



# PHYTOSOCIOLOGY OF ORCHIDACEAE FAMILY IN FRAGMENT OF SWAMPY FOREST FROM MONJOLINHO COUNTRY SEAT, MUNICIPAL DISTRICT OF SANTA CRUZ DAS PALMEIRAS, SP, BRASIL.

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## INTRODUCTION

Swampy forests occupy deep fertile valley with soil permanently soaked and low diversity when compared to other forests. Part of floristic diversity in humid tropical forests come upon epiphytes species which amount to 10% of all vascular plants that influence positively the process and the maintenance of ecological systems. However, the abundance and the diversity are strongly influenced by changes in ecological conditions along of altitudinal, latitudinal and continental gradient (Gentry & Dodson, 1987). Orchids constitute environmental bioindicators, since they are sensitive to anthropic interference in primary forests in the face of the occupation of specialized niches. This fact is checked in many forests fragments in the state of São Paulo, which are preserved after anthropic intervention, where diversity of this family presents low index.

## OBJECTIVE

The objective of this study was to carry out the phytosociological study in swampy forest which integrates the forest fragment from Monjolinho country seat, situated in the municipal district of Santa Cruz das Palmeiras, SP, aiming to understand the forest isolation effect and the anthropic activities effects on the group.

## MATERIAL AND METHODS

The study was developed in 2006 and 2007 in a swampy forest component of one of the biggest permunicipal forests fragments of Santa Cruz das Palmeiras, SP, which belongs to Monjolinho country seat. The property presents 9,7 hectares corresponds to a swampy forest remainder. The regional climate corresponds to the kind Aw. For the phytosociology, 20 portions totalizing 4.000 m<sup>2</sup> were built. The orchid species found were

registered, the claimed material was herborized and incorporated into the Rio Clarence Herbarium Collection (HRCB) - UNESP. The species were classified in ecological categories according to their relation with the substrate and the phorophyte in: terrestrials, holoepiphytes and hemiepiphytes. Also, the position on the phorophyte was registered in the following categories: 1- half bottom of the stem, 2- half upper of the stem, 3- primary branches, 4- mediator branches, 5- external branches. From the counting on the present species, the phytosociological parameters were calculated: absolute and relative density and frequency (Matteucci & Colma, 1982), epiphytic index of importance value (IV<sub>Ie</sub>), epiphytic index of enlarged importance value (IV<sub>IAe</sub>) for epiphyte species and terrestrial, and absolute and relative sociologic position. The Shannon index of diversity (H') (Shannon & Weaver, 1949) and the Equitability (J) (Pielou, 1975) were calculated.

## RESULTS AND DISCUSSION

Floristic composition resulted in four species distributed in four genera of orchids. Species found were *Catasetum fimbriatum* (Morren) Lindl., *Ionopsis utricularioides* Lindl. *Oeceoclades maculata* Lindl. and *Rodriguesia decora* (Lem) Rehb.f. Only *O. maculata* presented terrestrial habit. Such species was the one which presented the highest absolute and relative densities and frequencies calculated in the studied area. The enormous dispersion of this species is consequence of an autogamy mechanism where the majority of the flowers originates fruits that influence directly in its index of importance value. Three species of holoepiphytes epiphyte orchids were registered. Species that presented the greatest number of individuals were, respectively, *C. fimbriatum* and *R. decora*. It was found that the fragment is surrounded by sugar-cane culture and grazing ground area without isolation, that surround the

fragment, causing edge effect. The development of the sugar-cane culture around the area was possibly the responsible factor for the low number of gauged species, mainly when compared to studies in similar areas which suffered anthropic interferences. Regarding upright position, the greatest amount of species is in the half bottom of the stems what is attributed to a greater quality and availability of substrate for fixation. Individuals of *C. fimbriatum* and *I. utricularioides* were found in primary horizontal branches and mediator branches, respectively, mainly due to the accumulation of organic matter, necessary for the development of epiphytes species. The most important species concerning IVI were: *O. maculata* (112,62%), *C. fimbriatum* (49,70%), *R. decora* (34,05%) . *I. utricularioides* had an IVI of 3,63%. *C. fimbriatum* was the most important epiphyte species in the community, this fact is demonstrated by its high index of enlarged importance value (IVIA) infered on the upright stratification, where the species was found, presented it self on the half bottom of the stem and in primary branches. Even with the heterogeneity and the irregularity characteristics of that stratum, the similar values assumed make evident that the refered species demonstrates high plasticity when it needs to adapt to varied climatic conditions. The Relative Sociologic Position' values (PSoR) for *C. fimbriatum* showed the assured position of the species in the forest structure and the previous anthropic perturbation occurred in the studied area. This can be confirmed by the lower values of PSoR found for *C. fimbriatum* in two stratum, what indicates the beginning of regeneration, because vegetal species tend to remain in an unique stratum in climax communities. Most part of the species was found in an unique upright position. This fact is due to the photon flow density and the humidity occurrent in the face of the variation among phorophyte heights and the forest stratification. *C. fimbriatum* presented 15 individuals in the fragment, *R. decora*, 12, *I. utricularioides*, only one individual, and the terrestrial species, *O. maculata*, presented 52 individuals. For *I. utricularioides* this result indicates a high susceptibility for local extinction on the fragment, in case of death or indiscriminate harvest of this individual. All species presented very low biodiversity index and did not presented uniformity in their distributions. Such statement can be proved by the fact that *C. fimbriatum* is the orchid that presents bigger biodiversity index ( $H' = 0,3139 \text{ bits.ind}^{-1}$ ) and Equitability ( $J = 0,0716$ ). The orchid with lower value for this parameters

was *I. utricularioides*, presenting  $H' = 0,0548 \text{ bits.ind}^{-1}$  and  $J = 0,0125$ .

## CONCLUSION

The orchids populations suffered decreased and possibly extinction of species in the face of the disturbings caused by human occupation and development of agropastoral areas, implying in the current lower diversity and equitability. High densities and frequencies indexes of some species, mainly *O. maculata*, make evident the process of recolonization related to adaptation mechanisms and to the current state of the conservation of the fragment, confirmed by the IVIAe and PSoR for the *Catasetum fimbriatum*.

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