Botanic Gardens in Sri Lanka; past, present and future

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Introduction

Sri Lanka's botanic gardens have a long and proud history, punctuated by colonialism, and industrial change. Throughout this period the gardens have continued to flourish, and the plant collections and herbarium have grown in size. Within the context of the 21st century, the gardens represent a significant national asset for Sri Lanka.

Over 1.4 million people visit Sri Lanka's botanic gardens every year. And that is in addition to the 5% of the nation's schoolchildren who visit. As a profit-making public institution, employing almost 450 people, the national botanic gardens are uniquely placed to *educate by stealth* (Edwards 2000), taking advantage of the pleasure and joy experienced by visitors to share, gradually, our growing knowledge and expertise in conservation, biodiversity, floriculture and sustainability.

Current activities within the gardens include education and training, botanical research, and contributions to biodiversity conservation and public education. A staff re-structuring is already underway to accommodate the new strategic priorities. 2007 is a landmark year, notably for the opening of a new Education Centre Facility within the Royal Botanic Gardens, Peradeniya, the founding of the first new botanic garden in 130 years and the launch of a new, nationally accredited Diploma in Floriculture and Landscape Design.

Future needs to be addressed include *ex-situ* conservation of biodiversity and the potential for economic return for Sri Lanka.

The vision of the Sri Lanka's botanic gardens is to be the finest botanic gardens in the tropics by 2015.

The past

The National Botanic Gardens of Sri Lanka are pioneering botanical institutions, started during the early years of the 19th century. The following are the important milestones in the history of Sri Lanka's botanic gardens,

Year	Event
1371	Peradeniya first used as a royal pleasure garden by King Wickramabahu III
1780	King Kirthi Sri Rajasinghe declared Peradeniya as a Royal Garden
1810	A botanic garden named "Kew Gardens" established on Slave Island, Colombo, by Joseph Banks
1821	The garden moved to Peradeniya; first superintendent appointed
1824	Moon's *Catalogue of Ceylon Plants*, listing 1,127 indigenous plants with their local names was published. National Herbarium established.
1861	Hakgala Botanic Gardens established as an experimental plot

	for *Cinchona*
1876	Gampaha Botanic Gardens established as an experimental garden for rubber.
1893	Vol. 1 of the *Handbook to the Flora of Ceylon* first published.
1900	Vol. 5 of the *Handbook to the Flora of Ceylon* published
1912	Sri Lanka Department of Agriculture (SLDA) established and botanic gardens came under research division of SLDA
1968	The revision of the *Handbook to the Flora of Ceylon* Project started
1982	Botanic gardens became separated from the research division and a Deputy Director of Agriculture (Botanic Gardens) appointed
1994	Botanic Gardens Division of the SLDA was elevated and a Director (National Botanic Gardens) appointed.
2000	Vol. 14 of the *Revised Handbook to the Flora of Ceylon* published.
2005	Botanic Gardens separated from SLDA.
2006	The Department of National Botanic Gardens established. Work began to establish new dry zone botanic gardens.

The Royal Botanic Gardens, Peradeniya, the Botanic Gardens at Hakgala and Henarathgoda, Gampaha were responsible for almost all of the plant introductions for economic and environmental development of the island of Sri Lanka in the 19th Century. Activities during this period resulted in the development of economic and plantation crops, the emergence of important state departments such as the Forest Department in 1887 and Department of Agriculture in 1912, as well as the institutions for the development of plantation crops such and tea and rubber.

After 1912 the botanical research activities slowed down (Haltom 1970) and it was during the last few decades the taxonomic research in the gardens started to resume with the commencement of the Revision of the "Flora of Ceylon" Project.

The Present

Currently, the national botanic gardens of Sri Lanka are engaged in the taxonomy of the flora of the Island, floriculture, ornamental horticulture, *ex situ* plant conservation (Ganetlike *et al* 1987), as well as the maintenance and development of the Botanic Gardens and its allied units.

Until recently, the national botanic gardens came within the remit, and were organised by the SLDA. Management areas such as budget allocation, personnel and administrative matters were previously handled by the SLDA. The period ahead is characterised by change management needs, within a new and fast changing political, environmental and global climate.

The Future

Just as the introductions of tea and rubber have shaped the past, it is anticipated that the gardens have a future impact. Areas where future achievements will demonstrate the gardens' contribution to the development of Sri Lanka are outlined in the table below, alongside areas where there is already a past track record of performance – and impact.

Areas of Past Impact	Areas of Future Impact
Recreation	Colourist
Plant introductions (for economic returns)	Commerce and e-Commerce Floriculture and herbal industries Pharmaceuticals and medicines
Plant explorations	Biodiversity, bio prospecting and *ex-situ* conservation
Knowledge	Knowledge management –(Historical/scientific archives and herbaria; development and maintenance of national botanical inventories; GIS; updating of *Flora of Sri Lanka*; publications promoting flora; comprehensive herbaria for specific high-diversity sites such as Sinh raja, Horton Plains, Knuckles; research on inventory, monitoring and control of invasive alien species; building national capacity for systematic botany; education and training Initiatives).

Colourist, floriculture and the development of the herbal industries each feature strongly as areas of national policy priority, where impacts and progress will be monitored over the coming few years. Impact in each of these areas can be defined as having economic impact in Sri Lanka.

Impact in these will also cause change within the gardens themselves, with higher demand for education and training courses, and tour guides trained to a high service standard. Additional technical and business support needs from small- and medium-sized businesses, engaged in one or more of these industry areas, may also emerge.

Over the last 180 years the Royal Botanic Gardens, Peradeniya have significantly increased their capability by emphasising high quality science, expanded contributions to biodiversity conservation and improved public education programmes. This effort will be reinforced over the period ahead by a focus on key targets for development, and appropriate re-structuring, recruitment and training initiatives.

Research - Investing in science, conservation and sustainable use

In the past, research efforts have achieved considerable successes (rubber, tea, cocoa etc). Currently, the gardens focus on floriculture research, supporting and encouraging commercial venture and development activities. It is envisaged that this area can be developed strategically.

Floriculture has priority as an area for national policy objectives. Sri Lanka has been involved in the export of floriculture products since 1980, with an export value of $10.5 million in 2004. This industry was encouraged by research and development into floriculture, initiated in the gardens in the late 1950s, which led directly to the growth in this industry. As well as the new Diploma course in Floriculture, it is proposed that a new Propagation Centre is developed, with full humidity, temperature and light control to enable the propagation of *any* plant. This will greatly speed up the research and development process – for new cultivars, endangered species, new varieties, hybrids, tissue cultured specimens - and critically, support the floriculture industry in Sri Lanka.

Responsibility for the development of floriculture within the gardens lies within this management area, encompassing conservation, the collections, the herbarium and bio prospecting. In 2006, a pilot project to support small local nurseries become established; the project supplies growers with shade netting for protected houses, equipment and tool kits for gardening, improved planting material and materials for transportation (packing material, boxes etc.). Such capacity building projects are well within the remit and

capability of the gardens. After evaluation, a follow up support strategy or up scaling of the present project may be considered within the forward action plan.

The National Herbarium of the Royal Botanic Gardens, Peradeniya has a unique collection of about 132,000 specimens. Some of the specimens are almost 200 years old and represent a valuable floral catalogue as well as an interesting historical record. Year on year, there are more visits to the National Herbarium by researchers and members of the general public. There is an important new role for the Gardens in being recognised as the National Red Listing Authority for Plants in Sri Lanka, one that is well within current scope and that articulates well with the traditions of a national herbarium.

By 2010 it is anticipated that a new national centre for biodiversity will be established. As a strategy this approach binds together the various, and seemingly disparate, strands of activity into a single unit. Biodiversity is increasingly perceived as the way forward for 21st century conservation efforts. It encompasses policy and practice areas, and will focus on activities that support both. Activities proposed range from meeting the needs of a national plant repository and bio prospecting through to informing higher education programmes on biodiversity.

Scientific research in the Gardens spans purely botanical research through to the relevance of technical applications to conservation efforts for all plants groups, and their application in the floriculture, herbal and medicinal plant industries.

Looking ahead

There are three key elements to the vision of what the Sri Lanka's Botanic Gardens are seeking to achieve:

- Updating and improving knowledge of plant diversity, conservation through scientific research of the highest quality, (maintaining a fine National Herbarium, investing in the intellectual capital of staff etc);

- Effective outcomes for Sri Lanka – practical applications that will capitalise on Sri Lanka's unique capital and intellectual assets, project development, direct involvement, capacity building and contributions of data, practical experience and education to *ex situ* conservation programmes; floriculture; ecotourism etc);

- Heightened public awareness and appreciation of the botanic gardens, and the importance of their work – focusing on the conservation and sustainable use of plant resources, up scaling educational programmes and including greatly enhanced public access to our important collections and improved visitor facilities.

It is anticipated that the first phase of the dry zone botanic gardens, located in the south east of Sri Lanka in Hambantota, will open in 2009. The new garden will contain a comprehensive collection of dry and arid zone plants, and is a considerable undertaking. Plans are also underway to set up another botanic garden near Awissawella in the low country wet zone.

According to the Ten Year Plan (2007–2016) of the Sri Lanka government there will be 10 National Botanic Gardens in the Island by 2016. It is hoped to establish an *ex-situ* conservation area network to represent the 15 floral regions recognised by Gunatilleke and Gunatilleke (1990) so that the majority of the indigenous higher plants could be cultivated in the botanic gardens.

Maintaining and developing the botanic gardens has separate, and often, specific challenges at a practical level. In particular the infrastructure requirements – buildings, visitor attractions and facilities have both capital and revenue implications.

The challenges ahead are substantial at global and international level. The pace of change is unprecedented with strategic drivers such as habitat destruction, poverty and pollution having real impact across the world.

There are strategic opportunities for the Gardens to adopt a new and significant role within this context, and the development issues are being pursued within realistic current parameters (staffing, resources, timeframe, capability etc).

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