

Orchidaceae of a forest fragment in the Escola do Meio Ambiente, Botucatu - SP

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Workshop Information

I Workshop of Plant Biology (I Workshop de Biologia Vegetal) was held in the Bioscience Institute – UNESP, campus of Rio Claro, Brazil, during August 20 and 21, 2012. Workshop was a scientific event organized by Post-graduate students from that Institute aiming to integrate Post-graduate and Graduate students from different areas related to Plant Biology (Anatomy, Ecology, Evolution, Morphology, Physiology, and transitional areas) from different Universities. Workshop Organization offered a large number of speaking activities, scientific discussions, and extra short-courses to improve the knowledge and formation of students in Plant Biology.

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Received on August 14, 2012. Accepted on August 21, 2012. Online published on November 13, 2012.

INTRODUCTION

Orchidaceae is probably the largest family of flowering plants (Dressler 1993), occurring in all vegetation formations in Brazil (Hoene 1949). It is in the tropical regions occurring with more intensity and variability of species terrestrials and epiphytes, especially in the American tropics and southeastern Asiatic, with concentration in the regions more humid and mountainous (Pabst and Dungs 1975). It is constituted by about 24,500 species distributed in over 800 genera (Dressler 1993, 2005). In Brazil, experts believe the number can approach more than 2,400 species (Barros 1996).

The semi-deciduous forest was, probable, the ecosystem most devastated in Brazil (Rocha 2003). Very few scientists have been made about the knowledge of the floristic diversity and/or conservations of these areas. Furthermore, about the Orchidaceae family, only few floristic surveys are realized including these vegetation type in the state (Pansarin and Pansarin 2008).

The present study has the major objective of to invent the Orchidaceae family that occurs in the Escola

do Meio Ambiente, Botucatu city, São Paulo State, Brazil. Beyond accompany the floral phenology, to check the habitat and the occurrence of each species in natural ambient, to increase the number of collections in herbarium and to expand the knowledge on the distribution of orchid species.

MATERIAL AND METHODS

The area of study was located in Botucatu municipal district, at the Escola do Meio Ambiente (EMA) (22°55'23" S and 48°27'28" W), a governmental organization created in 2005 by the municipal administration of Botucatu. It is situated at 850 m of altitudes and occupies an area of approximately 12 hectares, with remnants of cerrado, semi-deciduous forest, flooded forest, forest planted eucalyptus and one of some nascent of Ribeirão Lavapés.

The Botucatu municipal district of the State of São Paulo is located in the center-south region, at 232 km of the capital of the State. It is delimited by the geographic coordinates: latitude 22°35'22" to 23°04'30" S and longitudes 48°14'39" to 48°50'03" W, occupying an area of 1,522 km². The climate

classification is Cfa, according to Köeppen. The mean annual rainfall is over 1,447 mm, occurring a mean rainfall in the rainiest months of 223.4 mm, and in the driest months of 37.8 mm (Campos et al. 2004). Annual mean temperature is 20.2 °C, in the hottest months is 23.2 °C, and in the coldest months is 16.9 °C (Martins 1989).

The survey of Orchidaceae was realized by exploratory walks for all area studied, without demarcation of parcels. The area was walked from May 2011 up to June 2012 for collecting botanical material in flowering stage, and then obtained data of flowering period, habitat, and life forms of species. The species was considerate being rare when it was found just one or a few isolated individuals.

RESULTS AND DISCUSSION

Orchidaceae was composed by 36 species (Table 1) distributed among 29 genera from two sub-families: Epidendroideae (27 species, 75%) and Orchidoideae (9 species, 25%). The genera most representatives were: *Epidendrum* and *Gomesa* (3 species, each), *Acianthera*, *Anathallis* and *Cyclopogon* (2 species, each), all other genera were represented by only one species, but not all species (3 species) could be identified, because they did not flower during the study. Among the species occurring in the Escola do Meio Ambiente, the great majority were found as epiphyte species (26 species – 72%) and terrestrial (10 species – 28%).

Table 1. Orchidaceae species occurring in the Escola do Meio Ambiente, Botucatu, SP. Habit: E=epiphyte, T=terrestrial. Habitat: MP=flooded forest, SF=semi-deciduous forest. Flowering period: JAN=January, FEB=February, MAR=March, APR=April, MAY=May, JUN=June, JUL=July, AUG=August, SEP=September, OCT=October, NOV=November, DEC=December. * Rare species in the region of study. Botucatu, Brasil, 2010-2011.

Species	Habit	Habitat	Flowering
<i>Acianthera leptotifolia</i> (Barb.Rodr.) Pridgeon & M.W.Chase	E	MP	JUN-JUL
<i>Acianthera macuconensis</i> (Barb.Rodr.) F.Barros	E	MP	DEC-MAR
<i>Anathallis guimaraensii</i> (Brade) Luer & Toscano	E	MP	NOV-JUL
<i>Anathallis obovata</i> (Lindl.) Pridgeon & M.W.Chase*	E	MP	MAY-JUN
<i>Baskervilla paranaensis</i> (Kraenzl.) Schltr.	T	MP	APR-JUN
<i>Bulbophyllum regnellii</i> Rchb.f.	E	MP	FEB-MAR
<i>Campylocentrum aromaticum</i> Barb.Rodr.	E	SF	JAN-MAR
<i>Capanemia micromera</i> Barb.Rodr.*	E	MP	MAR-MAY
<i>Catasetum</i> sp.*	E	SF	
<i>Cattleya loddigesii</i> Lindl.	E	SF/MP	JUL-AUG
<i>Cyclopogon congestus</i> (Vell.) Hoehne *	T	SF	AUG-SEP
<i>Cyclopogon variegatus</i> Barb.Rodr.	T	SF/MP	JUL-SEP
<i>Cyrtopodiun</i> sp.*	E	SF	
<i>Dryadella aviceps</i> (Rchb.f.) Luer	E	MP	NOV-MAR
<i>Epidendrum henschenii</i> Barb.Rodr.	E	MP	MAR-APR
<i>Epidendrum latilabre</i> Lindl.	E	MP	JAN-FEB
<i>Epidendrum rigidum</i> Jacq.	E	MP	DEC-MAR
<i>Gomesa lietzei</i> (Regel) M.W.Chase & N.H.Williams	E	SF	SEP-OCT
<i>Gomesa sarcodes</i> (Lindl.) M.W.Chase & N.H.Williams	E	SF	OCT-NOV
<i>Gomesa</i> sp.*	E	SF	
<i>Habenaria josephensis</i> Barb.Rodr	T	SF	FEB-APR
<i>Heterotaxis valenzuelana</i> (A.Rich.) Ojeda & Carnevali	E	MP	MAY-JUN
<i>Isochilus linearis</i> (Jacq.) R.Br.	E	SF/MP	DEC-MAY
<i>Leptotes unicolor</i> Barb.Rodr.	E	MP	MAY-JUN
<i>Mesadenella cuspidata</i> (Lindl.) Garay	T	SF	JAN-MAY
<i>Microchilus arietinus</i> (Rchb.f. & Warm.) Ormerod	T	MP	OCT-NOV
<i>Myoxanthus lonchophyllus</i> (Barb.Rodr.) Luer	E	MP	MAR-JUL
<i>Notylia lyrata</i> S.Moore	E	SF/MP	DEC-JAN
<i>Oeceoclades maculata</i> (Lindl.) Lindl.	T	SF	JAN-APR
<i>Pabstiella tripterantha</i> (Rchb.f.) F.Barros	E	MP	SEP-APR
<i>Polystachya estrellensis</i> Rchb.f.	E	SF/MP	JAN-FEB
<i>Pleurothallis pristeoglossa</i> Rchb.f. & Warm.	E	MP	AUG-SEP
<i>Prescottia stachyodes</i> (Sw.) Lindl.	T	SF	JUN-AUG
<i>Sarcoglottis fasciculata</i> (Vell.) Schltr.	T	SF	AUG-SEP
<i>Sauroglossum nitidum</i> (Vell.) Schltr.	T	MP	JUL-OCT
<i>Trichocentrum pumilum</i> (Lindl.) M.W.Chase & N.H.Williams	E	SF/MP	NOV-JAN

The major species bloom between December and June, between January to March, corresponding to the summer in the South Eastern of Brazil. From July up to November, a small number of species had bloom (Table 1).

The ambient with most diversity in the Escola do Meio Ambiente was the flooded forest (24 species, 67%), followed by the semi-deciduous forest (18 species, 50%). Some species can be found in the two habitats, as: *Cattleya loddigesii* Lindl., *Cyclopogon variegatus* Barb.Rodr., *Isochilus linearis* (Jacq.) R.Br., *Notylia lyrata* S.Moore, *Polystachya estrellensis* Rchb.f. and *Trichocentrum pumilum* (Lindl.) M.W.Chase & N.H.Williams. In addition, among the species found, six were considerate as rare species (17%).

Representative genera in the Escola do Meio Ambiente, such as *Epidendrum* and *Acianthera*, were also the most common in the Atlantic Rainy Forest of coastal in the South Eastern of Brazil (Miller et al. 1996, Romanini 2006). Although the area is considered an ecotone between two Brazilian biomes "hotspots" the Atlantic Forest and Cerrado (Myers et al. 2000), terrestrial genera, such as the *Habenaria*, that is representative in Cerrado (Batista and Bianchetti 2003), showed unrepresentative in this area studied, and the predominance of epiphytes, can be explained by the forest formation predominance in this area (Ferreira et al. 2010).

Between the species found in the Escola do Meio Ambiente, around 50% could be found in the semi-deciduous forest in Serra do Japi (Jundiá – SP) (Pansarin and Pansarin 2008), 31% in the Atlantic Rain Forest in Ilha do Cardoso (Cananéia – SP) (Romanini 2006), 25% in the Atlantic Rain Forest in Macaé de Cima (Nova Friburgo – RJ) (Miller et al. 1996), and 20% in the semi-deciduous forest in Mata do Baú (Barroso – MG) (Menini Neto et al. 2004).

Although the low richness, the semi-deciduous forest presented species occurring mainly in this ambient. The flooded forest sustains the argument about the tendency of orchids to wet ambient (Pabst and Dungs 1975).

CONCLUSION

The fragment of forest studied, although be a small area, present a high diversity of Orchidaceae plants, emphasizing the importance of surveying and conserving these fragments in São Paulo State, so that the richness of the semi-deciduous forests may be known and preserved.

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