

# VASCULAR EPIPHYTES IN A REMNANT OF SEASONAL SEMIDECIDUOUS FOREST IN THE ZONA DA MATA, STATE OF MINAS GERAIS, BRAZIL

## *EPÍFITAS VASCULARES EM UM REMANESCENTE DE FLORESTA ESTACIONAL SEMIDECIDUAL NA ZONA DA MATA, MINAS GERAIS, BRASIL*

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**ABSTRACT:** This study was performed in a remnant of Seasonal Semideciduous Forest at Fazenda Fortaleza de Sant'Anna, in the municipality of Chácara, Minas Gerais, Brazil (22.0129S, 43.8628W), in an area of ca. 1 ha, via monthly expeditions throughout the year 2012. We found 91 species of vascular epiphytes, distributed in 44 genera and 12 families. The richest families were Orchidaceae (35 spp.), Bromeliaceae (18 spp.), Polypodiaceae (10 spp.), Piperaceae (nine spp.) and Araceae (seven spp.). Two species were recorded for the first time in Minas Gerais: *Rodriguezia stricta* and *Stelis oligantha* (Orchidaceae). *Rhipsalis oblonga* (Cactaceae) was recollected in the state after about 100 years without records. Four species are cited in the list of endangered plants in Minas Gerais: *Nematanthus crassifolius* (Gesneriaceae) and *Cattleya bicolor* (Orchidaceae) are in the category "Vulnerable" (VU), *Nidularium azureum* (Bromeliaceae) and *Pleurothallis pectinata* (Orchidaceae) are "Critically Endangered" (CR). *Nidularium azureum* is also cited as CR in the Red Book of Brazilian Flora. Most species were classified as characteristic holoeiphytes and anemochory was the most frequent dispersion syndrome.

**KEYWORDS:** Atlantic Forest. Biodiversity. Conservation. Fazenda Fortaleza de Sant'Anna. Municipality of Chácara.

### INTRODUCTION

The Atlantic Forest is one of the world hotspots of biodiversity due to the large number of plants and animals, including many endemics (MYERS et al., 2000). About 11% of its original area exists today (RIBEIRO et al., 2009), where ca. 15,800 plant species occur, a high percentage of which are threatened with extinction (STEHMANN et al., 2009).

In Minas Gerais (MG), the original forest cover remained little altered until the beginning of the nineteenth century, when the coffee crop was responsible for a great impact on the natural landscape (VALVERDE, 1958). Menini Neto et al. (2009b) highlighted that the majority of existing vegetation remnants is composed of montane or high montane forests, "campos de altitude" and "campos rupestres", which are found only in areas of difficult access.

The few studies or non-existence of biological surveys in many regions of MG hinders the evaluation of these areas and consequently, the establishment of concrete actions to conserve biodiversity (DRUMMOND et al., 2009). Specific studies concerning the epiphytic flora are concentrated in the Southern Region of Brazil, with few for the Southeastern Region (KERSTEN, 2010)

and even fewer in MG (WERNECK; ESPÍRITO-SANTO, 2002; ALVES et al., 2008; MENINI NETO et al., 2009a).

To contribute to the knowledge of epiphytic flora in Minas Gerais state and to reduce the current knowledge gaps in the Southeastern Region, the present study was conducted in a remnant of Seasonal Semideciduous Forest in Zona da Mata of MG, in the municipality of Chácara, part of the "Corredor Sudeste" in an area considered of "Very High" biological importance by Drummond et al. (2005).

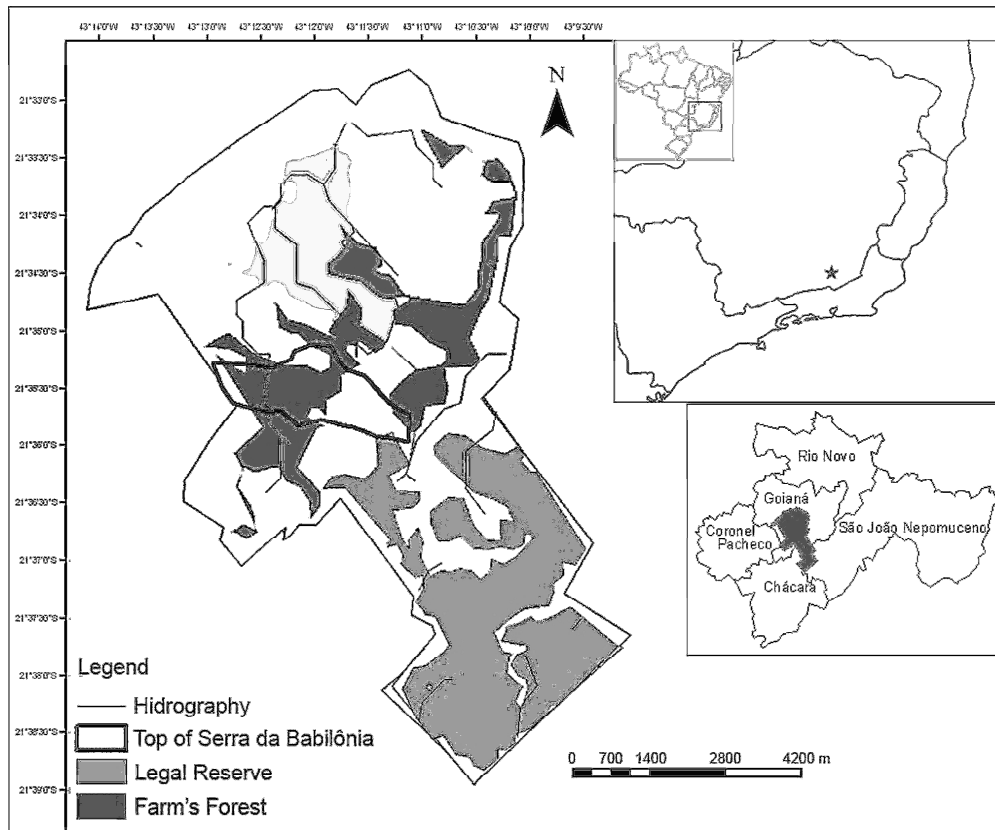
The aims of the study were to survey the species of vascular epiphytes, indicate the ecological category and dispersal syndromes and discuss the importance of forest remnants in the conservation of epiphytic species in the Zona da Mata of Minas Gerais.

### MATERIAL AND METHODS

The study was performed in a remnant of Seasonal Semideciduous Forest that lies in Fazenda Fortaleza de Sant'Anna (FFS) (22,0129S, 43,8628W), in the Zona da Mata, MG, between the municipalities of Chácara, Coronel Pacheco, Goianá and São João Nepomuceno, in a region locally known as Serra da Babilônia (Figure 1). The forest

has several watercourses that integrate the basin of Rio Paraíba do Sul. The altitude is between 800 and 900 m.s.m. and the area that surrounds the forest is occupied by crops and pasture (PREA, 2012). The climate of region is CwB according to the Köppen classification, with dry and cold winters and wet and mild summers (CETEC, 1983).

Monthly collections were conducted during 2012 (with one pilot collection in July 2011), via the “método de caminhamento” (FILGUEIRAS et al., 1994), in the region belonging to the municipality of Chácara, located about 25 km from Juiz de Fora in an area of ca. 1 ha, in gallery forest of the Rio Cágado.



**Figure 1.** Location of Fazenda Fortaleza de Sant'Anna (Minas Gerais, Brazil) and the surveyed area ●. Font: modified of PREA (2012).

The plants were photographed and a “Rapid Color Guide” was published by The Field Museum of Chicago (available at: [http://fm2.fieldmuseum.org/plantguides/iter\\_guide.asp?type=full&id=579&link=475%20Epiphytes%20of%20Sant'Anna.pdf](http://fm2.fieldmuseum.org/plantguides/iter_guide.asp?type=full&id=579&link=475%20Epiphytes%20of%20Sant'Anna.pdf)). The collected specimens were herborised according to usual methodology and deposited at the CESJ Herbarium of the Universidade Federal de Juiz de Fora (acronym according to THIERS, 2012). The species were identified by comparison with the collection of the CESJ Herbarium, consultation of specialised bibliography and via consultation of experts in each family. The spelling of species and author names were determined by The International Plants Names Index ([www.ipni.org](http://www.ipni.org)). Intraspecific categories were not considered. The ecological categories of

recorded species were classified according to epiphyte-phorophyte relationships based on Benzing (1990).

## RESULTS

Ninety one species of vascular epiphytes were recorded in Fazenda Fortaleza de Sant'Anna, belonging to 44 genera and 12 families (Table 1).

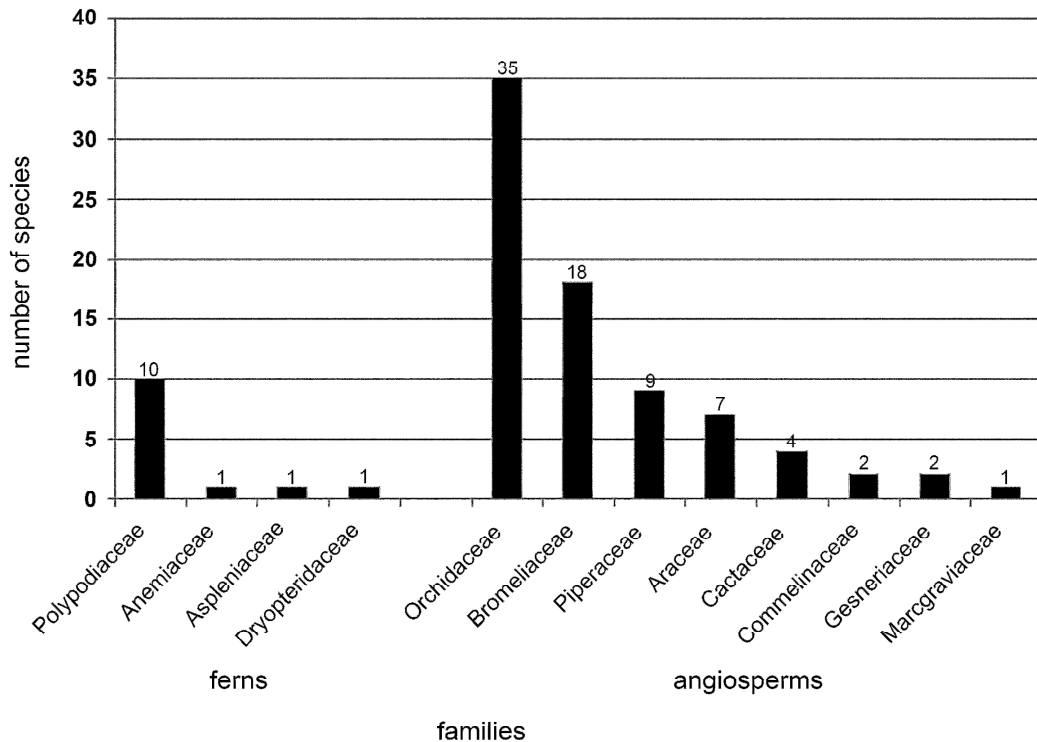
Ferns were represented by 13 species, distributed among four families. Polypodiaceae was the richest family (10 spp.) (Figure 2) and comprised the richest genera: *Campyloneurum* C.Presl and *Microgramma* C.Presl (three spp. each), followed by *Pleopeltis* Humb. & Bonpl. ex Willd. and *Serpocaulon* A.R.Sm. (two spp. each).

**Table 1.** List of families and species of vascular epiphytes recorded in the Fazenda Fortaleza de Sant'Anna, Zona da Mata of Minas Gerais, Brazil.

| Families/Species   | CE  | Disp. | Voucher |
|--|-----|-------|---------|
| <b>Anemiaceae – 1/1 (Vinicius A.O. Dittrich – CESJ)</b>                |     |       |         |
| <i>Anemia phyllitidis</i> (L.) Sw.                                     | HLA | Anem  | 80      |
| <b>Araceae – 3/7 (Marcus Nadruz – RB)</b>                              |     |       |         |
| <i>Anthurium comtum</i> Schott   | HLF | Zoo   | 56      |
| <i>Anthurium</i> aff. <i>intermedium</i> Kunth                         | HLF | Zoo   | 95      |
| <i>Anthurium pentaphyllum</i> (Aubl.) G.Don                            | HLC | Zoo   | 30      |
| <i>Anthurium scandens</i> (Aubl.) Engl.                                | HLC | Zoo   | 1       |
| <i>Monstera adansonii</i> Schott                                       | HEM | Zoo   | 107     |
| <i>Philodendron appendiculatum</i> Nadruz & Mayo                       | HEM | Zoo   | 106     |
| <i>Philodendron propinquum</i> Schott                                  | HEM | Zoo   | 83      |
| <b>Aspleniaceae – 1/1 (Vinicius A. O. Dittrich – CESJ)</b>             |     |       |         |
| <i>Asplenium martianum</i> C.Chr.                                      | HLC | Anem  | 132     |
| <b>Bromeliaceae – 9/18 (Rafaela C. Forzza – RB)</b>                    |     |       |         |
| <i>Acanthostachys strobilacea</i> (Schult. & Schult.f.) Klotzsch       | HLC | Zoo   | 135     |
| <i>Aechmea</i> aff. <i>aiuruocensis</i> Leme                           | HLF | Zoo   | 102     |
| <i>Aechmea nudicaulis</i> (L.) Griseb.                                 | HLC | Zoo   | 93      |
| <i>Aechmea</i> sp.   | HLC | Zoo   | 103     |
| <i>Billbergia distachia</i> (Vell.) Mez                                | HLF | Zoo   | 75      |
| <i>Billbergia horrida</i> Regel  | HLF | Zoo   | 137     |
| <i>Billbergia zebrina</i> (Herb.) Lindl.                               | HLC | Zoo   | 123     |
| <i>Neoregelia farinosa</i> (Ule) L.B.Sm.                               | HLF | Zoo   | 127     |
| <i>Nidularium azureum</i> Leme   | HLF | Zoo   | 76      |
| <i>Portea petropolitana</i> (Wawra) Mez                                | HLC | Anem  | 134     |
| <i>Quesnelia indecora</i> Mez  | HLF | Zoo   | 8       |
| <i>Tillandsia geminiflora</i> Brongn.                                  | HLC | Anem  | 130     |
| <i>Tillandsia recurvata</i> (L.) L.                                    | HLC | Anem  | 6       |
| <i>Tillandsia stricta</i> Sol.   | HLC | Anem  | 46      |
| <i>Tillandsia usneoides</i> (L.) L.                                    | HLC | Anem  | 105     |
| <i>Vriesea ensiformis</i> (Vell.) Beer                                 | HLF | Anem  | 64      |
| <i>Vriesea gigantea</i> Gaudich.                                       | HLF | Anem  | 24      |
| <i>Vriesea</i> sp.   | HLC | Anem  | 47      |
| <b>Cactaceae – 3/4 (Diego R. Gonzaga – CESJ, Daniela C. Zappi – K)</b> |     |       |         |
| <i>Hatiora salicornioides</i> (Haw.) Britton & Rose                    | HLC | Zoo   | 126     |
| <i>Lepismium houlettianum</i> (Lem.) Barthlott                         | HLC | Zoo   | 112     |
| <i>Rhipsalis lindbergiana</i> K.Schum.                                 | HLC | Zoo   | 29      |
| <i>Rhipsalis oblonga</i> Loefgr.                                       | HLC | Zoo   | 58      |
| <b>Commelinaceae – 2/2</b>   |     |       |         |
| <i>Commelina</i> sp.   | HLA | Aut   | 86      |
| <i>Dichorisandra hexandra</i> (Aubl.) Kuntze ex Hand.-Mazz.            | HLA | Zoo   | 28      |
| <b>Dryopteridaceae – 1/1 (Vinicius A.O. Dittrich – CESJ)</b>           |     |       |         |
| <i>Polybotrya pilosa</i> Brade   | HLC | Anem  | 26      |
| <b>Gesneriaceae – 1/2</b>  |     |       |         |
| <i>Nematanthus crassifolius</i> (Schott) Wiehler                       | HLC | Zoo   | 113     |
| <i>Nematanthus lanceolatus</i> (Poir.) Chautems                        | HLC | Zoo   | 104     |
| <b>Marcgraviaceae – 1/1</b>  |     |       |         |
| <i>Marcgravia polyantha</i> Delp.                                      | HEM | Zoo   | 92      |
| <b>Orchidaceae - 17/35 (Luiz Menini Neto – CESJ)</b>                   |     |       |         |
| <i>Campylocentrum brachycarpum</i> Cogn.                               | HLC | Anem  | 2       |
| <i>Campylocentrum crassirhizum</i> Hoehne                              | HLC | Anem  | 12      |
| <i>Campylocentrum wawrae</i> (Rechb.f.) Rolfe                          | HLC | Anem  | 13      |
| <i>Cattleya bicolor</i> Lindl.   | HLC | Anem  | 66      |
| <i>Dichaea pendula</i> Cogn.   | HLC | Anem  | 114     |

|   |     |      |     |
|---|-----|------|-----|
| <i>Encyclia patens</i> Hook.  | HLC | Anem | 11  |
| <i>Epidendrum armeniacum</i> Lindl.                                   | HLC | Anem | 67  |
| <i>Epidendrum secundum</i> Jacq.                                      | HLF | Anem | 9   |
| <i>Eurystyles actinosophila</i> (Barb.Rodr.) Schltr.                  | HLC | Anem | 17  |
| <i>Gomesa recurva</i> R.Br.   | HLF | Anem | 51  |
| <i>Isochilus linearis</i> (Jacq.) R.Br.                               | HLC | Anem | 109 |
| <i>Leptotes bicolor</i> Lindl.  | HLC | Anem | 124 |
| <i>Maxillaria brasiliensis</i> Brieger                                | HLC | Anem | 108 |
| <i>Maxillaria consanguinea</i> Klotzsch                               | HLC | Anem | 49  |
| <i>Maxillaria pumila</i> Hook.  | HLC | Anem | 125 |
| <i>Oncidium hookeri</i> Rolfe   | HLC | Anem | 21  |
| <i>Oncidium pumilum</i> Lindl.  | HLC | Anem | 45  |
| <i>Oncidium</i> sp.   | HLC | Anem | 68  |
| <i>Pleurothallis auriculata</i> Lindl.                                | HLC | Anem | 110 |
| <i>Pleurothallis grobyi</i> Bateman ex Lindl.                         | HLC | Anem | 87  |
| <i>Pleurothallis hygrophila</i> Barb.Rodr.                            | HLC | Anem | 96  |
| <i>Pleurothallis hypnicola</i> Lindl.                                 | HLC | Anem | 20  |
| <i>Pleurothallis luteola</i> Lindl.                                   | HLC | Anem | 71  |
| <i>Pleurothallis macropoda</i> Barb.Rodr.                             | HLC | Anem | 19  |
| <i>Pleurothallis pectinata</i> Lindl.                                 | HLC | Anem | 91  |
| <i>Pleurothallis saundersiana</i> Rchb.f.                             | HLC | Anem | 94  |
| <i>Pleurothallis</i> sp.  | HLC | Anem | 90  |
| <i>Polystachya estrellensis</i> Rchb.f.                               | HLC | Anem | 54  |
| <i>Rodriguezia sticta</i> M.W.Chase                                   | HLC | Anem | 5   |
| <i>Rodriguezia venusta</i> Rchb. f.                                   | HLC | Anem | 136 |
| <i>Stelis argentata</i> Lindl.  | HLC | Anem | 22  |
| <i>Stelis oligantha</i> Barb.Rodr.                                    | HLC | Anem | 41  |
| <i>Stelis papaquerensis</i> Rchb.f.                                   | HLC | Anem | 40  |
| <i>Xylobium variegatum</i> (Ruiz & Pav.) Mansf.                       | HLF | Anem | 119 |
| <i>Zygostates lunata</i> Lindl.                                       | HLF | Anem | 138 |
| <b>Piperaceae – 1/9 (Daniele Monteiro – RB)</b>                       |     |      |     |
| <i>Peperomia alata</i> Ruiz & Pav.                                    | HLC | Zoo  | 128 |
| <i>Peperomia elongata</i> Kunth                                       | HLC | Zoo  | 116 |
| <i>Peperomia glabella</i> (Sw.) A.Dietr.                              | HLC | Zoo  | 81  |
| <i>Peperomia martiana</i> Miq.  | HLC | Zoo  | 79  |
| <i>Peperomia pseudoestrellensis</i> C.DC.                             | HLC | Zoo  | 18  |
| <i>Peperomia rotundifolia</i> (L.) Kunth                              | HLC | Zoo  | 118 |
| <i>Peperomia tenella</i> (Sw.) A.Dietr.                               | HLC | Zoo  | 117 |
| <i>Peperomia tetraphylla</i> (G.Forst.) Hook. & Arn.                  | HLC | Zoo  | 115 |
| <i>Peperomia</i> sp.  | HLC | Zoo  | 77  |
| <b>Polypodiaceae – 4/10 (Vinicius A.O. Dittrich – CESJ)</b>           |     |      |     |
| <i>Campyloneurum acrocarpon</i> Fée                                   | HLC | Anem | 133 |
| <i>Campyloneurum</i> cf. <i>austrobrasiliense</i> (Alston) de la Sota | HLC | Anem | 78  |
| <i>Campyloneurum nitidum</i> (Kaulf.) C.Presl                         | HLC | Anem | 55  |
| <i>Microgramma percussa</i> (Cav.) de la Sota                         | HLC | Anem | 34  |
| <i>Microgramma squamulosa</i> (Kaulf.) de la Sota                     | HLC | Anem | 7   |
| <i>Microgramma tecta</i> (Kaulf.) Alston                              | HLC | Anem | 35  |
| <i>Pleopeltis astrolepis</i> (Liebm.) E.Fourn.                        | HLC | Anem | 16  |
| <i>Pleopeltis desvauxii</i> (Klotzsch) Salino                         | HLC | Anem | 60  |
| <i>Serpocaulon catharinae</i> (Langsd. & Fisch.) A.R.Sm.              | HLC | Anem | 14  |
| <i>Serpocaulon fraxinifolium</i> (Jacq.) A.R.Sm.                      | HLF | Anem | 131 |

CE: ecological category. HLC: characteristic holoepiphyte; HLF: facultative holoepiphyte; HLA: accidental holoepiphyte; HEM: hemiepiphyte. Disp: dispersal mode – Anem: anemochoric; Zoo: zoochoric. Voucher: D.E.F.Barbosa (deposited in the Herbarium CESJ). The numbers after the family names correspond respectively to numbers of genera and recorded species. The names between parentheses refer to the experts that collaborated with the identification of species and respective herbaria.



**Figure 2.** Number of species and families of ferns and angiosperms recorded in the Fazenda Fortaleza de Sant'Anna, municipality of Chácara, Minas Gerais, Brazil.

Angiosperms comprised 78 species distributed among eight families: Orchidaceae was the most representative (35 spp.), followed by Bromeliaceae (18 spp.), Piperaceae (nine spp.) and Araceae (seven spp.) (Figure 2). The most representative genera were *Peperomia* Ruiz & Pav. (Piperaceae) and *Pleurothallis* R.Br. s.l. (Orchidaceae) (nine spp. each), *Anthurium* Schott (Araceae) and *Tillandsia* L. (Bromeliaceae) (four spp. each), and *Aechmea* Ruiz & Pav., *Billbergia* Thunb., *Vriesea* Lindl. (Bromeliaceae), *Campylocentrum* Benth., *Maxillaria* Ruiz & Pav. s.l., *Oncidium* Sw. s.l. and *Stelis* Sw. (Orchidaceae) (three spp. each), totalling 47 species or slightly more than 60% of angiosperms and ca. 51% of all vascular epiphytes recorded in this study.

*Rodriguezia sticta* M.W.Chase and *Stelis oligantha* Barb. Rodr. were recorded for the first time in MG. The record of *Nidularium azureum* Leme (Bromeliaceae) must be highlighted, since it is an endemic species to the region and known only from a few collections from the type-locality (Coronel Pacheco, neighbouring municipality to Chácara), and *Rhipsalis oblonga* Loefgr. (Cactaceae), recollected after about 100 years without any collection in MG.

Characteristic holoepiphyte was the most frequent ecological category (69 spp., ca. 75%) and

the most common dispersal syndrome was anemochory (56 spp., ca. 61%), being more frequent in orchids, ferns and bromeliads of the genera *Tillandsia* and *Vriesea* (Table 1).

## DISCUSSION

The five richest families in Fazenda Fortaleza de Sant'Anna (Orchidaceae, Bromeliaceae, Polypodiaceae, Piperaceae and Araceae) include about 86% of all recorded species, following a pattern observed in the Neotropical Region, in which a few families commonly comprise a high concentration of species (CATLING; LEFKOVITCH, 1989; WAECHTER, 1992; HIETZ; HIETZ-SEIFERT, 1995; DITTRICH et al., 1999; KERSTEN; SILVA, 2001; ARÉVALO; BETANCUR, 2004; GIONGO; WAECHTER, 2004; KERSTEN et al., 2009; MENINI NETO et al., 2009a; BIANCHI et al., 2012). In general, these families are the five most representative in the epiphytic synusia both in the Atlantic Forest (KERSTEN, 2010) as well as globally (MADISON, 1977), occupying however, a different position to that found in FFS. Orchidaceae is frequently the richest family in studies concerning epiphytic flora in the Neotropical Region, followed by Bromeliaceae (DISLICH; MANTOVANI, 1998;

LINARES, 1999; BUSSMANN, 2001; ARÉVALO; BETANCUR, 2004; ROGALSKI; ZANIN, 2003; GIONGO; WAECHTER, 2004; CERVI; BORG, 2007; MENINI NETO et al., 2009b).

Although Polypodiaceae is the richest family of epiphytic ferns, both *Campyloneurum* and *Microgramma* are seldom highlighted as the most representative genera, since *Asplenium* or *Pleopeltis* are often richer (KERSTEN; SILVA, 2001; CERVI; BORG, 2007; BUZZATTO et al., 2008; KERSTEN et al., 2009; MENINI NETO et al., 2009b; GERALDINO et al., 2010), and if *Microgramma* is cited as the richest genus, it often shares this position with other genera (ROGALSKI; ZANIN, 2003; BREIER, 2005; MANIA; MONTEIRO, 2010). The other recorded genera (*Anemia*, *Polybotrya* and *Serpocaulon*) often have a low or intermediate richness.

According to Carvalho-Silva and Guimarães (2008), *Peperomia* is predominant in Dense Ombrophilous Forests, and less frequent in Seasonal Forests, in which humidity levels are low, as confirmed by Menini Neto et al. (2009b), who found it to be the most representative genus of epiphytes in a Riverine Forest in the Zona da Mata of MG. However, Cervi and Borge (2007) found *Peperomia* to be the most representative genus in a fragment of Seasonal Semideciduous Forest, similar to the results of this study. Surprisingly, *Pleurothallis* s.l. is the other genus notable for its richness in the Fazenda Fortaleza de Sant'Anna, since it is most speciose in cloud forests (Montane and High Montane Dense Ombrophilous Forests) of the Andes and in the Atlantic Forest (LUER, 1986). Thus, the large number of recorded species in the Fazenda Fortaleza de Sant'Anna is unexpected, suggesting an ombrophilous component in the studied area, probably due to the humidity provided by the Rio Cágado.

In general, the specific richness can be considered low in comparison with studies performed in the Dense Ombrophilous Forest, such as those of Breier (2005) (161 spp.), Petean (2009) (159 spp.) and Blum et al. (2011) (278 spp.), which is an expected result taking into account the climatic factors of this vegetation physiognomy, such as high temperature and humidity, as well as precipitation distributed evenly throughout the year, which favour the occurrence of epiphytic plants. Furthermore, the size of the area might be important in this comparison, since the studies of Breier (2005) and Blum et al. (2011) were performed in larger areas (10.24 and 6.3 ha, respectively), whereas only the area studied by Petean (2009) was 1 ha, as in the present study.

If compared with the same type of forest physiognomy (Seasonal Semideciduous Forest), the surveys conducted by Rogalski and Zanin (2003) (70 spp.), Giongo and Waechter (2004) (57 spp.), Breier (2005) (25 spp.), Dettke et al. (2008) (29 spp.), Bataghin et al. (2010) (21 spp.), produced lists with lower richness than that of the Fazenda Fortaleza de Sant'Anna. Even when compared with areas of Mixed Ombrophilous Forest, which have higher humidity levels, which might explain richer floras, the epiphytic flora of Fazenda Fortaleza de Sant'Anna is markedly richer than those areas studied by Dittrich et al. (1999) (74 spp.), Kersten and Silva (2002) (51 spp.), Gaiotto and Acra (2005) (48 spp.) and Buzzatto et al. (2008) (44 spp.). However, the richness of Fazenda Fortaleza de Sant'Anna is lower than that observed by Bianchi et al. (2012) (127 spp.) in an area of similar extent (1 ha), reinforcing the theory that ecotones demonstrate a high species richness (KERSTEN, 2010).

Four species are cited in the red list of plants threatened with extinction in MG (BIODIVERSITAS, 2007): *Nematanthus crassifolius* (Gesneriaceae) and *Cattleya bicolor* (Orchidaceae) in the category "Vulnerable" (VU); *Nidularium azureum* (Bromeliaceae) and *Pleurothallis pectinata* (Orchidaceae) as "Critically Endangered" (CR) (cited as *Acianthera pectinata* (Lindl.) Pridgeon & M.W.Chase). Prior to this record, *P. pectinata* was only collected twice in MG, according to Abreu et al. (2007), in the 1950s (in Ferros) and in 1969 (in Juiz de Fora). Since then, there are no records of the species in MG, reinforcing its critical status of conservation. *Nidularium azureum* is also cited in the Red Book of Brazilian Flora as CR (Forzza et al. 2013), due to reduced area of occurrence and, until this record, only one known population in the municipality of Coronel Pacheco, neighbor to Chácara.

The records of *Rodriguezia sticta* and *Stelis oligantha* (Menini Neto et al., 2013), apart from the rediscovery of *Rhipsalis oblonga*, which has not been collected within the state in the past 100 years, represent an important contribution to the knowledge of MG flora. All three species are considered to be threatened with extinction in the state, due to their restricted distribution, with only a few specimens having been observed (especially the latter two species), and their occurrence in a locality without the protection of a conservation unit.

*Rodriguezia sticta* was previously known only from Espírito Santo and Rio de Janeiro states, in Seasonal Semideciduous Forest and Dense Ombrophilous Forest (BARROS et al., 2014). It is a

common species in Fazenda Fortaleza de Sant'Anna, occurring both in the forest interior, in shaded and humid environment near the watercourse and in open environments with anthropogenic intervention, commonly using cultivated loquat (*Eriobotrya japonica* (Thunb.) Lindl., Rosaceae) as a phorophyte.

*Stelis oligantha* is previously cited in São Paulo and Rio de Janeiro, occurring typically in Dense Ombrophilous Forest (BARROS et al., 2014). No record of this species was found on the site SpeciesLink ([www.splink.org.br](http://www.splink.org.br)), suggesting that it is a rare species. However, its reduced size and difficult observation in the field, allied to a great number of unidentified or misidentified *Stelis* specimens in herbaria collections (L. MENINI NETO, pers. obs.) do not permit a more accurate conclusion.

*Rhipsalis oblonga* is found in eastern Brazil, occurring from southern Bahia to São Paulo in gallery forest or Dense Ombrophilous Forest and is absent from MG according to Zappi et al. (2014). However, on the SpeciesLink internet site, there are two specimens from MG in the herbarium of the Smithsonian Museum (US); one collected in 1915 and another without collection date, both lacking a specific locality. Therefore, we confirm the existence of this species in MG, but its rare occurrence must be emphasised, because only one specimen was found in Fazenda Fortaleza de Sant'Anna.

The results concerning ecological categories corroborate the predominance of characteristic holoepiphytes (DITTRICH et al. 1999; KERSTEN; SILVA, 2001; ROGALSKI; ZANIN, 2003; CERVI; BORGIO, 2007; DETTKE et al., 2008; MENINI NETO et al., 2009a; BATAGHIN et al., 2010; BONNET et al., 2011; BIANCHI et al. 2012), underlining the importance of this habit for epiphytic plants. Gonçalves and Waechter (2003), Menini Neto et al. (2009a), Geraldino et al. (2010) also emphasise the high frequency of anemochory, corroborating the assertion of Benzing (1990) that it

is the most common type of dispersal among epiphytes. The vertical distribution of these plants in the forest confirms the action of wind as the major dispersal agent (MADISON, 1977).

A high biodiversity occurs in the Atlantic Forest, despite the intensive fragmentation of its vegetation, and actions to conserve those remnants are essential. Thus, to provide subsidies to implement these actions it is necessary to perform floristic surveys in this phytogeographic domain, which currently are scarce regarding epiphytic plants, especially in MG, where there are few published studies that address the subject and the epiphytic flora is mostly unknown.

This study shows that a small area of this forest remnant shows a higher specific richness than expected for a Semideciduous Forest in a region with a strong anthropogenic intervention (crops and pasture), increasing the knowledge of the MG flora with two new records (*R. sticta* and *S. oligantha*) and the rediscovery of a species that was not collected within the last 100 years (*R. oblonga*), as well as the collection of *N. azureum*, previously known only from the type-locality.

The existence in the FFS of species threatened with extinction in MG as well as globally (with the presence of the microendemic species, *N. azureum*) highlights the importance of the maintenance of forest remnants in the Zona da Mata of MG and the relevance of surveys in areas not protected by conservation units.

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**RESUMO:** O estudo foi realizado em um remanescente de Floresta Estacional Semidecidual, na Fazenda Fortaleza de Sant'Anna, município de Chácara, Minas Gerais, Brasil (22,0129S, 43,8628W), em uma área aproximada de 1 ha, através de expedições mensais durante o ano de 2012. Foram encontradas 91 espécies de epífitas vasculares, distribuídas em 44 gêneros e 12 famílias. As famílias mais ricas foram Orchidaceae (35 spp.), Bromeliaceae (18 spp.), Polypodiaceae (10 spp.), Piperaceae (nove spp.) e Araceae (sete spp.). Duas espécies foram registradas pela primeira vez para Minas Gerais: *Rodriguezia sticta* e *Stelis oligantha* (Orchidaceae). *Rhipsalis oblonga* (Cactaceae) foi recoletada no estado depois de cerca de 100 anos sem registros. Quatro espécies estão presentes na lista de plantas ameaçadas de extinção em Minas Gerais: *Nematanthus crassifolius* (Gesneriaceae) e *Cattleya bicolor* (Orchidaceae) na categoria "Vulnerável" (VU), *Nidularium azureum* (Bromeliaceae) e *Pleurothallis pectinata* (Orchidaceae) como "Criticamente em Perigo" (CR). *Nidularium azureum* também é citado como CR no Livro Vermelho da Flora do Brasil. A maioria das espécies foi classificada como holoepífita característica e a síndrome de dispersão mais frequente foi a anemochoria.

**PALAVRAS-CHAVE:** Biodiversidade. Conservação. Fazenda Fortaleza de Sant'Anna. Floresta Atlântica. Município de Chácara.

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