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Education in Botanic Gardens
— an overview and a look to the future

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ABSTRACT

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Botanic gardens are excellent centres for conservation education. Yet although this is recognised by the majority of gardens, it is only the minority that run education programmes. If plant conservation is to be effective then education must be seen to be an integral part of a botanic garden's workplan.

This necessity has stimulated the production of the Botanic Gardens Environmental Education Strategy which will be published later this year.

The aims of the strategy are to:

- focus botanic gardens on environmental education,
- provide botanic gardens with a framework within which to develop environmental education programmes,
- equip botanic gardens with a document that can be used to raise funds for education programmes.

With reference to the strategy, this paper will focus on the wide role that botanic gardens can play in education — in particular conservation education. It will look at examples of good educational programmes currently going on in botanic gardens around the world and will highlight the advances made by botanic gardens in education at the recent education congress in Las Palmas, Spain.

The paper will emphasise the importance of building national and international education networks while stressing the need for more resources to be allocated to education from inside and outside the garden.

RÉSUMÉ

WILLISON, J. (1993). L'éducation dans les jardins botaniques — vue d'ensemble et regard sur le futur. Comptes-rendus du colloque "Nature et Jardins botaniques au XXI^e siècle", Genève, 2-4 juin 1993. *Boissiera* 47: 108-113.

Les jardins botaniques sont d'excellents centres pour l'éducation en matière de conservation. Toutefois, bien que cela soit reconnu par la majorité des jardins, seule une minorité a développé des programmes d'éducation dans ce domaine. Si l'on veut que la conservation des plantes soit efficace, les programmes d'éducation doivent faire partie intégrante des plans de travail des jardins botaniques.

C'est ce besoin qui est à l'origine de l'élaboration de la Stratégie d'éducation environnementale des Jardins botaniques qui sera publiée plus tard cette année.

Les buts de cette stratégie visent à:

- Concentrer l'attention des jardins botaniques sur l'éducation environnementale.
- Fournir un cadre aux jardins botaniques leur permettant de développer des programmes d'éducation environnementale.
- Soumettre aux jardins botaniques un document qu'ils pourront utiliser pour recueillir des fonds pour leurs programmes d'éducation.

En ce qui concerne la stratégie, cet exposé mettra l'accent sur le rôle que les jardins botaniques peuvent jouer en matière d'éducation, et notamment d'éducation sur la conservation. Des exemples seront fournis de bons programmes d'éducation qui sont mis en œuvre à l'heure actuelle par des jardins botaniques à travers le monde. Par ailleurs, il sera fait mention des progrès réalisés par les jardins botaniques en matière d'éducation, tels qu'ils ont été révélés lors du dernier Congrès sur l'éducation à Las Palmas en Espagne.

L'exposé attirera tout particulièrement l'attention sur l'importance de développer des réseaux d'éducation sur le plan national et international ainsi que sur la nécessité de consacrer davantage de ressources financières à l'éducation aussi bien à l'intérieur qu'à l'extérieur du jardin.

The audience survey at the beginning of my paper demonstrated effectively the sharp contrast between what staff in botanic gardens feel about education and what they're actually doing. By the number of hands raised, it was clear that every delegate thought environmental education in botanic gardens is important. This number dropped dramatically however, when delegates were asked how many of their gardens were running education programmes. In fact out of 200 delegates, only five hands were raised when asked whether their garden had more than two full time education officers.

So why is education in botanic gardens important?

Botanic gardens are at the forefront of conservation. They are among some of the only institutions in the world whose primary concern is saving wild plant species. Their existence is vital for the conservation of plants. Botanic gardens have something unique to teach the public.

Projecting into the 21st century we are certain to see the genetic base of many species eroded and the likely result is the extinction of many plant species. If botanic gardens don't alert the public to this, then who will?

Botanic gardens are superbly equipped to do this. They possess remarkable collections of plants, often from all over the world. No one walking through a botanic garden can fail to be held in awe of the sheer diversity that exists. And with plants touching every area of our lives — food, clothes, medicine, music, building, the air we breathe, even the water cycle — it is only imagination

that limits what botanic gardens can teach. With over 150 million people visiting the world's botanic gardens each year, the potential to educate the public about plant conservation is enormous. And as our urban environments grow, botanic gardens will increasingly provide, the only opportunity there is for people to be close to nature.

As well as plants, botanic gardens possess incredible knowledge and expertise in botany. To persuade the general public that botanic gardens are essential botanists need to share this knowledge and expertise. In doing so, people will learn why plants are important and relevant to their lives. Botanic Gardens cannot carry out conservation in isolation. The public needs to be involved in our mission.

But to exist, botanic gardens need funding. Long gone are the days when a botanic garden can rely solely on their budget from the government. Botanic gardens have to now compete with other attractions, such as museums and fun parks, and are increasingly being called on to justify their existence. Competition for funding is fierce.

Gardens are realising that they need good public relations to raise their profile among the public. There is no doubt that the public profile of the Viera y Clavijo Botanic Garden in Las Palmas, for example, helped raise money for the recent international botanic garden education congress. Also during the congress, the garden worked at keeping a high profile by setting up a national radio programme and ensuring that there was constant news coverage in the local papers. The Conservatoire et Jardin botaniques has also did an excellent job of using this conference to raise its profile with the people of Geneva.

Another example is the Royal Botanic Garden in Edinburgh. This garden runs a very effective publicity department. Jackie Roberts, responsible for Public relations at the garden, can always turn a story into news. The garden is very active in education and a great deal of the news coverage is to do with the education programmes. Not a week goes by when the garden is not mentioned in the local or national media. Although not directly fundraising, PR has helped Edinburgh gain sponsorship. One article in the Financial Times, a daily U.K. national newspaper, for example, attracted an anonymous donor to give £15,000 for an expedition to China.

There are many examples that show the relationship between public awareness and sponsorship. Botanic gardens need to get involved in education if a) they want to survive and b) they want to help the planet survive.

So what are botanic gardens actually doing in education?

Signs

The use of signs is one of the most common ways botanic gardens get their message across to a diverse public. Signs come in all shapes and sizes and because of their relatively low cost and low regular demand on staff time they are a very effective way of communicating messages to large audiences.

This sign, used by the Utrecht Botanic Garden in The Netherlands, is used to interpret the environment in a novel way. It is made of clear perspex on which you can write with marker pens. You place the sign in front of scene or object and draw or write on the perspex whatever information you want to convey to your visitors. Visitors can then line up the object with the drawings on the sign. The beauty of this sign is that you can wipe it clean and use it again anywhere in the garden.

As technology becomes more accessible, its use will become more common in botanic gardens, as is already the case in many museums. Several botanic gardens are already running small computer programmes to provide more information, such as the Rio de Janeiro Botanic Garden in Brazil which has a touch screen computer programme about the endangered Atlantic Forest. This was developed to tie in with an exhibition on the Atlantic Forest. A similar project was run at the Geneva Botanic Garden. A computer terminal was set up at the end of an exhibition where children had to choose from multiple choice questions about the uses of wild plants. The programme was developed by the Geneva Botanic Garden, The Museum of Food and Technology and the Natural History Museum in Geneva.

In the Ness Botanic Garden, U.K. they have terminals set up to help the public locate the plants of interest to them in the garden. Using the computer the public can print out a tour of their choice. Interactive signs will also become more common such as the ones used at the Australian National Botanic Garden, Canberra, Australia which monitor the temperature, humidity and light of two areas: the rainforest gully and an open field. Visitors can use the signs to compare the two habitats.

Tours

Botanic gardens still find that tours are an effective way to get their message across, providing a personal way in which information about the garden and its collections can be communicated. Tours are a relatively passive activity for the public who walk round with a guide (or stereo headphones) and listen to information. But tours are also developing. The Desert Botanic Garden in Phoenix, North America, for example has a very successful interactive ethnobotany tour. The garden is situated in the Arizona desert which is the home of the Navajo Indian. The tour uses exhibitions and demonstrations to show people how the Indians live and how rich their culture is and so cultivate a conservation ethic towards the plants of the region.

Exhibitions

The use of exhibitions is another way that botanic gardens get their message across to the public. They range from collections of plants used to illustrate for example medicinal values, to boards with photographs and text on to a full blown exhibition with video, slides and artifacts. The Geneva Botanic Garden last year ran an exhibition in conjunction with the Chilean Embassy who wanted to exhibit some textiles which had been hand woven and dyed in Chile. The garden developed the scientific side of the exhibit making it accessible for children.

Formal education

On the more formal education side, botanic gardens work with specific groups. "Project Green Reach" was initiated by the Brooklyn Botanic Garden, New York, USA. It was set up to work with schools situated in low-income areas. Schools have to pay fairly hefty fees to participate in the Gardens education programmes and as a result many schools are unable to attend. The Garden set up the project with teachers and advisers and help from the New York City Board of Education to choose the schools. The programme involved;

- an introductory workshop to teach the teachers
- a lesson in basic botany for each class including a hands-on planting experience
- a guided tour of Brooklyn Botanic Garden with bus transport provided
- a community project such as window boxes or outside flower gardens, planted and cared for by the children
- a final teachers' evaluation workshop, plus feedback from the children through letters, stories and class projects, such as scrap-books.

The more interested children were invited to take part in a summer botany school. They were taught basic botany skills and each given their own plot of land to cultivate. At the final class each one of them was allowed to invite a member of their family or a friend to join them. The programme was an enormous success and is being run again.

This programme raises an important point about the role botanic gardens have to play in encouraging children to develop a long term interest in botany. Botanic gardens can be instrumental in identifying and nurturing potential botanists.

Moving further south to Mexico, the UNAM Botanic Garden runs some very interesting education programmes. Mexico has a population of around 80 million — about 20 million live in Mexico City. In 1980 there were six million children in Mexico under the age of 15.

Environmental education is seen as a high priority in Mexico by the UNAM Botanic Garden. There is a need to make people aware of the problems that are threatening the ecosystems, such as pollution, over-collection of species and the over-exploitation of forests. The UNAM Botanic Garden links all its programmes to its collections and tries to familiarise the public with plants which are used to make everyday products.

A successful education programme was called Finding out about the Day of the Dead. The Day of the Dead is a Mexican tradition which has its roots in paganism. It is celebrated on the 1 & 2 November each year as a mark of respect to the dead. People prepare offerings such as bread, sugar skulls, flowers, paper doilies. These, plus photographs and personal objects are used to adorn the altar. Many of the traditional offerings are now replaced with synthetic look-alikes. For this reason the garden set up the programme to teach children how to prepare the traditional offerings while at the same time learn about where the ingredients come from.

But botanic gardens have limited resources. By running teacher training courses botanic gardens can effectively reach far more children than if they taught individual classes.

Teacher training is an important part of the education work at the UNAM Botanic Gardens. However, not all schools are able to visit the garden and so portable cases have been developed by the garden for teachers to use in the classroom. The cases have different themes, medicinal plants, sweets (a favourite), herbs, cosmetics, for example. Each case has a set of teacher's notes. Teachers collect the cases from the garden and return them in a few days. They are allowed to use the materials in the cases for children to try.

Environmental education is well developed in many of the Australian botanic gardens. In fact the gardens are listed in the National School Curriculum as an education resource. The Australian National Botanic Garden in Canberra, for example, last September opened an environmental centre in the gardens. The funding for the centre was found because of the commitment of the director, who lobbied the government. The building of the center has endorsed the work of the education officer, Julie Foster, who does some superb work there and has helped increase the profile of the garden.

The Royal Tasmanian Botanical Gardens, has worked with a sixth grade school to stop soil erosion on a slope one of their school banks. The children had to investigate the cracking of the bank and work out possible solutions. They came up with various ideas ranging from an adventure playground to tree planting. Following discussions the girls decided to plant the bank and develop a bird garden. They prepared various landscape plans and took advice. The class decided to include in the plan a small eucalypt species which is threatened in the wild, the Risdon peppermint. After a field trip to collect the species they had a seed planting session at the garden. The project was very successful and the class won a science talent competition.

A similar type of programme was also run at the National Botanic Garden of Cuba. Here staff from the garden worked with children to reforest a quarry. The success of such activities show how important it is for children to be involved in conservation activities. Empowering them to believe that they can do something positive to help the environment.

Nearer home in The Netherlands, the Kerkrade Botanic Garden ran a project to look at how dietary habits have changed in relation to the environment. The project involved the use of a small exhibition, the garden and a two hour lecture.

The project involved students as much as possible through practical work, experiments and research. The first part looked at the variety of food that we have to choose from and what dangers there are from eating an unbalanced diet. The second part looked at how food is packed and the effect this has on the environment. And the last part looked at how our consumer habits effect the environment, for example, the cutting down of Costa Rican rainforests to graze cattle for hamburgers, monoculture crops such as tea, coffee, sugar. The project is aimed at encouraging children to take responsibility for their eating habits.

Such programmes emphasise that the state of our planet affects us all and that plant conservation is everyone's concern. We are not mere observers witnessing the inevitable destruction of our planet. We are the key players in its future. Our attitudes, our behaviour, the decisions we make affect the environment. Botanic gardens can help children and adults become responsible citizens, by providing them with good clear information about the environment and helping them examine many of their long held attitudes and behaviours. The way we live needs to be in-keeping with a future which is sustainable and the only way to achieve this is through education.

Conclusions

I have only been able to give you a brief glimpse at what botanic gardens are doing in education. But I hope this paper illustrates how important education is for raising the public's awareness about botanic gardens and also the environment. With all these activities going on, it doesn't take much to realise how important it is for botanic gardens to network with each other and other institutions — to meet and share ideas and materials. The recent international education congress at Las Palmas, Spain, for example, provided a forum for educators to do just that. The congress was very much a hands on experience with simultaneous workshops being run and delegates being encouraged to participate.

At the congress a draft environmental education strategy for botanic gardens was proposed and discussed. Unanimously the delegates supported the development of the strategy, asserting that it would help botanic gardens focus on environmental education and develop education programmes. The delegates also felt that the strategy would be important for helping them raise the profile of education both inside and outside the gardens.

Over the last few years the BGCI Education Programme has seen a tremendous growth in interest by botanic gardens wanting to develop their education programmes. I would like to urge everyone here to embrace this enthusiasm and fully support education in your botanic garden. This after all may be the only way we can secure the future of botanic gardens and certainly the only way we can effectively conserve plants.