

The Sharing of Science at the National Natural History Museum, Paris

Maité Delmas

Departement des Jardins Botaniques et Zoologiques

Museum National d'Histoire Naturelle, Paris

Introduction

The Convention on Biological Diversity and Agenda 21 following the Rio Conference in 1992 have put education and public awareness programmes promoting sustainable development in the fore front of the national missions. Today, the French Ministry of Education places environmental education as a major component for the initial training of pupils, from their younger age to allow them to acquire the necessary knowledge and methods to find their place in the environment in order to acquire a responsible behaviour towards sustainable development.

Education, one of the five institutional missions

The National Natural History Museum (the Museum), administered by the Ministry of Education, the Ministry of Higher Education and Research and the Ministry of Ecology and Sustainable Development, is dedicated to all fields of Natural History. Both a scientific institution and a public service, the Museum has five statutory missions which govern and underpin all of its activities: fundamental and applied research, conservation and enrichment of the collections, education and training, dissemination of knowledge and assessments based on its scientific expertise. The first objective stated in the founding decree of 1793 and repeated in the succeeding statutes has been to transmit knowledge at all levels and to all audiences. Over 200 teachers-researchers, lecturers and professors are responsible for this objective, carrying out research and contributing directly to the development of the knowledge taught.

A large palette of disciplines for very different audiences

For the last 350 years, the Museum has been making inventories and classifying past and present natural diversity in order to understand the dynamism of living organisms. Due to the large range of disciplines covered and thanks to the diversity of approaches on the natural and human sciences, the Museum addresses a wide variety of audiences. It has become a reference in its pedagogical approaches.

Today, the **Direction of Research, Education and Pedagogy** (DREP) a common department for the seven Departments of scientific research and the 3 Departments of scientific diffusion is in charge of education and dissemination. The diversity of disciplines studied make the institution a privileged place for Environmental Education for Sustainable Development (EEDD). The DREP has three poles of activity:

1 The PhD Programmes

The research school "Sciences of Nature and Man", created in 1995, is largely trans-disciplinary, driven by the activities and priorities of the seven Research Departments. 250 PhD students currently take part in the programme.

2 The six Master's courses

120 students are involved in the six Master's courses programmes «Evolution, natural heritage and societies » They include a master which has received the recognition of UNESCO for sustainable development and one which is a joint European Master, part of the Erasmus Mundus Programme.

3 The teacher's training

The DREP is particularly active in the domain of teacher training. A team of teachers, posted full time or part time by the Ministry of Education at the DREP, work closely with the teachers of the primary and secondary schools to put into place academic training plans. Training is organised with the participation of the Museum's researchers in the different domains linked to the environment: biodiversity, climate, water, impact of human activities on its environment, the management of resources as well as human health.

Three offers are provided to teachers:

- **Offer A- Train teachers**

The objective is to help them increase or update their knowledge on a specific subject through training sessions and encounters with the institution's researchers. The DREP regularly organises conferences followed by discussions on environmental issues and sustainable development. These conferences involve the Museum's researchers but invite also professionals from other Institutions. In 2004-2005 the Museum welcomed 450 teachers.

In 2006, the Museum organised a training course «*From nature protection to biodiversity management*» involving professionals from the forestry commission (ONF), the coastline management office (Conservatoire du Littoral) and representatives of the national and regional parks. After the conferences, debates are organised and issues are raised by the audience.

- **Offer B- assist teachers**

The objective is to welcome and assist teachers on a personal basis for specific projects or during national events such as the *Science Week*, *Sustainable Development Week*, etc.

The DREP organises different events to get teachers and pupils together to present their experience, and practices and discuss problems encountered. On June 1st 2005, within the framework of the Sustainable Development week, seven classes of the Paris region, from primary to secondary schools came to present projects carried out at school during the year under the supervision of Museum researchers. The event was called: "Youngster thoughts on sustainable development" On this occasion, different themes were chosen from discovering biodiversity in a nearby area for the younger ones, to a discussion on sustainable planning for a coastal area for the older ones.

- **Offer C- Explain the scientific resources of the Museum and offer teachers the resources and partnerships necessary for EEDD**

The team aims at accompanying teachers to find within the Museum the appropriate pedagogical offer and to help and guide specific projects. Thanks to its Research Departments and its pedagogical teams, the Museum is a resource centre for teachers willing to carry out a class project.

The DREP offers teachers activities to discover or increase their knowledge of the Institution facilities through thematic visits, introduction to the collections, conservation techniques and pedagogical introduction to the exhibitions. In 2006, a workshop was offered to secondary teachers on *Plant Systematics* using the Herbarium and the living plant collections. Guided tours and workshops are also offered at the Great Gallery of Evolution (third floor) which show the impact of man's activities on the species and ecosystems from the Palaeolithic period to the present time.

Moreover, the teachers find an accompaniment in the exploration of Environmental Education for Sustainable Development themes with their pupils. The Museum is thus participating fully to promote the sustainable development of knowledge and is contributing to stimulating the thinking of future generations. A website is being devised (www.mnhn.fr) to help and inform teachers on the potential resources for EESD at the Museum.

The role of the Departments of Scientific Diffusion

The Department of Botanical and Zoological Gardens (DJBZ), in using its important plant and animal collections plays a significant role in providing and spreading knowledge on natural habitats and in promoting awareness to the importance of biodiversity and the necessity to protect it. For generations, the

Museum has received ever-increasing numbers of visitors in its exhibition galleries, botanical gardens and zoos. The range of activities offered vary from a simple stroll, to courses, conferences and workshops for secondary and primary school pupils or the general public. This places the Museum as the most important centre for the transmission of scientific knowledge in France and a good contributor to Target 14 of the *Global Strategy for Plant Conservation*.

In accordance with our commitment to the Convention on Biodiversity, the DJBZ is putting into place a specific education and public awareness programme. This programme has been designed to help develop citizen recognition of the value and richness of our natural heritage and encourage new behaviour patterns aimed at its preservation. The registration to the International Agenda which was signed in 2006 by MNHN helped reassert this mission.

The botanical gardens of the Museum possess an exceptional plant heritage. The *Jardin des Plantes* itself, a listed historical monument, is an organised puzzle of gardens, all different in their conception and influence which witness more than 350 years of botanical expeditions and gardener know-how. To fulfil its historic mission of education, the MNHN has carried out an ambitious programme of renovation of its glasshouses, has committed itself to reopen all gardens and collections; and offered new presentations to the public (e.g. the *Ecological Garden*, the “*Potager*” with old and modern local varieties, the glasshouses). The DJBZ has also put a focus on the important plant collections: rare and endangered plant species, the genus *Euphorbia*, the reference *Fuchsia* collection, the Madagascan and New Caledonian floras.

The DJBZ has chosen to concentrate its efforts in presenting sensitive environments to the public in its botanical and zoological gardens. Today, botanic gardens in urban areas play a significant role in allowing city dwellers to discover natural or semi natural habitats of their regions. Created 70 years ago to present phytosociological associations of the Paris region, the *Ecological Garden* was reopened to the public with the scientific help of the “Conservatoire Botanique National of the Parisian Bassin” whose mission is to make the inventory of the region’s biodiversity and protect plant species *in situ*. Access to the *Ecological Garden* is restricted to guided tours thus helping to preserve this area as a semi wild sanctuary for the fauna and the flora. Beyond the woody habitats put into place at the origin of the garden in 1930, four open specific habitats all linked to human activities and formerly important habitats in the region have been recently created:

- A corn field with its companion plants (poppies, cornflower, corn marigold...)
- A hay meadow
- A waste land
- A vineyard pruned according to local tradition with its typical bulbous companion plants

Establish a link between plants and animals collections

The Menagerie (zoo) of the *Jardin des Plantes*, also part of the DJBZ, is one of the oldest zoos in the world. It presents essentially animals of tropical origin. The visitors are generally aware of environmental problems such as habitat destruction, climate change or biodiversity loss issues which have appeared in the media. They are also particularly eager to learn more about their immediate environment and in search of information about urban biodiversity. A project to invest in the interstitial spaces of the zoo and encourage their colonisation by the urban fauna and flora has been devised to show which plant and animal species have deserted cities due to the disappearance of their habitats. The idea is to increase awareness of the conservation of plants and animals of the public common environment and to help them realise that this environment needs just as much care as exotic ecosystems.

The objective is also to sensitize the public with the close connections between plants and animals. The project will support:

- **The installation of micro-ecosystems for insects** as in a natural garden (deadwood, stones, mosses, etc.) and favourable sites for their nesting (stems, logs, etc). Biological control will be favoured as well as specific plantings to feed the natural predators.

- **The creation of a pond.** Today, ponds having lost their utility are often filled in or polluted (50 % of the humid areas have been destroyed over the last decades). Many animals and plants which used to live in these habitats of great ecological interest are declining for example, useful predators: tritons, toads, mayflies, dragonflies, plankton, flies and mosquito larvae... Amphibians are destroyed by the Florida turtles but have also largely suffered from the concreting of river banks and the regression of waste lands among them the green frog and the Midwife toad (*Alytes obstetricans*) once a common species.
- **The installation of bat nests:** eighteen species of bats live in the Paris region. This genus is severely threatened by the extension of human transportation routes (road, tunnel, train), the abundant night lighting, the use of the toxic treatments of the wood beams and magnetic disturbances. The restoration of concrete buildings - which had become through degradation attractive habitats for them - is also a new threat.

Conclusion

Through its actions of knowledge dissemination in all areas of natural history aimed at larger audiences, the Museum paves the way for visitors to have access to scientific culture and to further their knowledge, providing a basis for their choices and decisions as citizens. By developing a strategy for environmental education, by working with the national and regional authorities to promote and develop in school-programmes the objectives of conservation and sustainable development, by collaborating and supporting school teachers, by welcoming school parties in its botanical and zoological gardens and developing and implementing a wide array of activities to target large audiences, the Museum is contributing fully to the implementation of the Global Strategy for Plant Conservation.