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SURVEY AND DISTRIBUTION OF THE ORCHIDACEAE FAMILY ON THE "VEREDAS DO CERRADO" FARM, MUNICIPALITY OF BURITIS, MINAS GERAIS, BRASIL

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Abstract: Classified into more than twenty-five thousand species in the world, the Orchidaceae family is the largest among angiosperms, however, they are not plants found in abundance in their places of origin, and this fact may be related to the complexity of propagation, deterioration of the environment and uncontrolled extractivism. Orchids from the Savanna of Minas Gerais are threatened by deforestation for the creation of planting and pasture areas. Of the species found in the state of Minas Gerais, 98 are threatened with extinction. The objective of the study was to carry out a floristic survey of orchid species in an area of the savanna, in order to identify the species in the region, as well as the preferences, needs and abundance of each species. The survey of orchid species was carried out on the farm ''Veredas do Cerrado", municipality of Buritis, Minas Gerais, Brazil, between May and December 2020. Fortnightly field trips were carried out to search for orchid species. Of the specimens found, the plant part close to the flowering was photographed using a professional photographic camera (Canon), using objectives with long-range lenses (18-55 mm, 75-300 mm), in order to facilitate the identification of individuals. Six genera were registered and identified near the water bodies of the farm: ''Veredas do Cerrado", in the municipality of: Buritis, MG, Brasil, and they are described here: *Acianthera*, *Cattleya*, *Epidendrum*, *Gomesa*, *Habenaria*, *Zygostates*. Of these genera, species were identified: *Gomesa fuscopetala* (Hoehne) M.W. Chase & N.H. Williams, *Gomesa macro*petala (Lindl.) M.W. Chase & N.H. Williams, *Encyclia patens* Hook., *Epidendrum densiflorum* Hook., *Epidendrum nocturnum* Jacq., *Epistephium williamsii* Hook.f. It is concluded that despite the short period of sample collection, the records of the Orchidaceae family obtained in the surveys were significant, as there is

a wealth of individuals in the area. Most of the specimens were not in flowering, therefore, they were not identified until the species taxon. Thus, new visits are being carried out, at different times of the year, to photograph the flowering of all species of the registered genera for their identification and cataloguing.

Keywords: Minas Gerais, Orchidaceae, Orchids, Savanna.

INTRODUCTION

Orchids make up one of the largest families of the angiosperm plant group, with approximately 25,000 species distributed worldwide, concentrated mainly in tropical and subtropical regions (ATWOOD, 1986). However, specimens are not found in abundance in their natural environment, and this fact may be related to the complexity of reproduction and propagation, environmental deterioration and uncontrolled extractivism (CUSTÓDIO et al., 2016).

In Brazil, orchids are classified into 238 genera and 2553 species, of which 1636 are endemic (BARROS et al., 2015). Among the country's phytogeographic domains, the Atlantic Forest stands out with the diversity of 1579 species of the Orchidaceae family, followed by the Amazon and the Savanna, with 885 and 730 species, respectively (BARROS et al., 2015).

Orchids have flowers with wide variations in color and shape, and therefore have great commercial value (FERNANDES et al., 2016), which is one of the reasons that contribute to the removal of individuals from their places of origin, including in protected areas. (MELLO, 2000).

Savanna is one of the largest biomes in Brazil and reaches several states in the country, including Minas Gerais (NETO, 2012). Composed of varied phytophysiognomies, the biome is considered the richest savannah in flora, with habitats conducive to endemism (KLINK; MACHADO, 2005). However, the natural vegetation still suffers constant loss of areas, which are destined for the creation of planting and pasture areas (RODRIGUES, 2005).

The lucrative interest in this group of plants led to numerous projects aimed at improving cultivation, but there are few works aimed at the conservation and reintroduction of specimens in natural environments, even with orchids being considered good bioindicators of environmental quality (VILELA, 2002; SUZUKI, 2005).

The objective of the study was to carry out a floristic survey of orchid species in Cerrado phytophysiognomies, located on the farm: ''Veredas do Cerrado", in the municipality of Buritis, Minas Gerais, to identify the species present in the region, as well as the substrate preferences.

MATERIAL AND METHODS

The survey of orchid species was carried out at the farm: ''Veredas do Cerrado" (15º27'13"S and 46º45'43º W), located in the municipality of Buritis, Minas Gerais, Brazil, between the months of May and December of 2020. The farm has varied cerrado phytophysiognomies. Several points of the farm were explored, mainly along the watercourses, for the registration of the species. Fortnightly field trips were carried out to search for orchid species. Of the specimens found, the plant parts next to the blooms were photographed using a professional photographic camera (Canon), using objectives with long-range lenses (18-55 mm, 75-300 mm), in order to facilitate the identification of individuals, since these were not collected.

Figure 1: Map of the Farm: ''Veredas do Cerrado" and areas covered during the survey. The red dots indicate the most visited places during the survey (Source: Adapted from Google Maps, 2022).

RESULTS

Eleven genera of orchids were registered and identified, of which ten were close to water bodies, in riparian forest and/or gallery forest. Genre only: *Epistephium* was found at greater distances in relation to the water, in the physiognomies of Campo Dirty, as shown in **Table 1**.

Of the genera found, fifteen species were identified. However, many other specimens were not sighted and recorded in bloom, therefore, they were not classified until the taxon species.

The genders: *Zygostates* and *Bulbophyllum* were the only ones to have no defined species.

DISCUSSION

All genera and species found had already been cited in other survey studies for the Savanna region (BOCCHESE et al., 2011; FERREIRA et al., 2017; BARROS et al., 2018), with the exception of the genus: *Zygostates*.

The gender: *Zygostates* is widely distributed in areas of the Atlantic Forest (MESSIAS, 2014; ROYER et al., 2017), including in the state of Minas Gerais. However, the registration of *Zygostates* sp. in Savanna is not indicated by Flora and Funga do Brasil, indicating a new place for the occurrence of the genus.

For *Encyclia*, some specimens were compatible with the description for: *Encyclia patens* (MENINI NETO et al., 2004) and other specimens of the same genus presented different sizes, being therefore considered:*Encyclia* sp. 1 and *Encyclia* sp. 2. Both observed with floral remnants, which indicates adult size of the orchids and therefore determines that the size of the specimen will not suffer large variations, corroborating the hypothesis of different species (ARAÚJO et al., 2019).

Family - Orchidaceae		
Gender	**Species**	**Substrate**
Barbosella	*Barbosella crassifolia* (Edwall) Schltr	Epiphyte
Bulbophyllum	*Bulbophyllum* sp.	Epiphyte
Cattleya	*Cattleya walkeriana* Gardner	Epiphyte
Encyclia	*Encyclia patens* (Hook) Porto & Brade	Epiphyte
	Encyclia. sp. 1	Epiphyte
	Encyclia. sp. 2	Epiphyte
Epidendrum	*Epidendrum densiflorum* (Hook)	Epiphyte
	Epidendrum nocturnum Jacq.	Epiphyte
Epistephium	*Epistephium lucidum* Cogn. 1893	Epiphyte
Gomesa	*Gomesa fuscopetala* (Hoehne) M.W. Chase & N.H. Williams	Epiphyte
	Gomesa macropetala (Lindl.) M.W. Chase & N.H. Williams	Epiphyte
Habenaria	*Habenaria johannensis* Barb.Rodr.	Terrestrial
Oeceoclades	*Oeceoclades maculata* (Lindl.) Lindl.	Terrestrial
Vanilla	*Vanilla bahiana* Hoehne	Hemiepiphyte
Zygostates	*Zygostates* sp.	Epiphyte

Table 1. List of orchid species recorded at the farm: ''Veredas do Cerrado", in Buritis, Minas Gerais, and their substrate preferences (Source: Adapted from Google Maps, 2020).

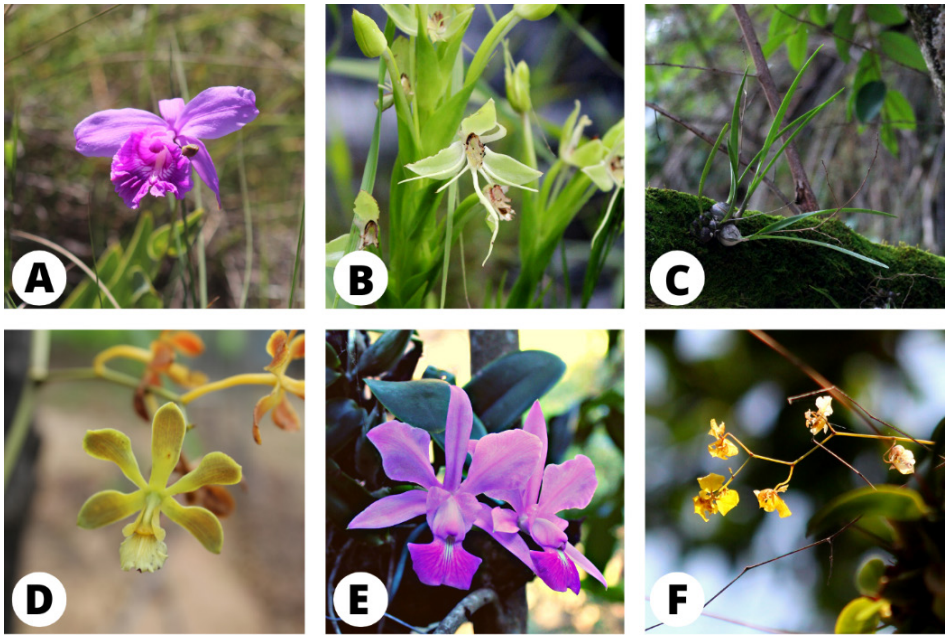

Figure 2. Specimens of the Orchidaceae family registered at the Farm: ''Veredas do Cerrado". **A.** *Epistephium lucidum*. **B.** *Habenaria* cf. *johannensis*. **C.** *Encyclia* sp 1. **D.** *Encyclia patens*. **E.** *Cattleya walkeriana*. **F.** *Gomesa macropetala*. (Source: SILVA, C. L.A., 2022).

In the case of genres: *Zygostates* and *Bulbophyllum*, both were not identified at the species level even though they were recorded with flowering. *Zygostates* sp. was seen in the crown of a phorophyte, above the watercourse, which made it difficult to photograph the flowering with more details, necessary for species identification. *Bulbophyllum* sp. and *Barbosella crassifolia* were classified as micro orchids, since they had flowers, bulbs and leaves in miniature sizes.

Most of the specimens were in epiphytic type substrate. Only: *Epistephium lucidum*, *Habenaria johannensis* and *Oeceoclades maculata* presented habits terrestres, and *Vanilla bahiana* had a mixed habit, being considered a hemiepiphyte.

Epistephium lucidum was the only species to occur in the physiognomy of the campo-dirto, and at a greater distance from the water. All other species were found in Gallery Forests or Riparian Forests, showing their dependence on more shaded environments with higher humidity.

Of the species found, only: *Barbosella crassifolia* did not present flowers and foliage that could be of commercial interest. To assess the potential landscape use of the species: *Encyclia* sp. 1 and *E.* sp. 2, it will be necessary to register the plant again with the floral structure. The other species presented flowers with characteristics valued in the market, such as:*C. walkeriana* and *E. patens*, that are marketed legally.

The Savanna biome does not harbor the largest number of orchid species, but it is still fully relevant to the floristic composition of the Orchidaceae family in the country, and this biome must be further explored in survey and protection work for this family.

The study site is a large area of preserved Savanna, with different phytophysiognomies, which contributes to a great diversity of plant and animal species. However, the farm is being cornered by large producers (a fact that can be seen in figure 1, which compromises the existence of fauna and flora, since there are numerous deforestations taking place close to springs and watercourses, and there is a great impact by the use of chemical products in plantations.

The results obtained show the importance of studies and greater conservation of the Savanna, which encompasses a large part of the Brazilian biodiversity and has lost large areas and animal and plant species to the expansion of agriculture and livestock.

CONCLUSIONS

It is concluded that despite the short period of sample collection, the records of the Orchidaceae family obtained in the surveys were significant, as there is a wealth of individuals in the area. Most specimens were not flowering, indicating that during the plant's reproductive period no visits were made, and therefore there is a need for more visits in order to register the plants with their flowers.

The local diversity allows and lacks new work on habitat preference and abundance, since at some observation points it was possible to view more than thirty individuals of the various genera mentioned above, proving to be an environment that meets the needs of the Orchidaceae family.

For future work, it is recommended to collect some individuals for better identification and possible use in herbaria, since few works have addressed the Savanna of Minas Gerais and that no survey of orchids has been found for the municipality of Buritis.

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