The role of the Free State National Botanical Garden (FSNBG) in educating communities about plant diversity awareness and conservation

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Introduction and background information about the Free State National Botanical Garden.

South Africa has a remarkable bio- and cultural diversity with over 3,000 plant species used for medicinal purposes (van Wyk et al, 2002). South Africa is also recognized for her variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part (www.environment.gov.za/PolLeg/WhitePapers/Biodiversity). The management of human use of these natural resources to yield the greatest benefit to present generations while maintaining the potential to meet the needs and aspirations of future generations then becomes inevitable.

This management would include, amongst others, the sustainable use, protection, maintenance, rehabilitation, restoration, and enhancement of the natural environment. This calls for education, awareness raising and capacity building of the interested and affected parties. Plants are some of the most vulnerable resources which are prone to exploitation because of their medicinal value, the use for wood carving, furniture, food, etc. This has resulted in the degradation of this valuable resource to a point of either being threatened, endangered, or extinct.

Botanical gardens are a resource that can be used to design programmes that promote awareness and education about plants, their conservation, sustainable use and non consumptive economic uses of plants. The Free State National Botanical Garden (FSNBG) is one of the botanical gardens that are managed by the South African National Biodiversity Institute. It is situated in Bloemfontein, in the Free State Province of the Republic of South Africa. It is comprised of both a developed and a natural area with various plant species either natural or introduced in the garden for various conservation goals.

This garden was once a farm called Wintersvalley which was bought by the Bloemfontein City Council in 1965 and later transferred to the trustees of the National Botanical Gardens of South Africa to be developed as a Botanical Garden. It was officially opened on February 1969 and since then it has developed and has been utilized for research by tertiary institutions, schools, ecologists and other conservationists for research, education, leisure, meetings and other uses. The garden is 74 hectares in total. Of this 74ha, 24 hectares is a developed area and the remaining area is a natural growing area. It is situated in an urban area with dense populations that use the garden for leisure. Amongst the facilities that are in the garden, there is a restaurant, and an Environmental Education Centre with meeting venues.

Ecological characteristics

The Free State NBG is mainly characterized by dolerite, which is shallow. Some areas are covered by sandy soil while the deep valleys are characterized by rich soils.

There is a grassland area and areas covered by the following species: *Buddleja saligna, Rhus lancea, Rhus ciliata, Olea Africana Euclea crispa, Grewia occidentalis, Cussonia paniculata and Rhigozum obovatum*. The semi-arid Karoo vegetation with *Ruschia spinosa* and *Euphorbia mauritanica* as well as the *Stomatium mustelinum* species dominate the vegetation of the FSNBG.

The cultivated area

The following species are used in the development of the cultivated areas of the garden:

- 75 % of Bulbine species under cultivation
- 100 % of Buddleja species under cultivation
- 5 % of Helichrysum under cultivation
- 20 % of Rhus species under cultivation
- 75 % of Bulbine species under cultivation
- 45 % of Hypoxis species under cultivation
- 100% of Merwilla species under cultivation
- 50% of Scilla species under cultivation
- 25 % of Brusvigia species under cultivation
- 75 % of Plectranthus species under cultivation
- 35 % of Aloe species under cultivation
- 65 % of Clivia species under cultivation
- 40 % of Khadia species under cultivation
- 40 % of Perlagonium species under cultivation

Communities neighboring the FSNBG are characterized by high rate of unemployment, high illiteracy, and are most of the times living below subsistence levels. This has resulted in heavy reliance on natural resources for their survival. For instance, they rely on certain tree species for firewood, building materials and wood carving and rely on certain tree and plant species for traditional medicine. This has resulted in some of these plant species threatened, extinct or endangered in the wild. The FSNBG has therefore a huge challenge of ensuring that communities in its neighborhood are educated on and made aware of the need to ensure that the rich natural heritage of the region is conserved for the benefit of both the current and future generations.

Environmental status of the areas neighboring the FSNBG

Environmental degradation characterizes the areas outside the FSNBG. Overgrazing, uncontrolled veld fires, over-exploitation of plants and trees for human consumption and soil degradation are the key environmental problems that are prevalent in these areas. The FSNBG is an example of a well managed protected area with restricted and managed access. It is a green patch of land where trees and plants are cared for and hence in good conditions. The selection of species to be planted in the cultivated area is such that species of conservation or cultural significance are selected and hence there is good representation of species endemic to the Free State, threatened species, rare species, endangered and species that have been extinct in the region. Most of the times, people are not very literate when it comes to these botanical, environmental and horticultural issues and hence education and awareness are very crucial.

Strategic use of the available infrastructure to promote plant conservation

The aggressive marketing of the garden as a venue for parliamentary meetings, conferences, seminars and other functions has resulted in a wide range of very prominent people visiting the garden. Most of these people are neither environmentalist, Botanists nor Horticulturists. We have developed a world class interpretation programme targeting visitors to the botanical gardens. These story boards are positioned in attractive features that draw the attention of the visitors and compel them to read the information as presented. This is valuable information about trees and plants in the garden, what the plant/tree is used for, its common and scientific name, its conservation status, its origin and where found/was found before it got extinct in the region, etc. People coming for a meal in the restaurant will learn a lot on their way to the restaurant and around the restaurant. Posters, decorations and other wall pictures and paintings have information about plants, their conservation status, their use and their location in the region if still available or where they used to be found if extinct.

The hiking trails that are popular to visitors to the garden are also characterized with these state of the art interpretation signs that make the garden speak for itself about the plants. Interesting information and stories that are written in local and English languages coupled by trained guides and interpretation officers that take visitors on guided walks assist in making sense of the interpretation and story boards. Visitors might have been in the botanical garden for various reasons but end up getting informative conservation information about plants through the interpretation/story boards, posters, paintings, and trained guides/interpretation officers.

Sunday's picnics and concerts

The FSNBG also run Sunday concerts that are attended by groups and families. Visitors to the garden coming for picnics and these concerts are also targeted for education on plant conservation by ensuring that venues for concerts and spots for visitors coming for picnics are well equipped with self explanatory, easy to read story boards targeting people of all categories. This makes every corner of the garden to be educational with every attempt made to be as creative as possible in designing interpretation signage, posters, wall paintings, banners and other display and promotional materials.

Annual plant sale and annual SANA plant exhibition

Every year the FSNBG hosts the South African Nurseries Association (SANA) plant exhibition and plant sales. People are exposed to various kinds of plants and learn to understand how plants are cared for and other information about plants. These are very good platforms to educate people more about plants and promote the use of the rich diversity of the plants found in the region. Because of the information provided in the plant labels people learn about plants that come from their regions and buy them to re-introduce them in their home yards. This revives the people's pride and passion about plants. Some even consider starting community nursery businesses because of the influence of these exhibitions and this assists in broadening the initiatives of plant conservation. More passion for plants created by these exhibitions result in more people visiting the FSNBG. More enquiries about the plants by visitors to the garden is catered for by training more interpretation officers.

General talks on, Plants of the garden and for the province, gardening, garden biodiversity and garden ecology

The FSNBG also hosts known Horticulturist and Botanist to address SANBI employees and visitors to the garden on plant conservation and other related issues. These are very informative sessions that also encourage people to further their studies on plant conservation related issues.

Internship programmes

We run six months internship programmes for students with training on Horticulture and Botany. The purpose of the internship programme is to expose the young Botanists and Horticulturists to plant conservation, research, interpretation as an educational tool in the botanical gardens and many other activities run by the FSNBG. A pool of these champions is created to work in the botanical gardens or other institutions to promote plant conservation.

Themes displayed in the cultivated portion of the FSNBG

- Plectrunthus display garden
- Rhus display area
- Medicinal garden,
- Fragrance and Bride and Groom Garden under development.

These are points of attraction for visitors either walk on unguided tours in the garden or taken through by trained and experienced interpretation officers. Those who come on unguided walks do not lose out because the storyboard make the garden talk for itself.

Environmental Education Programme

Besides these adult/family programmes that have been mentioned above, the FSNBG also run environmental education programmes through the Environmental Education Centre. These are:

- Garden based Environmental Education Programme for schools – where learners are transported to the FSNBG to attend Environmental Education sessions on plant biodiversity conservation; Learners are exposed to terminology such as Alien plants, declared invaders as outlined by Henderson (2001), threatened plant species, endemic, rare, endangered and extinct plant species. Learners are educated about useful and poisonous plants. This is very crucial considering the fact that the largest number of acute plant poisoning as per van Wyk *et,al* (2002) occur in young learners
- The Schools outreach greening programme – where trained SANBI staff with vast experience in Horticulture and Landscaping assist schools to develop indigenous waterwise educational gardens to reinforce plant conservation;
- The Greening the Nation – which focuses on both garden based EE and schools outreach greening but with a component of job creation and training and capacity building to provide alternatives to heavy reliance on natural resources, and to provide training to enhance sustainability of plant conservation strategies adopted in the region. More about these environmental education programmes will be outlined in the other paper to be presented by the FSNBG Principal Environmental Education Officer.

References

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