

Environmental education at the Center for Plant Conservation - Bogor Botanical Garden with case studies from Indonesia

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1. Introduction

One of the core competence of the Center for Plant Conservation-Bogor Botanical Gardens (CPC-BBG) of Indonesia, as an *ex situ* Institution is conducting environmental education (Strategic Plan 2005-2009 2006). The goal of the education at CPC-BBG is to enhance the environmental education activities.

Environmental education is an effort to change behaviour and attitude of the society that aims at increasing the knowledge, skill and awareness of the environment value and the environment problem issues. Environmental education is now incorporated in all major international strategies for biodiversity conservation and sustainable development (World Conservation Strategy 1980; The Botanic Gardens Conservation Strategy 1989; Convention on Biological Diversity 1992; International Agenda for Botanic Gardens in Conservation 2000; Global Strategy for Plant Conservation 2002).

Botanic Gardens are part of a growing worldwide movement working to make environmental education accessible to everyone. This education at Botanical Gardens is very strategic since the great number of visitors. The visitors of CPC-BBG could reach 1.2 million per year and 20-30 % of them are students.

2. Resources and facilities

At the end of 2005, more than 13,684 plants and 9,000 orchids, which consist of 3,864 species, have been planted in 87 ha of the bogor botanical garden. At least 5000 plants species have been collected by 4 botanical gardens in Indonesia, which located in Bogor, Cibodas, Purwodadi and Bali. The plant collections at the garden become valuable resources for conducting environmental education. The facilitators of this education at CPC-BBG consist of education staff, volunteer, guides and education practitioners. The facilities for conducting environmental education at CPC-BBG are for example the meeting and audiovisual rooms, nursery, herbarium, seed bank, laboratories and library.

3. Environmental education programs and activities

The example programs and activities of the environmental education at CPC-BBG including Cibodas, Purwodadi and Bali Botanical Gardens are as follows:

A. Tour of flora

The target groups of this program are school students from kindergarten to high school. The aims of the program are to increase the knowledge of environmental, flora and fauna as well as to increase the participation in solving the environment problems critically and constructively. Therefore, after joining the program, the students could hopefully develop their knowledge and understanding the nature phenomenon and the impact of people behavior to the changes of nature. Beside that, the students will love flora, fauna and nature. Furthermore, they will know the diversity and advantages of plants.

B. Communication and public awareness

There many communication and public awareness programs related with environmental at the botanical garden. Among the program is the production of the environmental video film and songs. Beside that, the education boards have been installed at the gardens, which explain the plant's collection, its distribution, its use and many other interesting stories of the plants. The garden has published website, books, leaflets, brochures, banners and stamps related with the plants. Marketing, fund rising and publicity of environmental education have also be done by the gardens. There are also many souvenirs related with plants available for the garden visitors, such as T shirt, post card, bags, calendar, mug, games equipment and many other souvenirs made from plants material. The competitions for students have also been conducted, such as make articles, poem, letter and drawing about plants and environment. Moreover, the gardens have chosen the environmental ambassador, who has actively worked for the environment.

C. Outreach program

The target group of this program are students of primary schools located at remote areas. The activities include introduce the medicinal plants and inform how to use the plants, plants propagation, nature games, build the medicinal garden at school and plant the trees and palms around the school. Those trees include *Altingia exelsa*, *Callistemon rigidus*, *Manglietia glauca* and the palm of *Pinanga javana*. The medicinal plants used at this program are *Orthosiphon aristatus*, *Hemerocallis minor*, *Dicksonia blumei*, *Berberis fortunei*, *Phaleria macrocarpa*, *Clerodendrum serratum* and *Grathopyllum pictum*. The education staffs of the botanical gardens work and monitor the schools' garden several times. To increase the awareness of teachers and students to this program, the botanical gardens conduct the competition of these schools' garden. The criterias for the winner of the competition are the clean, creativity, facility and architecture of the garden as well as the plants condition and the cooperation of the working group.

D. Human resource capacity building

Some activities such as teachers training course on environmental education as well as lectures, trainings and workshops for botanical garden staff have been conducted. The teachers training course involves the teachers from schools surrounding the gardens. The trainers and the facilitators are staff of Ministry of Education, NGO's, environmental education experts and Botanical Gardens staff. On the other hand, the lectures, trainings and workshops for botanical garden staff regarding plants conservation, plants taxonomy, plant propagation, ecosystem and many other aspects are also very important to build capacity of the staff.

F. Network

CPC-BBG has been worked together with many other institutions in conducting environmental education, such as Botanical Gardens Conservation International (BGCI), International Association Botanic Gardens, HSBC, Investing in Nature, PT Bayer Indonesia, NGO's and the participants of environmental education programs.

4. Future education challenges for botanical gardens

Many environmental education program and activities have been conducted by CPC-BBG. However, there are still many challenges to develop the environmental education program for the future. Since the schools in Indonesia have the authority to develop curriculum based on the standard of the government, it is such a good opportunity for botanical garden to produce material of environmental education curriculum for schools, i.e. environmental books with the topics of plants diversity, *ex situ* plants conservation, sustainable use of plant's products, plants and the ecosystem and many other important topics. The material should be continuity and gradually from primary school, junior high school, senior high school and universities. If possible, publications of botanical gardens should be printed for teachers, schools and universities for free and the distribution mechanism should be fast and precise.

All program and activities, including tour of flora, communication and public awareness, outreach program, human resource capacity building and network should be done continuously, not a temporary and sporadic program. Periodical meeting for environmental education network and stakeholders is very important to be conducted. To increase the public awareness to the environment, the programs could involve celebrities and use an interesting plant's icon.

5. References

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Biography

Reni Lestari is a research staff of the Center for Plant Conservation-Bogor Botanical Garden, Indonesia. She holds a Ph.D. degree in Horticultural Science from Humboldt University of Berlin in 2005.