

## Conservation status of the genus *Encyclia* (Orchidaceae) in Guamuhaya and its conservation in the Cienfuegos Botanic Garden - Macradenia Garden

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The conservation of orchids in the Guamuhaya Massif constitutes one of the lines of work that the Cienfuegos Botanic Garden - Macradenia Garden (JBC-JM) has been developing for decades. Based on research that has been carried out, there are more than 90 species living together in the area [1]. The most species-rich genera are *Epidendrum* L. with 9, *Encyclia* Hook. with 7 (Fig. 1), and *Pleurothallis* R. Br. with 4, with the genus *Encyclia* being one of those most affected by overcollecting. This work presents the conservation status of the seven species of *Encyclia* in Guamuhaya and experiences with their cultivation in the JBC-JM.

Of the *Encyclia* species present in Guamuhaya (Table 1), only *E. nematocaulon* is categorized as threatened [2]. In the present study, Red List categories are proposed at a provincial scale (Cienfuegos) for the remaining six (Table 1). The majority of the species of this genus in the region are threatened because of a limited distribution, restricted to very few types of habitats, which are being altered in an accelerated manner by forestry activity. These plants also do not form large populations and it can be seen that they are constantly affected by overcollecting.

It is important to point out the new report for the Guamuhaya Massif of *E. plicata* and of two endemic species - *E. moebusii* and *E. oxypetala* - until now considered exclusive to eastern Cuba (Nipe-Sagua-Baracoa Massif) [3] and now extended to central Cuba. Their discovery in the Guamuhaya mountains notably increases the range but does not imply an improvement in their conservation status, as the populations found are severely threatened.

Currently, the JBC-JM contains in its collection 100% of the species of *Encyclia* registered for Guamuhaya. This was established through the non-deleterious collection of plants in the different populations and their vegetative propagation. Five of the species develop satisfactorily in cultivation; this is not the case for *E. nematocaulon* and *E. moebusii*, which, because of their substrate requirements, require extreme cultural attention. Currently, work is being carried out on the elaboration of a protocol for the in vitro germination of these two species, the goal of which is to achieve

Table 1. Species of the genus *Encyclia* recorded to the Guamuhaya massif: endemism, provincial redlist category and cultivation at the JBC-Jardín Macradenia.

Species (* endemic)	Proposed CATEGORIES AND CRITERIA FROM THE RED LIST [4] at a provincial scale	Number of individuals in the collection at JBC-JM	Number of populations known in Guamuhaya / Number of populations represented at JBC-JM
<i>E. fucata</i> (Lindl.) Britton & Millisp.	VULNERABLE A1acd;B1ab(i,ii,iii,v)+2 ab(i,ii,iii,v);C1;D1+2	21	4/4
<i>E. grávida</i> (Lindl.) Schltr.	LEAST CONCERN	12	9/9
<i>E. moebusii</i> H. Dietr.*	CRITICALLY ENDANGERED A3cd;C1;D	3	1/1
<i>E. nematocaulon</i> (A. Rich.) Acuña	CRITICALLY ENDANGERED A3cd;C1;D	2	2/1
<i>E. oxypetala</i> (Lindl.) Schltr.*	VULNERABLE A1acd;B1ab(i,ii,iii)+2 ab(i,ii,iii);C1;D1+2	5	3/3
<i>E. phoenicea</i> (Lindl.) Neum.*	VULNERABLE A1acd;B1ab(i,ii,iii)+2 ab(i,ii,iii);C1;D1+2	22	6/6
<i>E. plicata</i> (Lindl.) Britton & Millisp.	CRITICALLY ENDANGERED A3acd;C1;D	18	8/7



Fig.1. *Encyclia plicata*. Photo: O. Alomá

sustainable cultivation which would guarantee future programs to reintroduce individuals to their natural populations.

### References and notes

- Alomá, O. 2008. Orchid flora of the Guamuhaya Massif, Cienfuegos. *Anuario 2007 "Universidad Carlos Rafael Rodríguez"*, Cienfuegos.
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- IUCN. 2001. *Categorías y Criterios de la Lista Roja de la UICN: Versión 3.1*. Comisión de Supervivencia de Especies de la UICN. IUCN, Gland, Switzerland and Cambridge, United Kingdom.

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## Biodiversity Conservation Prize at the 2011 Student Science Day

B. Falcón (National Botanic Garden) & G. León (Biology Faculty, UH)

During the 2011 Student Science Day of the Biology Faculty of the University of Havana celebrated this past 20 May, and providing continuity to an action begun in 2010 by the Cuban chapters of the Conservation Biology and the Mesoamerican Biology and Conservation Societies, the **Biodiversity Conservation Prize** was awarded to the best works presented by students, related to conservation of the Cuban biota.

This action was designed to foment student interest in focusing their research on Biodiversity Conservation. This year two prizes were awarded: to "Festival of Endemic Caribbean Birds: Ten years educating to protect the avifauna," exhibited by students of the second, third, and fourth year of the Biology major, and, to the group of works which presented the results and future strategies to the "Citizen Science Projects" for the conservation of birds in the city, defended by second to fourth year Biology major students.

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## Events

⇒ XV Congress of the Mesoamerican Society for Biology and Conservation. Mérida, Yucatán, México. 24-28/october/2011. Information: <http://www.sociedadmesoamericana.org>

⇒ XXV International Congress for Conservation Biology, Christchurch, New Zealand. 28/november-2/december/2011. Information: <http://www.conbio.org/Activities/Meetings/2011>

⇒ II International Symposium on Ecology and Conservation "S.O.S. Nature" (Baconao Biosphere Reserve, Santiago de Cuba. 9-12/april/2012. Information: [gerardo@ffauna.co.cu](mailto:gerardo@ffauna.co.cu)

## Courses

⇒ Conference "Environmentally friendly landscaping." Dr. G. Knox. Colegio Universitario San Gerónimo de La Habana. 24/june/2011. Information: [socubot@gmail.com](mailto:socubot@gmail.com)

⇒ Course "Tropical Ecology and Conservation OTS-2." Costa Rica. 12/january-21/february/2012 (application deadline: 10/june/2011). Information: <http://www.ots.ac.cr>

⇒ Course "Tropical Biology OTS-1." Costa Rica. 22/january-12/march/2012 (application deadline: 7/october/2011). Information: <http://www.ots.ac.cr>

## On-line

## World Environment Day Activities

The United Nations Environment Programme (UNEP) made available a guide for the organization of activities for World Environment Day, also useful for the celebrations for the International Year of Forests.

<http://www.unep.org/wed/WEDpack>

## Environmental Education Program for visits to the National Botanic Garden

S. Benítez Betancourt, L. Pérez Moraga, & S. González Pendás  
(National Botanic Garden)

Botanical Gardens, collections of living plants with purposes defined in terms of scientific activity, conservation, exhibition, and education, are an ideal space for environmental education and teaching sciences related to botany. However, education in these institutions must not consist only of informing but also to promote changes in the attitude and behavior of visitors. This work was based on the search for strategies for reaffirming knowledge acquired in the different subjects of elementary education.

As a result, a guided walk is proposed through the National Botanic Garden (JBN), pointing out the potentialities of this center for the reaffirmation of knowledge from the topics "The world in which we live" and "Natural Sciences", and propitiating student protagonism through joint activities between schools and the Garden. These actions contribute to the development of skills in research, observation, use, and preservation of natural resources, promoting the formation of values.

A group of possible activities was evaluated for development at JBN, where students participate as protagonists in cognitive and affective processes through recreational activities, observation, and recognition, bringing into play all the senses.

The area selected for carrying out the activities is the Exhibition Pavilions and their environs. In this place is displayed a representation of plants with different ecological requirements, which allows students to relate them to the environment in which they live.

A group of activities was organized to develop during an excursion through the selected area,

taking into account the grade and subject being studied by the students. For better development of the activities to be carried out, the guide orients the students and establishes work teams according to the number of students, and once the excursion is finished the guide facilitates the presentation of results between the teams. Finally, a debate is established for selecting those groups which achieved the best results.

The utilization of these visits provides the best comprehension and deepening of knowledge gained in the classroom through assignments, with which we contribute to the development of habits and skills in the research and observation of living specimens, promoting a proper relationship and harmony with the environment.

The Environmental Education program for visits to JBN by elementary school students has been applied already in three municipalities of the Cuban capital with good results. Their extension to other municipalities is recommended.

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Elementary school students during their visit to the National Botanic Garden. Photo: JBN.

## National Workshop on invasive plants in Cuba

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From 1-3 June, 2011, some 40 specialists from all over the country will meet at the National Botanic Garden (JBN) during the "II National Workshop on invasive plants in Cuba". During this encounter, the results will be discussed and validated from the Project "Invasive plants present in the Republic of Cuba - strategy for the prevention and management of species with the highest level of aggression", which has been led since 2007 by the National Herbarium "Onaney Muñiz" (Institute of Ecology and Systematics - IES). The Workshop will serve to validate the National List of invasive and potentially invasive plants in Cuba. General concepts will also be presented for recognizing and managing invasive plants in Cuba, as well as the ethical principles for treating them.

During the Workshop a series of informative brochures about the principal invasive plants of our country will be presented, and a Strategy proposal will be analyzed for the best understanding and management of invasive plant species in the Cuban Archipelago, in the period 2011-2015, which will serve for the implementation of the National Strategy for the Conservation of Plant Species 2011-2020.

Currently, the complexity of the invasive species problem combined with the conservation of native diversity, reaches special notoriety and importance, which is not surprising as this workshop is supported by IES, the Cuban Botany Society, the Cuban Plant Specialists Group of the IUCN, the National Center for Protected Areas, the National Company for the Protection of Flora and Fauna, the National Network of Botanic Gardens, and the JBN itself.

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