares-Silva - 464		
Eugenia sonderiana O.Berg	Shr	Osf	Lima - 32		
Eugenia widgrenii Sond. ex O.Berg	Tre	Mdo	Machado - 181		
Eugenia sp.	Tre	Mdo	Machado - 178		
Myrceugenia alpigena (DC.) Landrum	Shr	Cr	Machado - 195		
Myrceugenia miersiana (Gardner) D.Legrand & Kausel	Shr	Mdo	Machado - 212		
Myrceugenia oxysepala (Burret) D.Legrand & Kausel	Tre	Mdo	Machado - 173		
Myrcia blanchetiana (O.Berg) Mattosʘ	Tre | Shr	Osf | Ssf | Hdo	Lima - 9 | Lima - 46 | Lima - 116 | Völtz - 2553 | Machado - 51		
Myrcia cf. *neoobscura* E.Lucas & C.E.Wilson	Tre	Ssf	Machado - 163		
Myrcia eriopus DC.	Tre	Mdo	Soares-Silva - 455 | Machado - 177		
Myrcia guianensis (Aubl.) DC.	Tre	Hdo	Machado - 42		
Myrcia hebepetala DC.	Shr | Tre	Ssf | Mdo	Lima - 141 | Soares-Silva - 375 | Machado - 170		
Myrcia mutabilis (O.Berg) N.Silveira	Tre	Hdo	Machado - 40		
Myrcia aff. *neosuaveolens* E.Lucas & C.E.Wilsonʘ	Shr	Mdo	Machado - 59		
Myrcia splendens (Sw.) DC.	Shr | Tre	Osf | Ssf | Hdo	Völtz - 2485 | Völtz - 2560 | Völtz - 2564 | Machado - 38		
Myrcia subalpestris DC.	Shr	Cr	Machado - 204		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Myrcia subcordata DC.	Tre | Shr	Cr | Ssf | Hdo	Lima - 121 | Lima - 131 | Völtz - 2583 | Machado - 41 | Machado - 205		
Myrcia sp.	Shr	Hdo	Soares-Silva - 382		
Myrciaria cf. *floribunda* (H.West ex Willd.) O.Berg	Shr	Mdo	Lima - 25		
Myrciaria cuspidata O.Berg	Shr	Osf	Völtz - 2487		
Myrciaria floribunda (H.West ex Willd.) O.Berg	Tre | Shr	Osf | Mdo	Lima - 10 | Soares-Silva - 360 | Soares-Silva - 385 | Völtz - 2482 | Machado - 165		
Pimenta pseudocaryophyllus var. *fulvescens* (Mart. ex DC.) Landrum	Tre	Osf	Machado - 34		
Psidium myrtoides O.Berg	Tre	Mdo	Soares-Silva - 461		
Psidium rufum Mart. ex DC.	Shr	Mdo	Soares-Silva - 482		
Siphoneugena crassifolia (DC.) Proença & Sobral	Tre	Cr	Lima - 120		
Ochnaceae					
Ouratea semiserrata (Mart. & Nees) Engl.	Tre | Shr	Cr | Mdo	Soares-Silva - 465 | Machado - 221		
Sauvagesia vellozii (Vell. ex A.St.-Hil.) Sastre	HeTe	Osf | Cr | Hdo	Soares-Silva - 302 | Soares-Silva - 438 | Völtz - 2511		
Onagraceae					
Ludwigia laruotteana (Cambess.) H.Hara	HeTe	Mdo	Machado - 251		
Orchidaceae					
Acianthera cf. *modestissima* (Rchb.f. & Warm.) Pridgeon & M.W.Chase	HeTe	Cr	Soares-Silva - 446		
Acianthera teres (Lindl.) Borba	HeTe	Cr	Lima - 182		
Bulbophyllum exaltatum Lindl.	HeTe | HeEp	Cr | Hdo	Lima - 185 | Soares-Silva - 333		
Bulbophyllum weddellii (Lindl.) Rchb.f.	HeEp	Hdo	Soares-Silva - 332		
Cattleya coccinea Lindl.ʘ	HeEp	Mdo | Cr	Völtz - 2620 | Machado - 136	EN	
Cattleya loddigesii Lindl.	Vin	Ssf	Soares-Silva - 345	EN	
Encyclia patens Hook.	Vin	Ssf	Soares-Silva - 351		
Epidendrum cf. *secundum* Jacq.	HeTe	Ssf	Soares-Silva - 419		
Epidendrum paranaense Barb.Rodr.	HeEp	Hdo	Völtz - 2634		
Epidendrum secundum Jacq.	HeEp | HeTe	Ssf | Cr	Lima - 107 | Lima - 162 | Soares-Silva - 427 | Machado - 132		
Epidendrum sp.	HeEp	Mdo	Völtz - 2611		
Eurystyles actinosophila (Barb.Rodr.) Schltr.	HeEp	Mdo	Völtz - 2544		
Gomesa cf. *gardneri* (Lindl.) M.W.Chase & N.H.Williams	HeEp	Hdo	Völtz - 2635		
Gomesa cf. *ramosa* (Lindl.) M.W.Chase & N.H.Williams	HeTe	Cr	Lima - 173		
Gomesa praetexta (Rchb.f.) M.W.Chase & N.H.Williams	HeEp	Cr	Machado - 118	CR	
Gomesa ranifera (Lindl.) M.W.Chase & N.H.Williams	HeEp	Hdo	Völtz - 2638		
Gomesa recurva R.Br.	HeEp	Hdo	Völtz - 2637		
Gomesa sp.	HeTe	Cr	Soares-Silva - 435		
Habenaria cf. *josephensis* Barb.Rodr.	HeTe	Hdo	Lima - 198		
Habenaria petalodes Lindl.	HeTe	Mdo	Völtz - 2539		
Habenaria rodeiensis Barb.Rodr.	HeTe	Ssf	Machado - 97		
Isochilus linearis (Jacq.) R.Br.	HeTe	Hdo	Völtz - 2509		
Liparis nervosa (Thumb.) Lindl.	HeTe	Ssf	Machado - 102		
Octomeria sp.	HeEp	Hdo	Völtz - 2629		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Polystachya concreta (Jacq.) Garay & Sweet⊙	Vin | HeTe	Hdo | Cr	Soares-Silva - 342 | Machado - 119		
Prosthechea sp.	HeEp	Hdo	Völtz - 2624		
Stelis sp.	HeEp	Hdo | Cr	Völtz - 2644 | Machado - 125 | Machado - 157		
Trichocentrum pumilum (Lindl.) M.W.Chase & N.H.Williams	HeEp	Hdo	Soares-Silva - 338		
Zygopetalum maculatum (Kunth) Garay	HeTe | HeEp	Cr | Ssf	Lima - 172 | Soares-Silva - 417 | Machado - 133		
Zygopetalum sellowii Rchb.f.	HeTe	Cr	Soares-Silva - 448		
Zygopetalum sp.	HeTe	Ssf	Soares-Silva - 416 | Soares-Silva - 418		
Orchidaceae sp.	HeEp	Ssf	Lima - 217 | Lima - 218		
Passifloraceae					
Passiflora campanulata Mast.	Vin	Hdo	Völtz - 2627		
Passiflora cf. *amethystina* J.C.Mikan	Vin	Mdo	Völtz - 2643		
Phyllanthaceae					
Phyllanthus klotzschianus Müll.Arg.	HeTe	Osf	Soares-Silva - 301		
Phyllanthus niruri subsp. *lathyroides* (Kunth) G.L.Webster	Shr | HeTe	Hdo | Osf	Lima - 41 | Soares-Silva - 303 | Völtz - 2506		
Phyllanthus tenellus Roxb.	HeTe	Ssf	Soares-Silva - 278		
Picramniaceae					
Picramnia glazioviana Engl.	Shr | Tre	Ssf	Soares-Silva - 480 | Machado - 159		
Piperaceae					
Peperomia alata Ruiz & Pav.	HeTe	Mdo | Ssf | Hdo	Lima - 71 | Soares-Silva - 421 | Völtz - 2513		
Peperomia blanda (Jacq.) Kunth	HeTe | HeEp	Ssf | Cr	Soares-Silva - 404 | Soares-Silva - 409 | Machado - 122		
Peperomia glabella (Sw.) A.Dietr.	HeEp	Mdo	Völtz - 2617		
Peperomia tetraphylla (G.Forst.) Hook. & Arn.	HeEp	Mdo	Völtz - 2614		
Peperomia urocarpa Fisch. & C.A.Mey.	HeTe | HeEp	Mdo	Lima - 66 | Lima - 72 | Völtz - 2526		
Peperomia sp.	HeTe	Hdo	Soares-Silva - 437		
Piper arboreum Aubl.	Shr	Ssf	Völtz - 2489		
Piper corcovadensis (Miq.) C.DC.	Shr	Ssf	Soares-Silva - 468		
Piper crassinervium Kunth	Shr	Ssf	Völtz - 2490		
Piper lhotzkyanum Kunth	Shr	Mdo	Lima - 142 | Soares-Silva - 466 | Völtz - 2494 | Machado - 60 | Machado - 164		
Piper richardiifolium Kunth	Shr | Tre	Ssf | Mdo	Lima - 113 | Machado - 172		
Piper solmsianum var. *hilarianum* (Kunth) Yunck.	Shr	Ssf	Völtz - 2464		
Piper tectoniifolium Kunth	Shr	Ssf	Soares-Silva - 472 | Völtz - 2463		
Piperaceae sp.	HeTe | Shr	Cr | Ssf | Mdo	Soares-Silva - 430 | Soares-Silva - 471 | Völtz - 2541		
Plantaginaceae					
Plantago australis Lam.	HeTe	Mdo	Lima - 63		
Scoparia dulcis L.	HeTe	Mdo | Ssf	Lima - 207 | Soares-Silva - 405		
Umbraria aff. *microphylla* (J.A.Schmidt) Scatigna	HeTe	Cr	Soares-Silva - 440		
Poaceae					
Andropogon cf. *glaziovii* Hack.	HeTe	Osf	Völtz - 2502		
Andropogon leucostachyus Kunth	HeTe	Mdo	Lima - 86		
Andropogon selloanus (Hack.) Hack.	HeTe	Ssf | Osf	Soares-Silva - 289 | Machado - 92		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Aristida jubata (Arechav.) Herter	HeTe	Osf	Völtz - 2515		
Axonopus capillaris (Lam.) Chase	HeTe	Ssf	Soares-Silva - 272		
Chusquea attenuata (Döll) L.G. Clark	Vin	Hdo | Ssf	Völtz - 2630 | Machado - 1		EN
Chusquea capitata Nees	HeTe	Ssf	Lima - 105		
Dichanthelium sciurotoides (Zuloaga & Morrone) Davidse	HeTe	Ssf	Soares-Silva - 298		
Digitaria ciliaris (Retz.) Koeler*	HeTe	Ssf	Soares-Silva - 271		
Echinolaena inflexa (Poir.) Chase	HeTe	Cr	Lima - 158		
Eragrostis cf. *articulata* (Schrank) Nees	HeTe	Mdo | Cr	Lima - 77 | Lima - 177		
Eragrostis cf. *secundiflora* J.Presl⊙	HeTe	Ssf	Soares-Silva - 296		
Eragrostis rufescens Schrad. ex Schult.	HeTe	Hdo | Ssf | Mdo	Lima - 199 | Machado - 100 | Machado - 252		
Eragrostis secundiflora J.Presl⊙	HeTe	Ssf	Machado - 99		
Eragrostis tenuifolia (A.Rich.) Hochst. ex Steud.*	HeTe	Hdo | Mdo	Lima - 194 | Machado - 256		
Hildaea pallens var. *major* (Nees) C.Silva & R.P.Oliveira	HeTe	Mdo	Lima - 54 | Machado - 269		
Homolepis glutinosa (Sw.) Zuloaga & Soderstr.	HeTe	Ssf	Soares-Silva - 320		
Ichnanthus adpressus C. Silva & R.P. Oliveira◊	HeTe	Ssf | Hdo | Osf	Lima - 106 | Soares-Silva - 407 | Völtz - 2507 | Machado - 93		
Leersia hexandra Sw.	HeTe	Mdo	Machado - 264		
Oplismenus hirtellus (L.) P.Beauv. subsp. *hirtellus*	HeTe	Mdo	Lima - 78 | Machado - 267		
Panicum sellowii Nees	HeTe	Ssf	Soares-Silva - 288		
Panicum sp.	HeTe	Ssf	Soares-Silva - 285		
Paspalum cf. *nutans* Lam.	HeTe	Mdo | Ssf	Lima - 48 | Völtz - 2597a		
Paspalum corcovadense Raddi	HeTe	Osf | Mdo | Ssf	Völtz - 2514 | Völtz - 2534 | Völtz - 2597b		
Paspalum polyphyllum Nees	HeTe	Cr | Osf	Lima - 178 | Machado - 91		
Pseudechinolaena polystachya (Kunth) Stapf	HeTe	Mdo	Lima - 153		
Rugoloa pilosa (Sw.) Zuloaga	HeTe	Mdo	Lima - 49		
Schizachyrium tenerum Nees	HeTe	Osf	Machado - 90		
Setaria sulcata Raddi	HeTe	Mdo	Machado - 262		
Sporobolus cf. *metallicolus* Longhi-Wagner & Boechat	HeTe	Osf	Völtz - 2517		
Taquara micrantha (Kunth) I.L.C.Oliveira & R.P.Oliveira	HeTe	Ssf	Soares-Silva - 291		
Trichanthecium cyanescens (Nees ex Trin.) Zuloaga & Morrone	HeTe	Osf	Machado - 88		
Urochloa brizantha (Hochst. ex A.Rich.) R.D.Webster*	HeTe	Mdo	Lima - 87		
Urochloa decumbens (Stapf) R.D.Webster*	HeTe	Mdo	Machado - 254		
Podocarpaceae					
Podocarpus sellowii Klotzsch ex Endl.	Tre	Hdo	Völtz - 2566		
Polygalaceae					
Bredemeyera hebeclada (DC.) J.F.B.Pastore	Shr | Vin	Osf | Ssf | Cr	Lima - 29 | Völtz - 2466 | Machado - 13		
Caamembeca oxyphylla (DC.) J.F.B.Pastore	Shr	Osf	Lima - 33 | Völtz - 2476		
Caamembeca salicifolia (Poir.) J.F.B.Pastore	HeTe	Ssf	Lima - 214		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Polygala paniculata L.	HeTe	Ssf	Machado - 242		
Polypodiaceae					
Microgramma squamulosa (Kaulf.) de la Sota	HeEp	Mdo | Ssf	Völtz - 2616 | Machado - 23		
Microgramma tecta (Kaulf.) Alston	HeEp	Mdo	Völtz - 2545		
Niphidium crassifolium (L.) Lellinger	HeTe	Ssf	Soares-Silva - 413		
Pecluma truncorum (Lindm.) M.G.Price	HeEp	Mdo	Völtz - 2521		
Phlebodium pseudoaureum (Cav.) Lellinger	Vin	Ssf	Soares-Silva - 349		
Pleopeltis hirsutissima (Raddi) de la Sota	HeEp	Hdo | Mdo | Ssf	Soares-Silva - 340 | Völtz - 2610 | Machado - 3		
Pleopeltis macrocarpa (Bory ex Willd.) Kaulf.	HeEp	Hdo	Völtz - 2633		
Serpocaulon catharinae (Langsd. & Fisch.) A.R.Sm.	HeTe | HeEp	Ssf | Mdo	Lima - 223 | Völtz - 2613 | Machado - 24		
Pontederiaceae					
Heteranthera reniformis Ruiz & Pav.	HeTe	Mdo	Machado - 258		
Portulacaceae					
Portulaca mucronata Link	HeTe	Ssf | Osf	Soares-Silva - 388 | Völtz - 2503		
Primulaceae					
Cybianthus fuscus Mart.	Shr	Hdo	Lima - 45		
Myrsine coriacea (Sw.) R.Br. ex Roem. & Schult.	Tre	Ssf | Cr | Mdo | Hdo | Osf	Lima - 15 | Lima - 132 | Soares-Silva - 368 | Völtz - 2555 | Machado - 37		
Myrsine glazioviana Warm.◊	Shr	Cr	Machado - 191	EN	EN
Myrsine parvula (Mez) Otegui	Tre	Ssf	Völtz - 2569		
Proteaceae					
Roupala montana Aubl.	Shr	Cr	Machado - 202		
Pteridaceae					
Adiantum subcordatum Sw.	HeTe	Ssf	Lima - 215		
Lytoneuron ornithopus (Mett. ex Hook. & Baker) Yesilyurt	HeTe	Osf	Soares-Silva - 306		
Rosaceae					
Prunus myrtifolia (L.) Urb.	Tre	Mdo | Ssf	Soares-Silva - 354 | Soares-Silva - 454 | Völtz - 2654		
Rubus brasiliensis Mart.	Vin	Ssf	Machado - 115		
Rubus rosifolius Sm.	HeTe	Mdo	Lima - 81 | Lima - 206		
Rubiaceae					
Amaioua intermedia Mart. ex Schult. & Schult.f.	Tre	Mdo	Soares-Silva - 460		
Bathysa australis (A.St.-Hil.) K.Schum.	Tre	Mdo	Soares-Silva - 361		
Borreria brachystemonoides Cham. & Schltdl.⊙	HeTe	Ssf	Soares-Silva - 284 | Soares-Silva - 313		
Borreria cupularis DC.	HeTe	Mdo	Lima - 75		
Borreria spinosa Cham. & Schltdl.	HeTe	Ssf	Völtz - 2599		
Borreria tenella (Kunth) Cham. & Schltdl.	HeTe	Ssf | Cr	Soares-Silva - 389 | Machado - 199		
Borreria verticillata (L.) G.Mey.	HeTe	Ssf	Soares-Silva - 312		
Borreria sp.	HeTe	Osf	Machado - 96		
Chomelia sericea Müll.Arg.⊙	Shr	Mdo	Machado - 220		EN
Coccocypselum condalia Pers.	HeTe	Cr	Soares-Silva - 432		
Coccocypselum erythrocephalum Cham. & Schltdl.	HeTe	Mdo	Lima - 55		
Coccocypselum hasslerianum Chodat	HeTe	Ssf	Lima - 102		

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Coccocypselum lanceolatum (Ruiz & Pav.) Pers.	HeTe	Mdo | Ssf	Lima - 89 | Soares-Silva - 290 | Soares-Silva - 397		
Coccocypselum lymansmithii Standl.	HeTe	Ssf	Soares-Silva - 292		
Cordiera concolor (Cham.) Kuntze	Shr	Hdo	Soares-Silva - 386		
Cordiera elliptica (Cham.) Kuntze	Shr | Tre	Hdo | Ssf	Lima - 37 | Machado - 50		
Declieuxia fruticosa (Willd. ex Roem. & Schult.) Kuntze	HeTe	Cr	Lima - 171		
Diodia cf. *saponariifolia* (Cham. & Schltdl.) K.Schum.	HeTe	Osf	Völtz - 2505		
Emmeorhiza umbellata (Spreng.) K.Schum.	HeTe | Vin	Hdo | Ssf | Cr	Lima - 201 | Lima - 222 | Machado - 153		
Ferdinandusa speciosa (Pohl) Pohl	Tre	Ssf	Lima - 18 | Völtz - 2561		
Galianthe palustris (Cham. & Schltdl.) Cabaña Fader & E. L. Cabral	HeTe	Ssf	Machado - 248		
Galianthe sp.	HeTe	Cr	Lima - 169		
Galium hypocarpium (L.) Endl. ex Griseb.	HeTe | Vin	Mdo	Lima - 67 | Völtz - 2525		
Hillia parasitica Jacq.	Shr | Tre | Vin	Ssf | Cr	Lima - 104 | Völtz - 2579 | Machado - 123		
Manettia gracilis Cham. & Schltdl.	HeEp	Mdo	Völtz - 2523		
Manettia luteo-rubra (Vell.) Benth.	Shr	Ssf	Lima - 213		
Mitracarpus sp.	HeTe	Ssf	Machado - 107		
Palicourea cf. *sessilis* (Vell.) C.M.Taylor	Tre	Ssf	Völtz - 2663		
Palicourea malaneoides (Müll.Arg.) C.M.Taylor	Shr	Ssf | Mdo	Völtz - 2473 | Machado - 58 | Machado - 182		
Palicourea ruelliifolia (Cham. & Schltdl.) Borhidi	Shr	Ssf	Soares-Silva - 469		
Palicourea sessilis (Vell.) C.M.Taylor	Shr	Ssf	Völtz - 2469		
Palicourea sp.	Tre	Mdo	Soares-Silva - 364		
Psychotria appendiculata Müll.Arg.	Vin	Mdo	Völtz - 2608		
Psychotria beyrichiana Müll.Arg.	Shr	Ssf | Mdo	Lima - 140 | Soares-Silva - 486 | Völtz - 2596		
Psychotria nemorosa Gardner	Shr | Tre	Mdo	Machado - 67 | Machado - 176		
Psychotria stachyoides Benth.	HeTe | Shr	Ssf	Soares-Silva - 412 | Völtz - 2462		
Psychotria suterella Müll.Arg.	Shr	Mdo	Machado - 65		
Rudgea jasminoides (Cham.) Müll.Arg.	Tre	Mdo	Machado - 167		
Rudgea recurva Müll.Arg.	Tre | Shr	Mdo	Soares-Silva - 462 | Machado - 57		
Rudgea sessilis (Vell.) Müll.Arg.	Shr	Mdo	Machado - 166	EN	
Schizocalyx cuspidatus (A.St.-Hil.) Kainul. & B. Bremer	Tre	Mdo	Soares-Silva - 363 | Soares-Silva - 377		
Rubiaceae sp.	Shr | HeTe	Osf | Cr | Ssf	Lima - 34 | Lima - 165 | Soares-Silva - 470 | Machado - 208		
Rutaceae					
Dictyoloma vandellianum A.Juss.	Tre	Ssf	Machado - 52		
Esenbeckia grandiflora Mart.	Tre	Ssf | Mdo	Lima - 14 | Machado - 174		
Zanthoxylum rhoifolium Lam.	Tre	Ssf	Völtz - 2652		
Saccolomataceae					
Saccoloma brasiliense (C.Presl) Mett.	HeTe	Ssf	Lima - 96		
Santalaceae					
Phoradendron undulatum (Pohl ex DC.) Eichler	HeEp	Ssf	Soares-Silva - 352		
Sapindaceae					
Cupania concolor Radlk.	Tre	Mdo	Soares-Silva - 458		
Cupania ludowigii Somner & Ferrucci	Tre	Ssf	Lima - 13		

Continue...

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Cupania zanthoxyloides Radlk.⊙	Tre	Mdo	Soares-Silva - 365 | Soares-Silva - 453		
Dilodendron bipinnatum Radlk.	Tre	Mdo	Soares-Silva - 370		
Matayba juglandifolia (Cambess.) Radlk.	Tre	Ssf	Völtz - 2664		
Serjania aff. *hebecarpa* Benth.	Vin	Mdo	Lima - 229		
Serjania deflexa Gardner	Vin	Ssf	Lima - 221		
Serjania fuscifolia Radlk.	Vin	Ssf | Osf	Lima - 230 | Soares-Silva - 331		
Serjania sp.	Vin	Ssf | Mdo	Soares-Silva - 346 | Völtz - 2647		
Selaginellaceae					
Selaginella tenuissima Fée	HeTe	Ssf	Lima - 97		
Siparunaceae					
Siparuna brasiliensis (Spreng.) A.DC.	Shr	Mdo	Machado - 72		
Smilacaceae					
Smilax fluminensis Steud.	Vin	Mdo	Völtz - 2543		
Smilax staminea Griseb.	Vin	Cr	Machado - 117 | Machado - 143		
Solanaceae					
Athenaea anonacea Sendtn.	Tre | Shr	Hdo | Mdo	Völtz - 2589 | Machado - 175		
Athenaea cf. *tomentosa* (Sendtn.) I.M.C.Rodrigues & Stehmann	Tre	Mdo	Lima - 138 | Soares-Silva - 372		
Athenaea fasciculata (Vell.) I.M.C. Rodrigues & Stehmann	Shr	Mdo	Machado - 215		
Athenaea martiana Sendtn.	Shr	Ssf	Soares-Silva - 467	EN	
Brunfelsia brasiliensis (Spreng.) L.B.Sm. & Downs	Shr	Ssf | Cr	Soares-Silva - 478 | Völtz - 2471 | Machado - 150		
Cestrum bracteatum Link & Otto	Tre | Shr	Hdo | Mdo	Lima - 115 | Machado - 184		
Cestrum intermedium Sendtn.	Shr	Mdo	Machado - 76		
Cestrum sp.	Tre	Mdo	Machado - 179		
Schwenckia americana Rooyen ex L.	HeTe	Ssf | Osf	Soares-Silva - 297 | Völtz - 2500		
Solanum americanum Mill.	Shr	Mdo	Machado - 214		
Solanum cernuum Vell.	Tre	Ssf	Lima - 20 | Völtz - 2658		
Solanum cinnamomeum Sendtn.	Tre	Mdo	Soares-Silva - 457		
Solanum didymum Dunal	Shr | Tre	Hdo | Mdo	Völtz - 2590 | Machado - 210		
Solanum hexandrum Vell.	Tre	Mdo	Völtz - 2549a		
Solanum incarceratum Ruiz & Pav.	Shr	Mdo	Machado - 211		
Solanum lycocarpum A.St.-Hil.	Shr	Ssf | Mdo	Völtz - 2497 | Machado - 82		
Solanum sellowianum Sendtn.	Tre | Shr	Ssf	Lima - 6 | Lima - 147		
Solanum swartzianum Roem. & Schult.◊	Tre | Shr	Hdo | Mdo | Ssf	Lima - 118 | Soares-Silva - 357 | Völtz - 2570 | Machado - 80		
Theaceae					
Laplacea fruticosa (Schrad.) Kobuski	Tre	Ssf	Völtz - 2667		
Thelypteridaceae					
Steiropteris gardneriana (Baker) Pic.Serm.	HeTe	Ssf	Machado - 22		
Trigoniaceae					
Trigonia paniculata Warm.	Vin	Osf | Ssf	Soares-Silva - 330 | Soares-Silva - 450		
Urticaceae					
Coussapoa microcarpa (Schott) Rizzini	Tre	Ssf	Machado - 48		
Urera baccifera (L.) Gaudich. ex Wedd.	HeTe | Tre	Mdo	Lima - 56 | Soares-Silva - 356		
Velloziaceae					
Barbacenia cf. *tomentosa* Mart.	HeTe	Cr	Lima - 184		
Verbenaceae					
Lantana camara L.*	Shr	Mdo	Soares-Silva - 483		
Lantana fucata Lindl.	HeTe | Shr	Ssf	Soares-Silva - 414 | Soares-Silva - 476		
Lippia origanoides Kunth	Shr	Cr	Machado - 197		

Continue...

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Family/species	Habit	Phytophysiognomies	Voucher	Status MG	Status BR
Stachytarpheta cayennensis (Rich.) Vahl	HeTe	Ssf	Soares-Silva - 398 | Machado - 240		
Vitaceae					
Cissus albida Cambess.	Vin	Ssf | Hdo	Lima - 90 | Machado - 134		
Cissus serroniana (Glaz.) Lombardi	Vin	Ssf	Machado - 15		
Vochysiaceae					
Callisthene major Mart.	Tre	Ssf | Hdo	Lima - 17 | Machado - 43		
Qualea cryptantha (Spreng.) Warm.	Tre	Mdo	Machado - 225		
Xyridaceae					
Xyris sp.	HeTe	Osf	Machado - 84		
Xyris hymenachne Mart.	HeTe	Osf	Soares-Silva - 307		
Xyris jupicai Rich.	HeTe	Mdo | Ssf	Lima - 208 | Machado - 110		

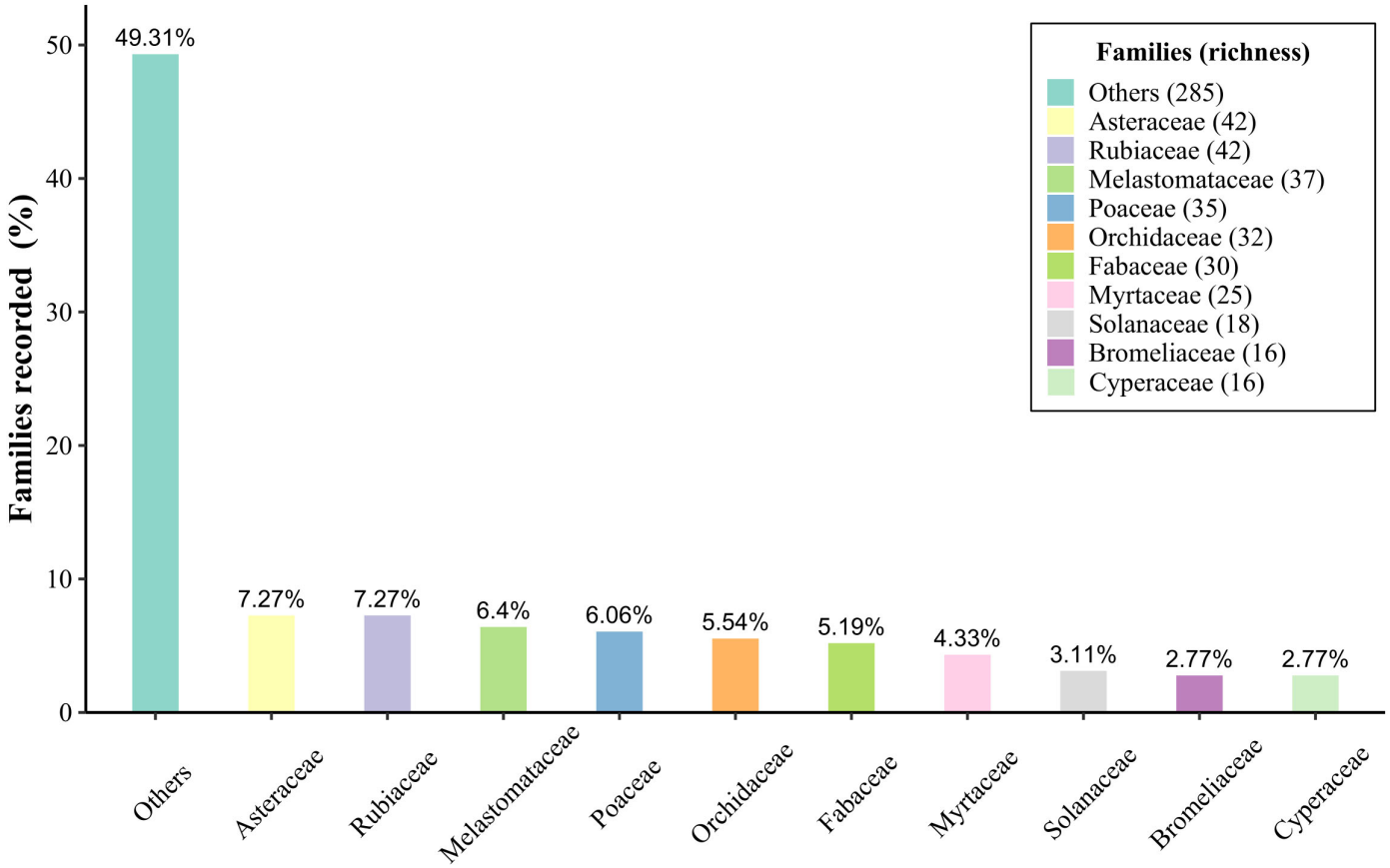

Figure 3. Number of species recorded for each family.

The most representative families in terms of species richness are Asteraceae and Rubiaceae, each with 42 species, followed by Melastomataceae (37), Poaceae (35), Orchidaceae (32), Fabaceae (30), Myrtaceae (25), Solanaceae (18), Bromeliaceae (16) and Cyperaceae (16), adding up to 51% of the total number of species in the area (Figure 3). *Miconia* Ruiz & Pav. (16 species), *Myrcia* DC. (11), *Solanum* L. (9), *Mikania* Willd. (8), *Leandra* Raddi (7) and *Piper* L. (7) are the richest genera.

From the 576 plant species surveyed in this study, 31 (5.4%) are considered to be either vulnerable (VU), endangered (EN) or critically endangered (CR) (according to CNCFlora, 2022; COPAM-MG, 1997) (Table 1), based on the categories of IUCN (2022).

As for the life forms, 334 samples belonged to terrestrial herbs (36.4%), 213 to shrubs (23.2%), 178 to trees (19.4%), 106 to vines (11.6%), 72 to epiphytes (7.9%), eight to arborescent herbs (0.9%) and one species is hemiparasite (0.5%) (Figure 4).

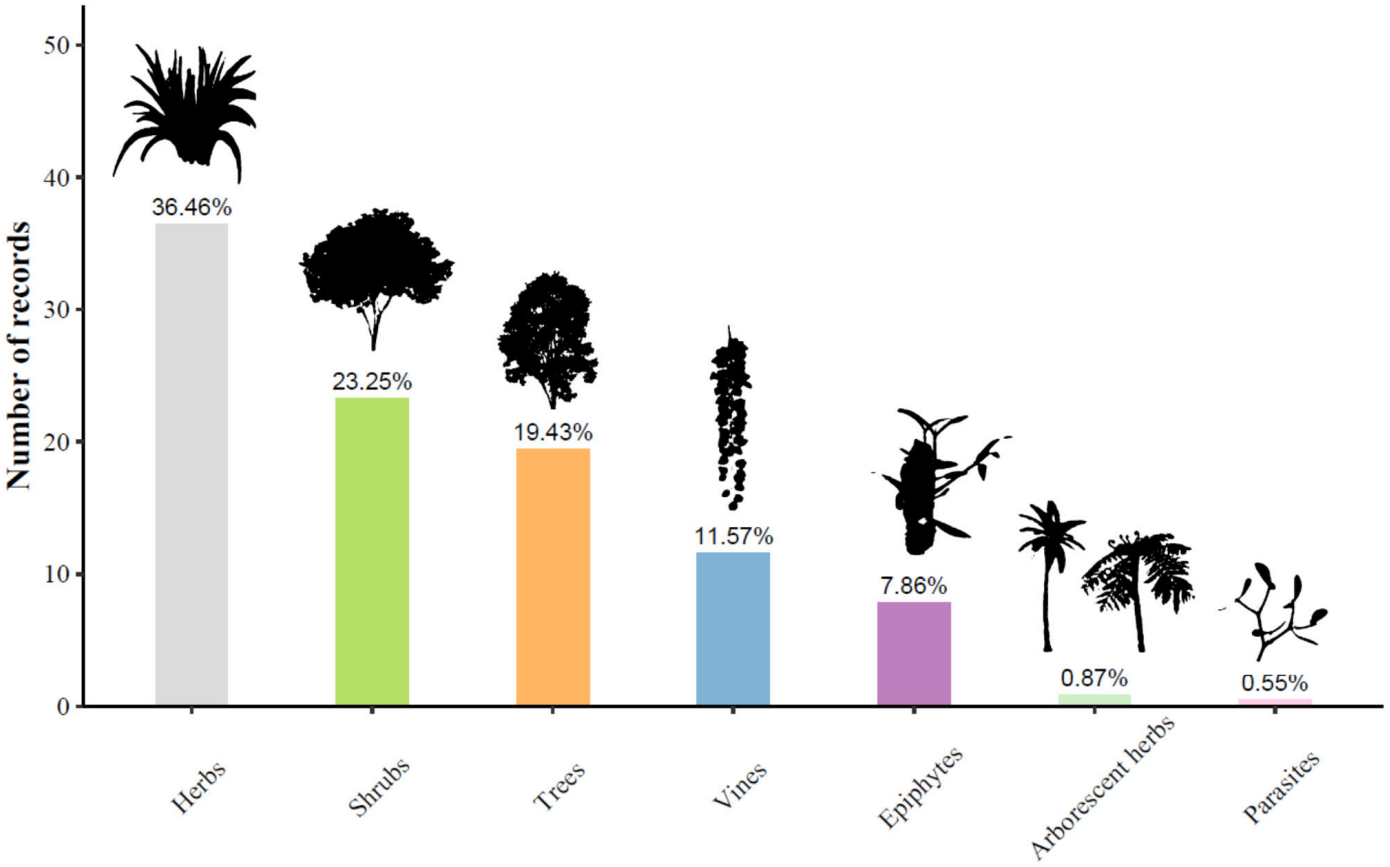

Figure 4. Habits of plants recorded in the study.

Moreover, 17 species (2.95% of the total) were firstly recorded in the state of Minas Gerais, justifying the importance of this study. From this list, *Chomelia sericea* (Rubiaceae) was classified as a threatened species according to CNCFlora (2022). Additionally, 20 species (3.4%) recorded in this study are exclusive to the state of Minas Gerais. Some of the species included in this study are illustrated in Figures 5–7.

Jaccard similarity value between the list from the present study and the Ibitipoca State Park was 18.95%, indicating that 288 species recorded here have not been found in the park. As for the comparison between the present list and that from the buffer zone of the state park (provided in Valente et al., 2013), Jaccard similarity index was 17.11%, meaning 416 species found in the present list and not in the buffer zone. When the lists of the park and its buffer zone are compared, a 18.48% index was found. These values are represented in Figure 8, as well as the total number of species, genera and families for each area.

Discussion

The surrounding areas of Ibitipoca State Park are inserted in the Atlantic Forest phytogeographic domain. These areas are considered a mosaic of different phytophysiognomies, mainly surrounded by Seasonal Semidecidous Forest, but also with open fields, "Campos Rupestres" and dense wet forests occurring sparsely. Such heterogeneity is a result of different abiotic factors driving landscape formation, such as soil type, rock deposition, slope and height of hills, and precipitation.

When this vegetational mosaic is observed from a landscape perspective, contact areas among different phytophysiognomies in Ibitipoca State Park and adjacent sites form different ecotones. Vegetation ecotones have been considered unique in terms of biodiversity composition, or even seen as local hotspots, normally with higher species richness indexes (Odum, 1971; Kark, 2007; Czaja et al., 2021). Therefore, considering that several vegetation types occur in the Ibitipoca Mountains – and consequently several ecotonal areas – the study area can be seen as important for biodiversity conversation in the region. Also, the occurrence of many different ecotones consequently results in the formation of contact zones, highly important to guarantee diversity of organisms among different phytophysiognomies, genetic bridge for gene flow, border protection for each associated ecosystem and speciation processes (Smith et al., 1997; Kark, 2007; Czaja et al., 2021).

Fragments of Seasonal Semideciduous Forests were found with different conditions in terms of structure, varying from more or less degraded to conserved. This phytophysiognomie is one of the most degraded environments in Brazil and is normally more susceptible to deforestation due to its topography, usually occurring in flat landscapes, which is desirable for agriculture and urbanization (Durigan et al., 2000; Lopes et al., 2012; Souza et al., 2024).

Dense Ombrophilous Forests, on the other hand, are here considered to be relatively more conserved, especially because they occur primarily on slope sites, where human activities are unfavorable (Ramalho Filho & Pereira, 1996; Scheer & Mocochinski, 2009). However, its vegetation

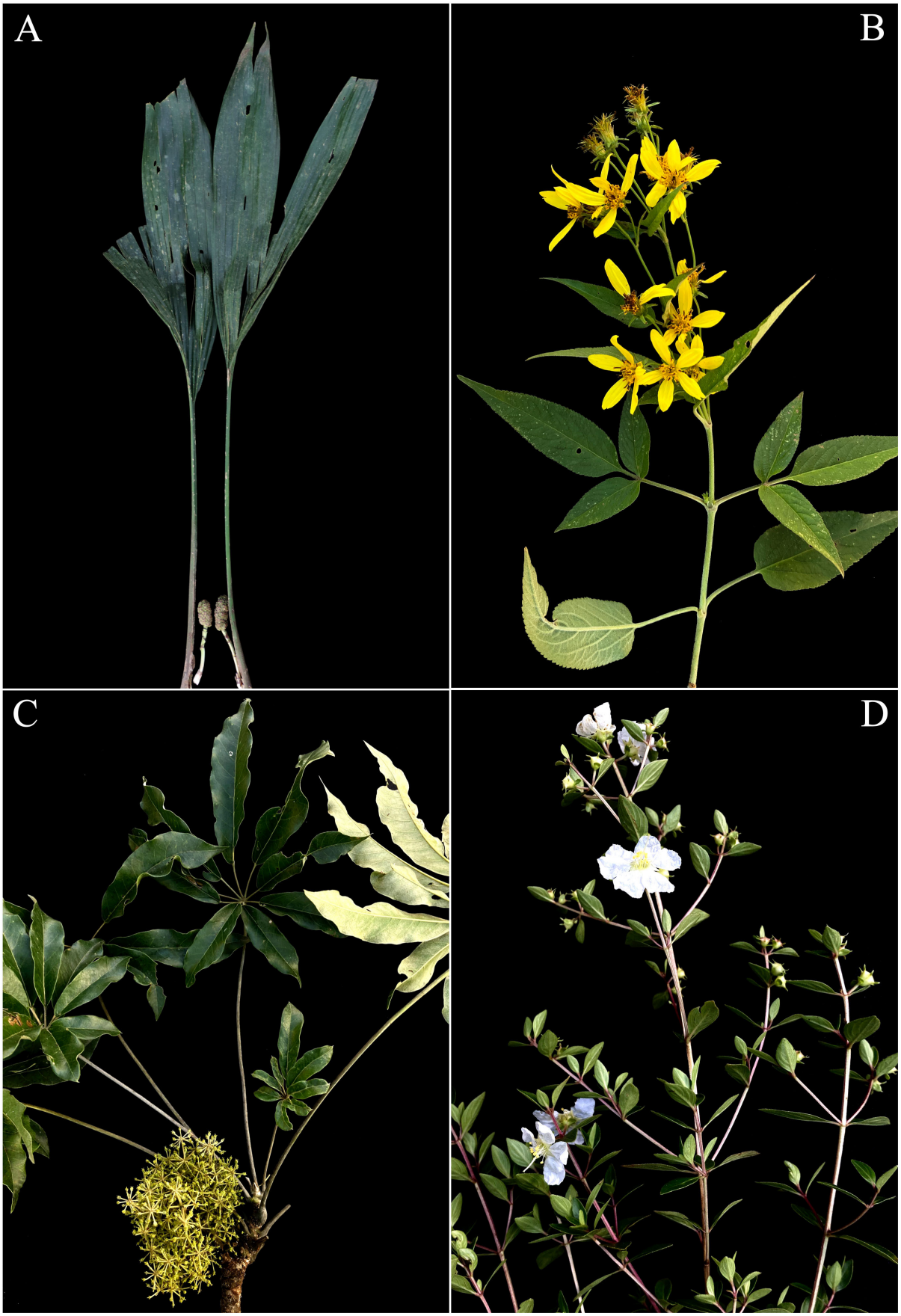

Figure 5. Some species recorded in the study: A–*Asplundia brachypus*; B–*Bidens squarrosa*; C–*Didymopanax angustissimus*; D–*Diplusodon virgatus*.

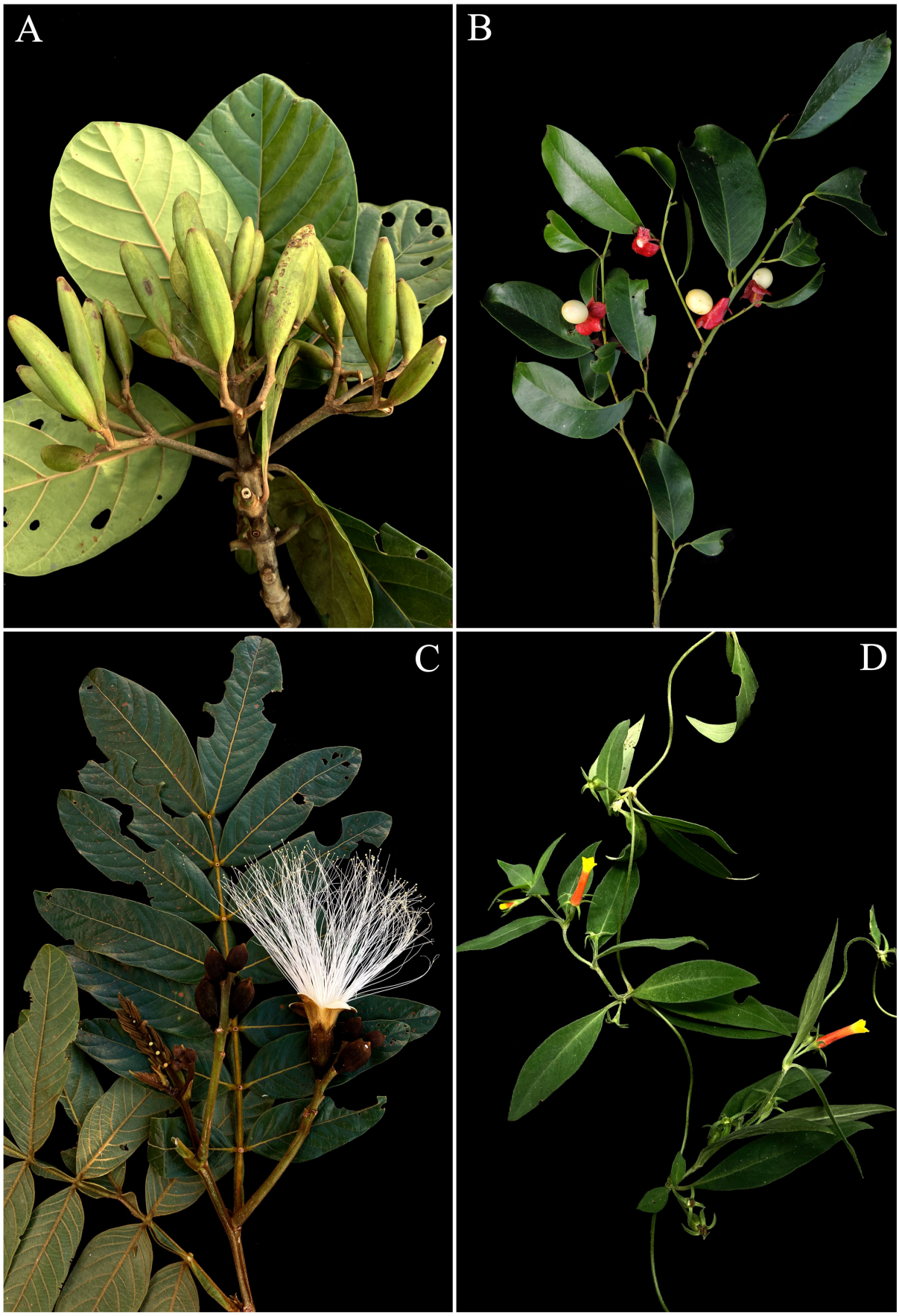

Figure 6. Some species recorded in the study: A–*Ferdinandusa speciosa*; B–*Heisteria silvianii*; C–*Inga sessilis*; D–*Manettia luteo-rubra*.

Figure 7. Some species recorded in the study: A–*Nectandra oppositifolia*; B–*Paepalanthus acuminatus*; C–*Solanum cernuum*; D–*Vriesea poenulata*.

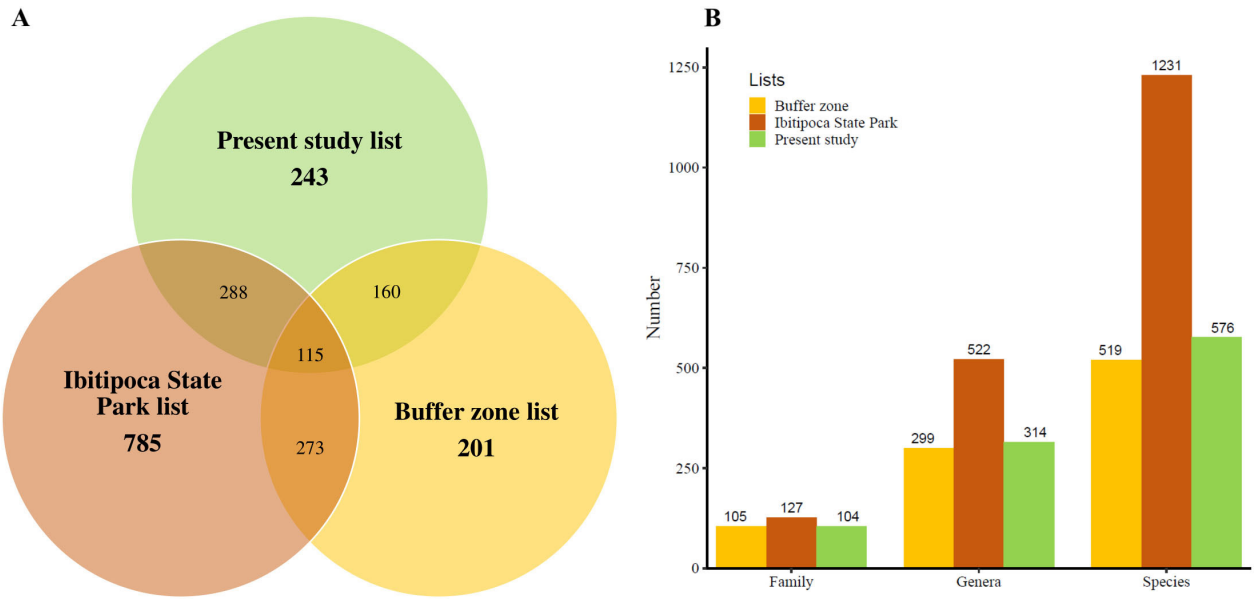

Figure 8. Floristic similarities discussed in the study: A–Venn Diagram showing similarity and dissimilarity (Jaccard index) among the list produced in this study compared to the list from Ibitipoca State Park (Salino et al., 2013; Forzza et al., 2013a) and its buffer zone (Valente et al., 2013); B–Comparing number of families, genera and species among the present list, Ibitipoca State Park (Salino et al., 2013; Forzza et al., 2013a) and its buffer zone (Valente et al., 2013).

structure is seen as more susceptible to erosion as soils in these fragments are shallow and precipitation rates are higher, demanding more attention to guarantee its protection (Roderjan, 1994; Blum, 2006; Canestraro & Kersten, 2018).

The incidence of pioneer *Eremanthus* species in the open fields with quartzite and sand might indicate a colonization process in the "Candeal". Species of this genus are considered colonizers of open areas (Scolforo et al., 2002), so the more the succession progresses, the fewer individuals of *Eremanthus* will be present (CETEC, 1994). *Eremanthus erythropappus*, for example, has been indicated for use in areas under initial stages of regeneration, as the species grows quickly in shallow and poorly developed soils (Rizzini, 1979).

Melinis minutiflora P.Beauv. (Poaceae) is an exotic and very invasive species (Martins et al., 2009) that dominates some of the areas in the "Candeal". This species normally inhibits the establishment of native species as it grows extremely fast, avoiding native seeds and seedlings to germinate, as well as possibly producing allelopathic compounds (Hoffmann & Harisasan, 2008). Therefore, conservation actions should consider partial removal of these individuals as they compete with native Flora and might become even more aggressive if not properly managed (Martins et al., 2011; Ribeiro, 2016).

Other species worth to be mentioned in the areas derived from quartzite and sand are two Eriocaulaceae, *Comanthera caespitosa* and *C. nivea*. These are species normally from of the "Campos Rupestres" (Echternacht & Parra, 2024), indicating the influence of this vegetation on the landscape of Ibitipoca State Park and adjacent areas, drawing attention to its conservation in Minas Gerais.

Most specimens collected during this study were represented by terrestrial herbs. These plants were mainly recorded in open areas, like in "Campo Rupestre" or in open fields; however, the majority of them were found in Seasonal Semideciduous Forests, indicating high incidence of open areas in this phytophysiognomy, normally associated to degraded forests. Shrub was the second most collected plant life form, especially in Seasonal Semideciduous Forests, "Campo Rupestre" and Montane Dense Ombrophilous Forests. Trees were mainly recorded in forest environments, such as Seasonal Semideciduous Forests and Dense Ombrophilous Forests. Vines were by far most collected in Seasonal Semideciduous Forests, which is expected as the presence of climbing plants is more frequent in forests with more light availability, marked dry season and history of degradation (Santos et al., 2009). Considering the epiphytes, these plants were mostly found in forests environments, as they normally grow on tree trunks. Finally, the specimens collected as arborescent herbs include species of monocotyledonous (Arecaceae) or ferns (Blechnaceae and Cyatheaceae), all of which recorded in Seasonal Semideciduous Forests or Montane Dense Ombrophilous Forests.

From the 14 species listed as threatened in the present inventory, six of them were not recorded in Ibitipoca State Park (Forzza et al., 2013a): *Aspilia reticulata* and *Mikania additicia* (Asteraceae), *Chomelia sericea* (Rubiaceae), *Chusquea attenuata* (Poaceae), *Hydrocotyle bradei* (Araliaceae) and *Virola bicuhyba* (Myristicaceae). In addition, *Asplundia brachypus* (Cyclanthaceae) was collected during this study, a rare species whose individuals rely on conserved forests to guarantee their maintenance of natural habitats. When such aspects are analyzed in combination with the newly recorded species for Minas Gerais, there is an indicator that the current area of Ibitipoca State Park should be expanded to accommodate threatened and rare species, as some of those mentioned above.

This expectation becomes clearer as floristic similarity values showed more than 80% of dissimilarity between the species recorded in the present study compared to Ibitipoca State Park, including some rare, threatened and newly recorded species, as mentioned above. This implies that, from the 576 species collected in this study, 288 are not

found in the limits of Ibitipoca State Park. It is interesting to note that most of these 288 species (145 species) were collected in Seasonal Semideciduous Forests, a phytophysiognomy absent in the park, which explains the high dissimilarity value. However, 137 out of these 288 species were collected in Dense Ombrophilous Forests (considering High-Montane Dense Ombrophilous Forests and Montane Dense Ombrophilous Forests), a vegetation type present in the Ibitipoca State Park (referred as "Floresta nebular" or cloud forest). This indicates that 137 species recorded in the present study are from similar environments of Ibitipoca State Park but do not occur in that park, reinforcing the idea that the Flora outside the park is important for its conservation. Finally, 36 of the dissimilar species from the present list compared to the park occur in "Campos Rupestres" and 33 occur in Open sandy fields.

About 83% of dissimilarity was found in comparing the park's buffer zone with the list produced here. This shows that 416 from the 576 species recorded here occur in the study area but not in the buffer zone of Ibitipoca State Park. Similarly, most of these dissimilar species from this study occur in Dense Ombrophilous Forests (213) or Seasonal Semideciduous Forests (191), followed by "Campos Rupestres" (75) and Open sandy fields (44). Most part of the area from the buffer zone is occupied by Seasonal Semideciduous Forests (Valente et al., 2013) and the high dissimilarity value between these two sites, considering this phytophysiognomy, indicates that, although both areas have Seasonal Semideciduous Forests as the main vegetation matrix, many incongruent species can be found. Differently, only a small portion of the buffer zone belongs to Dense Ombrophilous Forests (Valente et al., 2013), but still a high dissimilarity value was found.

Nevertheless, these findings suggest that the park limits, as well as its buffer zone, alone are not sufficient to guarantee full protection of the regional Flora, so public policies are recommended to evaluate possible candidate areas that could serve, if not as part of the park, as a Private Natural Heritage Reserve, Legal Reserve or Wildlife Refuge, ensuring that most species from adjacent areas of the park are somehow protected. The value of private properties – when they become protected by law – for biodiversity conservation and the creation of these alternatives have been recently discussed in the literature (Rambaldi et al., 2005; Silva et al., 2021; Marco et al., 2023).

Lastly, although the vegetation around Ibitipoca State Park is here seen as a potential buffer zone to be included within the limits of Ibitipoca State Park, it must be emphasized that many of its areas are more or less conserved depending on historical land use. Still, most of these sites present a high potential for natural regeneration, so conservation actions should include less intrusive restoration practices, such as removal of invasive grasses, isolation of areas invaded by cattle, containment of degraded slopes and enrichment plantings. If such management plans happen to work out, the functionality of fragments around Ibitipoca State Park could be reestablished, thus providing more structure, biodiversity and protection to the flora of this park.

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Ricardo R. Rodrigues: data collection and identification; writing.

Conflict of Interest

The authors declare that they have no conflict of interest regarding this publication.

Ethics

The authors declare that no unethical action was undertaken during the production of the manuscript.

Data Availability

The data related to this publication are available at: https://data.scielo.org/dataset.xhtml?persistentId=doi:10.48331/scielodata.BRVFWJ&version=DRAFT.

References

ALMEIDA-ROCHA, A.M & PERES, C.A. 2021. Nominally protected buffer zones around tropical protected areas are as highly degraded as the wider unprotected countryside. Biological Conservation 256:109068.

BALVANERA, P., PFISTERER, A.B., BUCHMANN, N., HE J.-S., NAKASHIRUKA T., RAFFAELLI, D., SCHMID, B. 2006. Quantifying the evidence for biodiversity effects on ecosystem functioning and services. Ecology Letters 9:1146–1156.

BLUM, C.T. 2006. A Floresta Ombrófila Densa na Serra da Prata, Parque Nacional Saint-Hilaire/Lange, PR - caracterização florística, fitossociológica e ambiental de um gradientealtitudinal. Masters dissertation. Universidade Federal do Paraná, pp. 185.

BRAZIL FLORA GROUP (BFG). 2018. Brazilian Flora 2020: Innovation and collaboration to meet Target 1 of the Global Strategy for Plant Conservation (GSPC). Rodriguésia 69(4):1513–1527.

BRAZIL FLORA GROUP (BFG). 2021. Brazilian Flora 2020: Leveraging the power of a collaborative scientific network. Taxon 71(1):178–198.

CANESTRARO, B.K. & KERSTEN, R.A. 2018. The slope does not influence understory community on a Brazilian montane Atlantic Forest. Darwiniana 6(1):5–23.

CENTRO NACIONAL DE CONSERVAÇÃO DA FLORA (CNCFlora). 2022. Lista Vermelha da flora brasileira. Available at: http://cncflora.jbrj.gov.br/portal/pt-br/listavermelha. Access: 16 June 2022.

CENTRO TECNOLÓGICO DE MINAS GERAIS (CETEC). 1994. Ecofisiologia da 'candeia'. Fundação Centro Tecnológico de Minas Gerais (Relatório técnico), Belo Horizonte, pp. 104.

CONSELHO ESTADUAL DE POLÍTICA AMBIENTAL, MINAS GERAIS (COPAM-MG). 1997. Aprova a lista das espécies ameaçadas de extinção da flora do Estado de Minas Gerais, Deliberação COPAM n. 85, de 21 de outubro de 1997, Belo Horizonte, MG. Available at: http://www.siam.mg.gov.br/sla/download.pdf?idNorma=5483. Access: 16 June 2022.

CZAJA, J., WILCZEC, Z. & CHMURA, D. 2021. Shaping the ecotone zone in forest communities that are adjacent to expressway roads. Forests 12(11):1490.

DURIGAN, G., FRANCO, G.A.D.C., SAITO, M. & BAITELLO, J.B. 2000. Estrutura e diversidade do componente arbóreo da floresta na Estação Ecológica dos Caetetus, Gália, SP. Revista Brasileira de Botânica 23(4):371–383.

ECHTERNACHT, L. & PARRA, L.R. 2024. *Comanthera* in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. Available at: <https://floradobrasil.jbrj.gov.br/FB116366>. Retrieved January 04, 2024.

FIDALGO, O. & BONONI, V.L.R. 1989 Técnica de coleta, preservação e herborização de material botânico. Série Documentos, São Paulo, pp. 62.

FLORA E FUNGA DO BRASIL. 2024. Jardim Botânico do Rio de Janeiro. Available at: http://floradobrasil.jbrj.gov.br/. Access: 8 April 2024.

FONSECA C.R. & VENTICINQUE, E.M. 2018. Biodiversity conservation gaps in Brazil: A role for systematic conservation planning. Perspectives in Ecology and Conservation 16(2):61–67.

FORZZA, R.C., BAUMGRATZ, J.F.A., BICUDO, C.E.M., CANHOS, D.A.L., CARVALHO JR A.A., COELHO, M.A.N., COSTA, A.F., COSTA, D.P., HOPKINS, M.G., LEITMAN, P.M., LOHMANN, L.G., LUGHADHA, E.M., MAIA, L.C., MARTINELLI, G., MENEZES, M., MORIM, M.P., PEIXOTO, A.L., PIRANI, J.R., PRADO, J., QUEIROZ, L.P., SOUZA, S., SOUZA, V.C., STEHMANN, J.R., SYLVESTRE, L.S., WALTER, B.M.T. & ZAPPI, D. 2012. New Brazilian floristic list highlights conservation challenges. BioScience 62:39–45.

FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. 2013a. Fanerógamas do Parque Estadual do Ibitipoca e suas relações florísticas com outras áreas com campo rupestre de Minas Gerais. In: FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. (Org.) Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, pp. 153–291.

FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. 2013b. Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, 382 pp.

HOFFMANN, W.A. & HARIDASAN, M. 2008. The invasive grass, *Melinis minutiflora*, inhibits tree regeneration in a Neotropical savanna. Austral Ecology 33:29–36.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). 2012. Manual Técnico da Vegetação Brasileira. Instituto Brasileiro de Geografia e Estatística, Rio de Janeiro, pp. 275.

INSTITUTO ESTADUAL DE FLORESTAS (IEF). 2007. Plano de Manejo do Parque Estadual do Ibitipoca, Belo Horizonte, Minas Gerais.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN). 2022. Guidelines for Using the IUCN Red List Categories and Criteria. Version 13. Prepared by the Standards and Petitions Subcommittee. Available at: https://nc.iucnredlist.org/redlist/content/attachment_files/RedListGuidelines.pdf. Access: 6 May 2022.

JAYAKUMAR, S., KIM, S.S. & HEO, J. 2011. Floristic inventory and diversity assessment - a critical review. Proceedings of the International Academy of Ecology and Environmental Sciences 1(3-4):151–168.

JOLY, C.A., METZGER, J.P. & TABARELLI, M. 2014. Experiences from the Brazilian Atlantic Forest: ecological findings and conservation initiatives. New Phytologist 204:459–473.

KARK, S. 2007. Effects of ecotones on biodiversity. Encyclopedia of Biodiversity 3:142–148.

LEMESSA, D., MEWDED, B. & ALEMU, S. 2023. Vegetation ecotones are rich in unique and endemic woody species and can be a focus of community-based conservation areas. Botany Letters 170(4):507–517.

LOPES, S. F., SCHIAVINI, I., VALE, V.S., PRADO JÚNIOR, J.A. & ARANTES, C.S. 2012. Historical review of studies in seasonal semideciduous forests in Brazil: a perspective for conservation. Brazilian Geographical Journal: Geosciences and Humanities research medium 2(1):21–40.

MARCO JR, P.M., SOUZA, R.A., ANDRADE, A.F.A., VILLÉN-PÉREZ, S., NÓBREGA, C.C., CAMPELLO, L.M. & CALDAS, M. 2023. The value of private properties for the conservation of biodiversity in the Brazilian Cerrado. Science 380:298–301.

MARGULES, C.R. & PRESSEY, R.L. 2000. Systematic conservation planning. Nature 405:243–253.

MARTINS, C.R., HAY, J.D.V. & CARMONA, R. 2009. Potencial invasor de duas cultivares de *Melinis minutiflora* no cerrado brasileiro - características de sementes e estabelecimento de plântulas. Revista Árvore 33(4):713–722.

MARTINS, C.R., HAY, J.D.V., WALTER, B.M.T., PROENÇA, C.E.B. & VIVALDI, L.J. 2011. Impacto da invasão e do manejo do capim-gordura (*Melinis minutiflora*) sobre a riqueza e biomassa da flora nativa do Cerrado sentido restrito. Revista Brasileira de Botânica 34(1):73–90.

MELLO, K., FENDRICH, A.N., SPAROVEK, G., SIMMONDS, J.S., MARON, M., TAVARES, P.A., BRITES, A.D., RODRIGUES, R.R., JOLY, C.A. & METZGER, J.P. 2021. Achieving private conservation targets in Brazil

through restoration and compensation schemes without impairing productive lands. Environmental Science & Policy 120:1–10.

MOTA, T.J.R.C., CARVALHO, F.A., IVANAUSKAS, N.M. & EISENLOHR, P.V. 2017. On the relevance of floristic and quantitative studies to the restoration of degraded areas: the case of the Atlantic Forest hotspot. AIMS Environmental Science 4(1):42–53.

MYERS, N. 1996. Environmental services of biodiversity. Proceedings of the National Academy of Sciences 93:2764–2769.

MYERS, N., MITTERMEIER, R.A., MITTERMEIER, C.G., FONSECA, G.A.B. & KENT, J. 2000. Biodiversity hotspots for conservation priorities. Nature 403:853–858.

NAEEM, S., THOMPSON, L.J., LAWLER, S.P., LAWTON, J.H. & WOODFIN, R.M. 1994. Declining biodiversity can alter the performance of ecosystems. Nature 368:734–737.

NAUGHTON-TREVES, L., HOLLAND, M.B. & BRANDON, K. 2005. The role of protected areas in conserving biodiversity and sustaining local livelihoods. Annual Review of Environment and Resources 30:219–252.

NUMMER, A.R., GARCIA, M.G.M., RODELA, L.G., OLIVEIRA, J.C.L. & BELCAVELO, R. 2012. Potencial Geoturístico do Parque Estadual da Serra do Ibitipoca, Sudeste do Estado de Minas Gerais. Anuário do Instituto de Geociências UFRJ 35(1): 112–122.

ODUM, E. P. 1971. Fundamentals of Ecology. Saunders, Philadelphia, pp. 574.

OKSANEN, J., SIMPSON, G.L., BLANCHET, F.G., KINDT, R., LEGENDRE, P., MINCHIN, P.R., O'HARA, R.B., SOLYMOS, P., STEVENS, M.H.H., WAGNER, E.S.H., BARBOUR, M., BEDWARD, M., BOLKER, B., BORCARD, D., CARVALHO, G., CHIRICO, M., CACERES, M., DURAND, S., EVANGELISTA, H.B.A., FITZJOHN, R., FRIENDLY, M., FURNEAUX, B., HANNIGAN, G., HILL, M.O., LAHTI, L., MCGLINN, D., OUELLETTE, M.-H., CUNHA, E.R., SMITH, T., STIER, A., BRAAK, C.J.F.T. & WEEDON, J. 2022. vegan: Community Ecology Package. R package version 2.6-4. https://CRAN.R-project.org/package=vegan

OLIVEIRA, U., SOARES-FILHO, B.S., PAGLIA, A.P., BRESCOVIT, A.D., CARVALHO, C.J.B., SILVA, D.P., REZENDE, D.T., LEITE, F.S.F., BATISTA, J.A.N., BARBOSA, J.P.P., STEHMANN, J.R., ASCHER, J.S., VASCONCELOS, M.F., MARCO, P., LÖWENBERG-NETO, P., FERRO, V.G. & SANTOS, A.J. 2017. Biodiversity conservation gaps in the Brazilian protected areas. Scientific Reports 7:9141.

OLIVEIRA-FILHO, A.T., FONTES, M.A.L., VIANA, P.L., VALENTE, A.S.M., SALIMENA, F.R.G. & FERREIRA, F.M. 2013. O mosaico de fitofisionomias do Parque Estadual do Ibitipoca. In: FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. (Org.) Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, pp. 53–86.

PAULA, B.A. 2022. Migração na zona da Mata Mineira no início do século XXI. Course Completion Work, Universidade Federal de Ouro Preto, pp. 50.

PRESS, D., DOAK, D.F. & STEINBERG, P. 1996. The role of local government in the conservation of rare species. Conservation Biology 10(6):1538–1548.

RAMALHO FILHO, A. & PEREIRA, L.C. 1996. Avaliação da aptidão agrícola das terras do Brasil: potencial de terras e análise crítica dos principais métodos de avaliação. Embrapa, Rio de Janeiro, pp. 27.

RAMBALDI, D.M., FERNANDES, R.V. & SCHMIDT, M.A.R. 2005. Private protected areas and their key role in the conservation of the Atlantic Forest biodiversity hotspot, Brazil. Parks 15(2):30–38.

RIBEIRO, P.C.D. 2016. Efeitos da gramínea invasora Melinis minutiflora P. Beauv. Sobre a vegetação nativa e solo de Campo Rupestre do Parque Estadual da Serra do Rola Moça, Minas Gerais, Brasil. Masters dissertation. Universidade Federal de Minas Gerais, pp. 80.

RIZZINI, C.T. 1979. Tratado de fitogeografia do Brasil. HUCITES, São Paulo, v. 2, pp. 374.

RIBEIRO, B.R., MARTINS, E., MARTINELLI, G. & LOYOLA, R. 2018. The effectiveness of protected areas and indigenous lands in representing threatened plant species in Brazil. Rodriguésia 69(4):1539–1546.

ROCHA, G.C. 2013. O meio físico da região de Ibitipoca: características e fragilidade. In: FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. (Org.) Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, pp. 27–52.

RODELA, L.A. & TARIFA, J.R. 2002. O clima da Serra do Ibitipoca, sudeste de Minas Gerais. GEOUSP – Espaço e Tempo 11:101–113.

RODERJAN, C.V. 1994. O gradiente da Floresta Ombrófila Densa Altomontana no morro Anhangava, Quatro-Barras, PR. Aspectos climáticos, pedológicos e fitossociológicos. PhD thesis. Universidade Federal do Paraná, pp. 119.

SALINO, A., ALMEIDA, T.E., MYNSSEN, C.M., CONDACK, J.P.S. & SYLVESTRE, L.S. 2013. Pteridófitas do Parque Estadual do Ibitipoca. In: FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. (Org.) Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, pp. 123–152.

SANTOS, K., KINOSHITA, L.S. & REZENDE, A.A. 2009. Species composition of climbers in seasonal semideciduous forest fragments of Southeastern Brazil. Biota Neotropica 9(4):175–188.

SCHEER, M.B. & MOCOCHINSKI, A.Y. 2009. Florística vascular da Floresta Ombrófila Densa Altomontana de quatro serras no Paraná. Biota Neotropica 9(2):51–69.

SCOLFORO, J.R.S., OLIVEIRA, A.D., DAVIDE, A.C., MELLO, J.M. & ACERBI JR, F.W. 2002. Manejo sustentável da candeia *Eremanthus erythropappus* e *Eremanthus incanus*. Relatório Técnico Científico. UFLA-FAEPE, Lavras, pp. 350.

SILVA, J.M.C., PINTO, L.P. & SCARANO, F.R. 2021. Toward integrating private conservation lands into national protected area systems: Lessons from a megadiversity country. Conservation Science and Practice 3(7):e433.

SMITH, T.B., WAYNE, R.K., GIRMAN, D.K. & BRUFORD, M.W. 1997. A role for ecotone for generating Rainforest biodiversity. Science 276:1855–1857.

SOUZA, D.C., SOUZA, L.R., COUTO, E.V., CAXAMBÚ, M.G. & PERON, A.P. 2024. Effect of slope on the forest structure of the Atlantic Forest domain in southern Brazil. Brazilian Journal of Biology 84:e258048.

SOUZA, V.C., FLORES, T.B. & LORENZI, H. 2013. Introdução à Botânica Morfologia. Plantarum, Nova Odessa, pp. 224.

THIERS, B. 2022. [continuously updated] Index Herbariorum. A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/science/ih/ (Accessed 4 April 2023).

VALENTE, A.S.M., ARAÚJO, F.S., FONTES, M.A.L. & ROCHA, G.C. 2013. O entorno do Parque Estadual do Ibitipoca: fitofisionomias e lista florística. In: FORZZA, R.C., MENINI NETO, L., SALIMENA, F.R.G. & ZAPPI, D. (Org.) Flora do Parque Estadual do Ibitipoca. Editora UFJF, Juiz de Fora, pp. 293–329.

WALTER, B.M.T. & GUARINO, E.S.G. 2006. Comparação do método de parcelas com o "levantamento rápido" para amostragem da vegetação arbórea do Cerrado sentido restrito. Acta Botanica Brasilica 20(2):285–297.

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