

Orchid diversity at a residual plateau on Caroebe, Roraima⁽¹⁾

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ABSTRACT

Orchids were observed in a granitic mountain hill at the, Caroebe road 35, Roraima, at February and June of 2016. It was observed the occurrence of orchids in three different points: the base of the mountain, with typical humid tropical dry land forest; the forest around the rocky top of the mountain, with the presence of thin trees about 15 meters high, medium light entrance below the vegetation; and the granitic plateau, more sun incidence and surrounded by small shrubs. The total area surveyed was of 5 hectares. The orchids encountered in the whole trail were prior identified locally, just as their localization by GPS and according to their growth habit (epiphytic, terrestrial or rupicolous). It was found 28 species. The majority of the individuals identified in this survey were found on organic layers accumulated over the granitic rock, as follow: *Catasetum planiceps*, *Catasetum discolor*, *Cyrtopodium andersonii*, *Encyclia granitica*, *Epidendrum ibaguense*, *Epidendrum viviparum*, *Cleistes rosea* e *Nohawilliamsia pirarensis*. At the forest that surrounds the rocky hill it was observed, associated to small trees, the following epiphyte orchids: *Dimerandra emarginata*, *Octomeria sp.*, *Scaphyglottis sickii*, *Trigonidium acuminatum* and *Cattleya violacea*. At the forest covering the base of the mountain it was found the larger number of species (13), with predominance of epiphytes. Besides the larger number found, the frequency of these species was very low, except for *Camaridium ochroleucum* and *Heterotaxis superflua* that were found in larger quantity associated to some sort of trees. The specie *Liparis nervosa* was found only associated to the base of a unique tree, over the organic matter accumulated locally. The large number of orchids found in the study area indicates its importance for more comprehensive studies and stresses the importance for conservation.

Keywords: biodiversity, Caroebe, Orchidaceae

RESUMO

Diversidade de orquídeas em área de planalto residual no Caroebe, Roraima

É apresentado o levantamento florístico das espécies de orquídeas silvestres encontradas em uma área de platô residual localizada na vicinal 35 do Caroebe, Roraima. O levantamento foi realizado em fevereiro e junho de 2016, em trilhas de reconhecida ocorrência de orquídeas. As espécies eram identificadas e classificadas segundo ao hábito de crescimento em: epífitas, rupícolas e terrestres. Para a confirmação da identificação botânica, exemplares considerados como representativos foram coletados. A área amostrada foi de 5 hectares. No total foram registradas 28 espécies. Todas já relatadas, em outros levantamentos, como ocorrentes em Roraima, entretanto, foi marcante a grande quantidade de indivíduos das espécies *Catasetum planiceps*, *Catasetum discolor*, *Cyrtopodium andersonii*, *Encyclia granítica*, *Epidendrum ibaguense*, *Epidendrum viviparum*, *Cleistes rosea* e *Nohawilliamsia pirarensis*, encontrados sobre a camada de serapilheira acumulada sobre a rocha granítica no topo da montanha. Com menor frequência, foram identificados sobre arbustos e pequenas árvores no topo da montanha as espécies: *Dimerandra emarginata*, *Octomeria sp.*, *Scaphyglottis sickii*, *Trigonidium acuminatum* e *Cattleya violaceae*. O maior número de espécies foi encontrado na floresta da base da montanha (13), com predominância de epífitas. A espécie *Liparis nervosa* foi a única encontrada nessa floresta úmida crescendo sobre a terra entre as raízes de uma árvore específica. O grande número de orquídeas, encontrado na região estudada, indica a sua importância para estudos mais abrangentes e realça a importância para a conservação.

Palavras-chave: Biodiversidade, levantamento, Orchidaceae.

1. INTRODUCTION

Biodiversity conservation and rational use of natural resources represent an important challenge on Amazonian sustainability. This question is being discussed nowadays by the society and the scientific organizations, leading to an amount of possibilities indicating that the advance of knowledge is the main key to the actions related to conservation and economic exploration of the bigger

tropical forest of the world. The building of a scenarium based on information about biodiversity may aim to establish a strategic plan for the use of species of economic potential, including native orchids. The survey of native species integrate fundamental information, when dealing to commercial use these species (CARDOSO, 2005).

Orchidaceae family is considered the most diverse among angiosperm, as for the number of species or for the variation on flower size and colors. It is estimated that there are

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about 25 thousand known species been 30% of them occurring in Brazil presents. The flowers are the meaning commercial appeal in this botany family, that still has medicinal and food potential (CARDOSO and ISRAEL, 2005).

Identify the occurrence of orchids in different environments has led to an enhance of biodiversity in many Brazilian regions. In the case of orchids, these studies may indicate the status of species conservation, epiphytic characteristics of most tropical orchids, pointing that deforestation changes the preservation of genotypes on natural environments (CARDOSO and ISRAEL, 2005; SILVA and SILVA, 2000; STORTI et al., 2011). The results of orchid surveys may also provide information of the species reproductive biology, which represents a strong concern when the intention is to obtain propagative material for economic purposes. The knowledge of species reproductive aspects is also important for genetic improvement (CARDOSO, 2013).

The Brazilian amazon orchid diversity is a result of interaction of some conditions, such as cross pollination, which is prevalent on the majority of the species of this region. It is estimated that there are around 700 species of orchids in this region, most of them founded in “campina” vegetation (BRAGA, 2010). Orchid family is distributed in a range of different natural environments found in Roraima, including tropical forest, dry land and low land savannas. The registration of native orchids in Roraima was made by Silva et al. (1995) and Luz and Oliveira (2012), but, some areas have not been fully explored, specially the “campinas” such as in the National Park

of Viruá, where it were registered 65 species of orchids (PESSOA, 2015).

Among high mountains areas of the state, in different macro-environments which compounds the geomorphological diversity of Roraima, it is common the occurrence of isolated or joined mountains in a range of 200 to 1.500 meters high, known as the residual plateau of Roraima (HOLANDA, 2014). These rocky landscapes, represented by granitic mountains, show different vegetation patterns, with high endemism levels, being important to biodiversity research as an area of refuge to many species. The climate conditions, height and hydrology in these special environments, results, in general, in the occurrence of different orchids, in relation to the surrounding areas. This work aimed to collect, identify orchids and its frequency in a granitic mountain hill at road 35, Caroebe, Roraima.

2. MATERIAL AND METHODS

This research was carried out on February and June 2016 in a granitic mountain hill at road 35, Caroebe, Roraima State ($01^{\circ} 00' 2,4''N$, $59^{\circ} 45' 2,1''W$), shown in Figure 1. The height of the mountain is around 260 meters. It is surrounded by a humid tropical forest vegetation. In the top of the hill, predominant vegetation is a “campina” with shrubs, small trees and xerophytic plants common to these rocky plateau. The local climate is Am (Köppen) with medium annual rainfall of 1700 to 2000 mm year⁻¹ (BARBOSA, 1997). The access to the top of the hill was indicated by a local farmer through a trail used frequently by him.

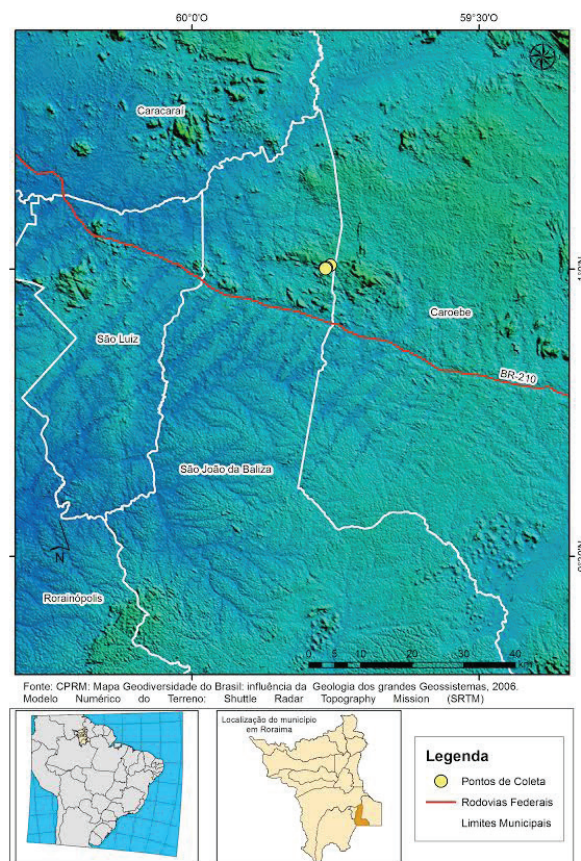


Figure 1. Location of the municipality of Caroebe, Roraima, Brazil.

In the sampled area, were chosen arbitrarily environment with defined ecological characteristics and occurrence of species of orchids.

Total area surveyed was of 5 hectares. The orchids collected in the trail were identified and labeled, and passport data as GPS localization and their growth habit (epiphytic, terrestrial or rupicolous) was recorded. For each individual specimen, it was collected material to botanical identification and its inclusion in the biological collection of Embrapa Roraima.

3. RESULTS AND DISCUSSION

In this survey it was observed the occurrence of orchids in three different points: the base of the mountain, with typical humid tropical dry land forest; the forest around the rocky top of the mountain, with the presence of thin trees about 15 meters high, medium light entrance below the vegetation; and the granitic plateau, more sun incidence and surrounded by small shrubs. It was found 28 different

species of orchids, related in the Table 1, according to its localization on the study area. These species are found on different environments of Roraima state (LUZ, 2001; PESSOA, 2015; LUZ and OLIVEIRA, 2012) and are part of Amazonian orchid flora (SILVA et al., 1995).

The majority of the specimens sampled in this survey were found on organic layers accumulated over the granitic rock (Figure 2). The identified species in this environment were: *Catasetum planiceps*, *Catasetum discolor*, *Cyrtopodium andersonii*, *Encyclia granitica*, *Epidendrum ibaguense*, *Epidendrum viviparum*, *Cleistes rosea* and *Nohawilliamsia pirarensis*. In these areas the continuous flow of rainfall water to the border of the forest, conduct and drives sediments from the surface of the rocks, maintaining an organic layer which provides humidity and nutrients for the plants. The shrubs and small trees associated to the rocky hill provides sufficient light to the growing orchids below. These species are also reported by Pessoa (2015) and Luz and Oliveira (2012), as occurring on others “campinas” and granitic hills existing in Roraima.

Table 1. List of orchidaceae species and predominant habit and locality at a residual plateau on Caroebe, Roraima, 2016

Species	Habit	Observation local
<i>Aspasia variegata</i> Lindl.	Epiphyte	Forest on base
<i>Brassavola martiana</i> Lindl.	Epiphyte	Forest on base
<i>Camaridium ochroleucum</i> Lindl.	Epiphyte	Forest on base
<i>Campylocentrum micranthum</i> (Lindl.) Rolfe	Epiphyte	Forest on base
<i>Catasetum</i> sp.	Epiphyte	Forest on base
<i>Catasetum discolor</i> (Lindl.) Lindl.	Rupicolous	Forest on top
<i>Catasetum planiceps</i> Lindl.	Rupicolous	Organic layer on the rock
<i>Cattleya violacea</i> (Kunth) Rolfe	Epiphyte	Forest on top
<i>Christensonella uncatata</i> (Lindl.) Szlachetko,	Epiphyte	Forest on base
<i>Cleistes rosea</i> Lindl.	Rupicolous	Organic layer on the rock
<i>Cohniella cebolleta</i> (Jacq.) Christenson	Epiphyte	Forest on base
<i>Cyrtopodium andersonii</i> (Lamb. ex Andrews) R.br.	Rupicolous	Organic layer on the rock
<i>Dimerandra emarginata</i> (G. Meyer) Hoehne	Epiphyte	Forest on top
<i>Encyclia granitica</i> Schltr.	Rupicolous	Organic layer on the rock
<i>Epidendrum</i> sp.	Epiphyte	Forest on base
<i>Epidendrum coronatum</i> Ruiz & Pavón	Epiphyte	Forest on base
<i>Epidendrum ibaguense</i> Kunth.	Rupicolous	Organic layer on the rock
<i>Epidendrum strobiliferum</i> Rchb.f.	Epiphyte	Forest on base
<i>Epidendrum viviparum</i> Lindl.	Rupicolous	Organic layer on the rock
<i>Heterotaxis superflua</i> (Rchb. f.) F. Barros	Epiphyte	Forest on base
<i>Liparis nervosa</i> (Thunberg) Lindl.	Terrestrial	Forest on base
<i>Nohawilliamsia pirarensis</i> (Richb.f.) M.W.Chase & Whitten ex. M.W.Chase & Whitten	Rupicolous	Organic layer on the rock
<i>Octomeria</i> sp.	Epiphyte	Forest on top
<i>Prosthechea vespa</i> (Vell.) W.E.Higgins.	Epiphyte	Forest on base
<i>Quekettia microscopica</i> Lind.	Epiphyte	Forest on base
<i>Scaphyglotis sickii</i> Pabst	Epiphyte	Forest on top
<i>Trigonidium acuminatum</i> Batem. ex Lindl.	Epiphyte	Forest on top
<i>Vanila</i> sp.	Epiphyte	Forest on top



Figure 2. Orchid *Liparis nervosa* on earth growth conditions

At the forest that surrounds the rocky hill it was observed, associated to small trees, the following epiphytes orchids: *Dimerandra emarginata*, *Octomeria* sp., *Scaphyglottis sickii*, *Trigonidium acuminatum* and *Cattleya violacea*. The frequency of these species was very low in the area studied. At the forest covering the base of the mountain it was found the larger number of

species (13), with predominance of epiphytes. Besides that, the frequency of these species was very low, except for, *Camaridium ochroleucum* and *Heterotaxis superflua* that were found in larger quantity associated to some sort of trees. The specie *Liparis nervosa* (Figure 3) was found only associated to the base of a unique tree, over the organic matter accumulated locally.



Figure 3. Orchids *Oncidium orthostate* in the natural environment

A copy of the 28 species sampled, was deposited in the germplasm bank of Embrapa Roraima orchids. The set of information about the indentivity of access, especially those related to their locations and rating botany, will be entered later in the Allele System.

4. CONCLUSIONS

The great variety of orchids found in the granitic hill studied shows the importance of these special environments with high biodiversity, demonstrating the need to look

sharper on ecological relation of orchids with other species, as pollinizers and phorophytes and the urging claim for conservation of these environments. Knowledge about the occurrence of species in natural conditions, it is essential for the establishment of conservation strategies of local biodiversity, especially for endemic or native species.

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