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BOTANICAL GARDENS, HOPES AND FACTS FOR AN ECOLOGICAL EDUCATION

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Abstract: The drastic decrease of a great number of plants and animals during the last decades has alarmed the specialists in the biodiversity conservation throughout the world; thus more steps have been taken in order to reduce this phenomenon. New national and international organizations were created, in which medium and long-term strategies were stated, including precise tasks for all the factors involved in the maintenance of the biodiversity. The Association of the Romania’s Botanic Gardens”, created by the initiative of the Management of the “Dimitrie Brandza” Botanic Gardens of Bucharest is certainly the most efficient one. Treating indifferently the continuous degradation of the environment due to the activities with negative impact on it represents an action of maximum gravity for the next generations.

An important role in the ecologic education belongs to the Botanic gardens. Having an impressionable great number of cultivated plants, lots of educational activities, the botanic gardens offer the visitors the possibility to see the plants, their environmental conditions, what endangers them, and the importance they have for our everyday life. I am presented a series of concrete shares, unfurled to Grădina Botanică from Jibou, in the direction instructions and young educations.

Botanical Gardens in the process of plant preservation

Botanical gardens play an important part in the realization of ecological education.

Although at the beginning of their existence botanical gardens were meant to serve studies and researches for a restricted number of specialists: scientists, medicine scholars and biologists, as time passed by, the purpose of botanical gardens became more meaningful.

In the last decades, botanical gardens everywhere understood that besides the classical functions (education-research) they would have to assume new responsibilities, to get more and more involved in preservation of plants on a local, national and then global scale.

“A series of measures have been taken since the last decades of the past century: “The conferences for preservation” held at the Royal Botanical Garden in Kew – England 1972, 1975, etc. One of the most important international meetings based on this subject was “The Conference of the United Nations for the Environment and Development” held at Rio de Janeiro in June 1992. On this occasion “The Convention Regarding Biological Diversity” has been signed, then adopted by the participant countries (including Romania, law 58/1994). According to these documents and to “The Global Strategy of Biodiversity” a series of tasks are assigned to the botanical gardens for preservation of rare and threaten with extermination plants. In this purpose, The International Counsel of Botanical Gardens, together with the national and regional organizations of botanical gardens worldwide, have established a series of organizational and financial measures that would lead to the increase of the efficiency of nature preservation activities.” (Cristurean, 2001).

Amongst the active national organizations is “*The Association of Botanical Gardens from Romania*” (AGBR) created at the initiative of the leadership of the “Dimitrie Brandza” Botanical Garden of Bucharest.

Therefore, botanical gardens carry the most important tasks for plant preservation both *in situ* as well as *ex situ*.

Hopes and facts for ecological education

The botanical garden in Jibou has been organized to serve as didactic basis for biological research.

Ever since its foundation (1968) it has served protecting the indigenous and exotic species of centuries old trees, rare or endangered species. In collaboration with the Agency of Environment and other responsibility factors, the Board of the botanical garden is preoccupied in maintaining protected areas throughout Sălaj County and creating the conditions for including these areas in the tourism programs i.e. the “Grădina Zmeilor” protected area from Gâlgău Almaşului.

On a surface of 500 square meters of land, bought in the 2001-2005 period from other financial sources than the budget, works were began to organize a collection of dendrotaxons for which conditions close to the habitats they come from are being created, as possible. The land at matter is partly occupied by centuries old trees- indigenous and exotic species of deciduous and coniferous trees. The new plantations are going to continue using species of important scientific and economical value (Fig. 1-4).

The land is circled and well-protected, so wild animals specific to our forests have begun to populate it (Fig. 5). The Botanical Garden in Jibou, as well as other botanical gardens, is divided into sectors, each sector grouping plants from a specific point of view.

Within the clear sectors of the garden, the variety of the collections containing almost 2500 taxons is permanently observed under numerous aspects, such as: ornamental, fitogeographic, taxonomical, ecological and genetically, economical etc.

A special place is reserved to the Reliquary, in order to gradually introduce species of plants that survived the disappearance of an entire flora during geologic times (Fig. 6 and 7).

Marking the more representative examples with boards, on which the scientific and popular names are written, awakes the visitor's interest and curiosity, aiding them in knowing about them, in an easier distinction from one species to another, to untangle their importance related to humans' life and health and also helping to understand how and why these species need to be protected.

In successfully accomplishing the educational act, an important part comes to the biology teachers and the guide that usually lead the groups of visitors.

As a distinctive mark we would also want to underline that the Botanical Garden in Jibou has an outcrop of Paleocene age, a rarity in the national geologic patrimony (Fig. 8). In Romania, the Paleocene formations in lacustrine facies are a true rarity, blooming on narrow surfaces in the N-W of the Transylvanian Basin... The fauna and floristic associations described in these stores offer the idea of succession an exceptional meaning. Thru their contents, the sites at Jibou are unique in Oriental Europe”. (V. Codrea et al., 2003).

The exhibition of greenhouses, on a surface of 2000 square meters, harbors over 2850 species of tropical and subtropical plants, realized on a specific plantation in ten compartments of the exhibition complex.

As in the clear sectors, greenhouse plants are marked with boards on which the scientific name, systematic unit that they belong to, provenience and place of origin are written, as well as short introduction notes for rare species like: *Welwitschia mirabilis*, *Alsophila australis*, *Zamia Ceratozamia*, etc. (Fig. 9).

Joining the greenhouse complex is the breeding greenhouse and the seed laboratory. In this lab seeds are being prepared and the “Index seminum” catalog is being elaborated, catalog that maintains an active exchange between the unit and another four hundred botanical gardens and other similar institutions in the entire world.

The attention is focused on the herbarium and the botanic museum, which are a little sluggish because of the lack of personnel.

To better inform the visitors, we have posted the rules, as well as the visiting program.



Fig. 1: *Platanus x acerifolia*



Fig. 2: *Quercus robur*



Fig. 3: *Tilia platyphyllos*



Fig. 4: *Pinus sylvestris*



Fig. 5: *Capreolus capreolus* and centuries old trees reserve



Fig. 6: *Cycas revoluta*



Fig. 7: *Ginkgo biloba*



Fig. 8: Outcrop of Paleocene age

On demand, visitors are offered (at a symbolic price) views, cards, fliers that briefly present all the sectors and the most representative species of plants.

From the sale exhibition, open permanently at the gateway cabin, visitors can purchase anything they want from the large variety of exposed plants and, on demand, they also receive tips regarding the caring and growing techniques of the purchased plants. Recommendations for other horticulture publications are also made.



Fig. 9: *Welwitschia mirabilis*

Group visits are guided, so the visitors receive information about plants, about the things we should be doing every day in order to prevent degradation of natural environments, about the part plants play in the life of mankind (Fig. 10).



Fig. 10: Group of students – Iasi University – Theme visit



Fig. 11: Group of students – The Horticulture Faculty- Cluj Napoca – Study visit

On the basis of convenient agreements or collaboration protocols, every year the Botanical Garden hosts theme visits and stages for major practice with students from Biology, geologists and geographers, students from Horticulture, Zootechnical and Veterinary Medicine Faculties, the Universities from Transylvania (Fig. 11).

On the basis of some partnership contracts, the Botanical Garden also hosts groups from every level of education: kindergarten, primary and gymnasium schools, especially the classes specialized in environment, biology, forestry, etc.

The means used by botanical gardens for accomplishing the ecological education are many and various. Each botanical garden is unique in its own way. Each botanical garden has its particularities, leading to a large number of activities that differ from one unit to another, depending on the material basis, the qualified personnel it has, etc.

The success of ecological education depends, finally, on the measure unit used to assemble all the responsibility factors: civil society at all levels, specialists from different topics in biology and other fields, that, thru a common effort can provide a considerable aid to the preservation of biodiversity, as it has been desired by important names in Romanian botanic.

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GRĂDINILE BOTANICE, NĂZUINȚE ȘI FAPTE PENTRU EDUCAȚIA ECOLOGICĂ

(Rezumat)

Scăderea drastică în ultimele decenii a unui mare număr de plante și animale a alarmat specialiștii în conservarea biodiversității din întreaga lume, determinând luarea unor măsuri care să ducă la reducerea acestui fenomen. Au fost create astfel, o serie de organizații naționale și internaționale, în cadrul cărora s-au stabilit strategii pe termen mediu și lung cu sarcini precise pentru toți factorii care pot interveni în conservarea biodiversității. Între organizațiile naționale active se înscrie și Asociația Grădinilor Botanice din România, creată la inițiativa conducerii Grădinii botanice "Dimitrie Brandza" din București. A trata cu indiferență degradarea continuă a mediului datorită activităților cu impact negativ asupra acestuia, constituie un act de maximă gravitate pentru generațiile viitoare.

Este acum necesară sporirea eforturilor pentru conservarea biodiversității și reconstrucția ecologică în întreaga lume, care să asigure o dezvoltare durabilă a vieții pe planeta noastră.

Conservarea biodiversității – respectiv a diversității plantelor sunt deziderate majore ale umanității care nu pot fi atinse fără educație. În acest scop un rol deosebit de important în educația ecologică îl au grădinile botanice. Prin numărul impresionant de plante pe care le cultivă, prin activitățile educative pe care le desfășoară, grădinile botanice oferă publicului vizitator posibilitatea de a cunoaște plantele, condițiile de mediu în care trăiesc, ceea ce le amenință și importanța pe care o au pentru viața noastră de zi cu zi.

Lucrarea prezintă și câteva aspecte concrete legate de activitatea instructiv-educativă desfășurată în Grădina Botanică din Jibou, mai ales în ultimul deceniu.