

THE BOTANIC GARDEN

A Newsletter for the Botanic Gardens of Australia and New Zealand

www.bganz.org.au



Issue 35 – MARCH 2013

Theme: EDUCATION

ISSN 1446-2044



Editorial Committee

Mr Alan Matchett

Team Leader/Curator, Dunedin, New Zealand,
and BGANZ Vice-President (New Zealand)

Mr Mark Fountain

Deputy Director Collections and Research, Royal
Tasmanian Botanic Gardens

Mr Dale Arvidsson

Curator, Mackay Regional Botanic Gardens and
BGANZ Vice-President (Australia)

Managing Editor: Eamonn Flanagan

Graphic Designer: Siobhan Duffy

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Feedback and comments on the newsletter
and articles is welcomed. Please email to:
secretariat@bganz.org.au

Cover: Children admire a banksia.
Photo: Australian National Botanic Gardens.

The theme of the July 2013 issue of *The Botanic Garden* will be 'Engaging Partnerships – Gardens succeeding with Business, Government, Community and Volunteer groups'. The deadline for contributions will be 14 June 2013. Please contact the Secretariat if you are intending to submit an article.

CONTENTS

President's View	3
<i>Anne Duncan, BGANZ President</i>	
BGANZ Membership news	3
Botanic in Brief	4
Profile BGANZ	5
<i>Danny Fraser, Curator, Eastwoodhill Arboretum</i>	
Reports from BGANZ Professional and Regional Groups	7
BGEN – Botanic Gardens Education Network Australia and New Zealand	
<i>Stephen Speer, Convenor</i>	
Professional Development Working Group	
<i>Paul Scannell, Convenor</i>	
BRON (BGANZ Records Officers Network)	
<i>Tom Myers, Convenor</i>	
BGANZ New Zealand News	
<i>Alan Matchett</i>	
BGANZ Queensland	
<i>Dale Arvidsson</i>	
BGANZ Victoria	
<i>Annette Zealley</i>	
Report from BGCI 8th International Congress on Education in Botanic Gardens, November 2012, Mexico City	10
Update from BGCI Education Congress	
<i>Marcelle Broderick, Director Business and Visitor Services, Kings Park and Botanic Garden, Perth</i>	
Dandy Lions preschool program – presented at BGCI Congress	
<i>Relle Frances Mott, Education Officer, Royal Botanic Gardens & Domain Trust</i>	
Final Report from Kew	15
A year (or two) at Kew	
<i>Professor Timothy J. Entwisle Director, Conservation, Living Collections and Estates, Royal Botanic Gardens Kew</i>	
Association of Friends of Botanic Gardens (AFBG) – Connecting Friends for 20 Years	17
<i>Annie McGeachy, Secretary</i>	

CONTENTS continued

Education	17
Sowing the seeds of wisdom <i>Janelle Hatherly is an education and interpretation specialist with over 20 years' experience</i>	
Life changing? – NMIT graduates receive inaugural horticultural scholarship to the Jerusalem Botanic Gardens (JBG) <i>Natalie Simmons, one of two recipients of inaugural horticultural scholarships to JBG</i>	
Innovations in Horticultural Vocational Education <i>Jane Grosvenor, Grosvenor Consultants and Marcus Ragus, Manager Learning and Community Engagement, Royal Tasmanian Botanical Gardens</i>	
Vocational Training and learning for life <i>Kate Heffernan, Consultant, Botanic Gardens www.kateheffernan.com.au Chair BGANZ Qld</i>	
Challenges for School Programs: Models, Content and the Personal World <i>Malcolm Cox, Friends of Maroochy Regional Bushland Botanic Gardens</i>	
Top of the class – Leading the way in environmental education <i>Rebecca Maddern, Communications Coordinator Kings Park and Botanic Garden</i>	
Kings Park Education Building and Programs <i>Marcelle Broderick, Director Business and Visitor Services, Kings Park and Botanic Garden, Perth</i>	
Children's Garden – Concept vs. Reality <i>Paul Scannell, Curator Albury Botanic Gardens, NSW</i>	
The Ghost of Courtney Puckey <i>Michael Connor, Wollongong Botanic Garden</i>	
Electronic Tablets in the Garden? <i>Michael Yeo, Education @ Adelaide Botanic Garden</i>	
A Capital garden alive with learning <i>Stephen Speer, Education Officer, Australian National Botanic Gardens</i>	
A place to escape, learn and be inspired! <i>Rana Baguley, Education Coordinator, Friends of Gold Coast Regional Botanic Garden</i>	
Community Greening, a Royal Botanic Gardens and Domain Trust outreach program <i>Philip Pettitt, Education Officer, Community Greening, Royal Botanic Gardens & Domain Trust</i>	
"The Bungee Jumping Caterpillars" (Bouncing out a botanic gardens' message...) <i>Maya Harrison Visitors Services Officer / Education Officer MRBG</i>	
Reports from Botanic Gardens – Cairns Botanic Gardens	43
Regional Gardens: News in brief – Queensland	43
Calendar of Events	45

PRESIDENT'S VIEW

Anne Duncan, BGANZ President

Botanic Gardens have been very busy over the summer, but luckily they have found time to share their 'busyness'! The result is that this is truly a bumper issue – so many thanks to our wonderful and passionate contributors for sharing their expertise, experience and enthusiasm, despite being some of the busiest people in a garden. Education is the most important role of gardens in my view and it seems there are many of you who agree. Of course "education" can mean many different things, and the diversity of approaches can and should uniquely reflect the diversity of our communities, and this is both a blessing and a challenge. However how to do that is made easier with an understanding of what is possible, and what has worked elsewhere and this month's contributions give us a wonderful sense of that diversity and possibility. It also helps a lot to understand 'why' and I'd particularly like to thank Janelle Hatherly for "downloading" her many years of experience in education and public programs for the benefit of our members, in her article "Sowing the seeds of wisdom".

Apart from being busy in the gardens around the country the last few months have also seen some of our people in botanic gardens being recognised for their contributions to their communities. Its fantastic to see our colleagues being appreciated – however this has caused me to start thinking about recognition of contributions and achievements from a BGANZ perspective – peer recognition is something particularly special and something that BGANZ is in a position to facilitate - something that I believe we should discuss as BGANZ develops in the future.

Finally the BGANZ Congress in New Zealand in October is fast approaching – this is a truly unique opportunity to experience the inspiration of an international conference on our doorstep, and I would commend all of you to pull out the stops to attend yourself or encourage attendance of staff. BGANZ Council will be offering some assistance, as part of its support of professional development, so look out for those opportunities over the next few months. My continuing thanks to Eamonn, for his patience with the website – please keep the comments and suggestions rolling in.

BGANZ MEMBERSHIP NEWS

Eamonn Flanagan, Executive Officer

Career Vacancies on BGANZ website

Please note BGANZ welcomes all vacancies and will place adverts on the BGANZ website and in our member email updates. All adverts will incur a \$100 fee.

New Website:

The new BGANZ website is now launched. All members can have their own individual user name and password. User names and passwords from the old site won't work.

If you find a page not working as you'd expect or resources are missing please contact secretariat@bganz.org.au and let us know as soon as possible.

How to get access to the new website?

Go to www.bganz.org.au and find the login page. Once there you'll be asked to enter your details and a confirmation email will be sent to you. I will manually enable your access and depending when I receive it this may take a day or two, at worst, so please be patient!



All BGANZ Institutional Members will be located on the map on our new website front page. You can check if your membership is [current here](#)

BGANZ Updates:

If you'd like to receive all updates and the Botanic Garden directly, please ensure we have your [correct email address](#).

BOTANIC IN BRIEF

Neonicotinoid pesticides and bee colony collapse

Has there been any discussion at your Garden about the use of neonicotinoid pesticides (ie imidacloprid - Confidor, Merit etc)? There has been a great deal of discussion in the UK and Europe regarding the use of neonicotinoid pesticides and bee colony collapse. EG www.europarl.europa.eu/committees/en/studiesdownload.html?file=79433&languageDocument=EN

The RBG&DT is currently using the precautionary principle with the use of these pesticides (ie not using them except in the glasshouses), but would like to know what the rest of the country's doing.

Interested in this topic: Contact Eamonn at secretariat@bganz.org.au and leave your preferred contact and we will organise a forum to discuss the matter.

Awards for Australians

Mr Dick Burns received a Medal in the Order for his services to botany, mainly his work in the Australian Plant Society, in particular with Tasmanian plants.

Mark Webb, Botanic Gardens Park Authority, Western Australia, received a Public Service Medal in the Australia Day honour list.

Dr Philip James Moors, former BGANZ President, received an Order of Australia for distinguished service to conservation and the environment through contributions to the botanical and scientific community and the promotion of Australian flora.

Kate Heffernan – BGANZQ President from the Gold Coast and **Irene Champion** – Friend of the Mackay Regional Botanic Gardens who both received awards for their longstanding commitment to and work in the environment and their local botanic gardens

Green Flag Award for New Zealand Hamilton Gardens is one of the first parks in New Zealand to earn the prestigious Green Flag Award for excellence and high standards in public parks.

The Green Flag Awards, delivered through Australasia by the Parks Forum, recognise well-managed parks which strive to meet its visitors' needs retain important historic and cultural values and develop protection of native species and habitats. The first 12 to be awarded to Australasian parks were announced this week.

Hamilton Mayor Julie Hardaker says the Green Flag Award emphasises the quality of one of Hamilton's finest attractions, and the hard work of a group of committed staff and supporters.

Be healed in Singapore. The Singapore Botanic Gardens [harbours the Healing Garden](#), which showcases 500 varieties of plants with medicinal properties.

Meijer Gardens' "Butterflies Are Blooming" Exhibition Highlights Exotic Butterflies From Four Continents. Thousands of butterflies fly freely in the tropical conservatory March 1 through April 30. Visitors can see more than 40 species and discover how these creatures use flight patterns for different purposes.

On ABC Radio National recently [David Mabberley, the Executive Director of the Royal Botanic Garden in Sydney](#), explains what makes botanic gardens such special places and how it is they continue to be so important for the world today.

The First Garden will be playing at the Royal Botanic Gardens in Sydney as part of their 2013 Autumn in your Gardens program. The season will be opening on International Women's day running from the 8th until the 17th of March 2013 this coincides with Australian Women's History Month.



Olive Pink (1884-1975) was a botanical illustrator, anthropologist, gardener and a trailblazing

Aboriginal land rights activist and environmentalist. In October 1956, at the age of 72, Olive Pink set up her tent on the grounds of what is now the Olive Pink Botanic Garden and from this tranquil location she vigorously lobbied Northern Territory politicians to establish a Flora Reserve to protect native flora and provide a site where locals could visit and learn about desert environments.

The First Garden is her story. The story of a woman who took no prisoners in her quest to develop her life's dream; it is also the story of how diverse cultures have valuable lessons for each other.

Fascination of Plants Day 18 May 2013

Everybody is welcome to join this initiative!

BGANZ contact for FPD is: [Stephen Speer](#)

We invite you to organize for the 18th of May 2013 a fascinating activity related to plants attracting and interacting with the public. May 18th will be the very Fascination of Plants Day and most events will be organised for this day. In addition, where this is not suitable, events will be organised throughout the week of 13-19 May 2013.

[Welcome Cameroon, the 47th country to join the Fascination of Plants Day 2013](#)

The second international “Fascination of Plants Day” will be launched under the umbrella of the European Plant Science Organisation (EPSO).

The goal of this activity is to get as many people as possible around the world fascinated by plants and enthused about the importance of plant science for agriculture, in sustainably producing food, as well as for horticulture, forestry, and all of the non-food products such as paper, timber, chemicals, energy, and pharmaceuticals. The role of plants in environmental conservation will also be a key message.

BGANZ / BGCI Congress October 20 – 25 October 2013

Dunedin Botanic Garden New Zealand

Celebrating Success – the influence and appeal of botanic gardens

A collaborative Congress to bring together expertise and experience from botanic gardens and partner organisations from both the BGANZ and BGCI networks. This will be a unique experience for all when this alignment of our own 6th Biennial Congress and BGCI's 5th Global Botanic Gardens Congress takes place in Dunedin.

Watch out for the Congress announcements and website updates of information and details about the programming call for papers posters and symposia coming your way shortly.

PROFILE BGANZ

Danny Fraser, Curator, Eastwoodhill Arboretum, Gisborne, New Zealand

Each Botanic Garden we focus on a BGANZ. If you know someone we should profile please let us know. In this edition Botanic Garden profiles Danny Fraser, Curator, Eastwoodhill Arboretum



Danny Fraser, Curator, Eastwoodhill Arboretum
Photo credit: Eastwoodhill Arboretum

We live in Douglas Cooks Homestead within the arboretum which is the most beautiful place so all we need to do is walk out our front door and we are in the best playground a family could ask for

Danny how did you first get involved in plant life and Arboretums?

When I was young my playground was the beautiful Waitakere Ranges west of Auckland. They invoked a passion for native flora and many trips into the bush in later years with a particular interest in edible and medicinal plants.

My interest in exotic trees did not really begin to stir until I took my first trip to the UK. Walking in mid-winter through deciduous European woodlands opened my eyes to a whole new world of trees.

Most of NZ's native flora is evergreen of every shade imaginable, but I was totally enthralled with the skeletal forms of trees upon masse. Working as a landscaper/gardener on large private properties provoked a desire to know more so I completed a Wintec diploma in arboriculture and my eyes were opened to the fascinating world of trees.

Since then it has been an awe inspiring journey of discovery especially in recent years within my role as Curator.

What do you enjoy about your role as Curator?

The diversity of tasks and responsibilities that I am challenged with every day keeps me on my toes and forever learning. Our collection has 3500 taxa over 135ha and minimal staff so you really have to be a jack of all trades.

I also get to meet many national and international visitors which is always interesting but the botanical experts which come through can be fascinating seeing your collection through their eyes and ideas and learning from their knowledge.

What is the biggest challenge facing Arboreta?

New Zealand had many magnificent private tree collections over the last century but many have faded away due to new generations having other priorities, others were gifted to local authorities and have become parks, very few have kept their original focus of diverse exotic collections.

Lack of funding for conservation of exotic species could cause the few remaining to fade away or turn to alternative tourism activities, but to many arborists and tree lovers, the trees are all that's needed. Douglas Cook founded Eastwoodhill in 1910 and spent his life making an 'Arboreal Ark' for threatened species from around the world, trees are important to us all and worth protecting, not just our indigenous species.

Can you tell us about someone you admire in sector and why?

Bob Berry from Hackfalls Arboretum is a man whom I have the utmost respect and admiration for. He has spent much of his life collecting seed and growing them on his Tiniroto farm and created the best private collection of oak in the southern hemisphere. During the 1970's he tirelessly completed the first formal catalogue of the Eastwoodhill collection which was a formidable task and is one of NZ's notable plants men. Today at 95 he still has a fantastic memory for plants and a great sense of humour.

Do you have a favourite plant or special area at Eastwoodhill Arboretum?

There are so many beautiful areas and each garden of planted form has its unique appeal but the timelessness of beechwood holds a special appeal to me.

Other gems like the bark of *Ulmus parvifolia* and *Luma apiculata* or the striking mature foliage of *Cupressus cashmeriana* always make me smile. What inspires me is the abundance of my favourite trees here in their mature form.

When you're not at work where would we find you?

I'm at home with my wife and three children. We live in Douglas Cooks Homestead within the arboretum which is the most beautiful place so all we need to do is walk out our front door and we are in the best playground a family could ask for! Obviously we don't go out of the arboretum much and a trip into town can be sometimes a bit of a chore.

Footnote: Danny has since resigned from this position at EastwoodHill

REPORTS FROM BGANZ PROFESSIONAL AND REGIONAL GROUPS

BGEN – Botanic Gardens Education Network Australia and New Zealand

Stephen Speer

BGEN (The Botanic Gardens Education Network Australia and New Zealand) is a special interest group serving as a professional development network for botanic gardens staff and volunteers working in education/learning, public programs and visitor services roles.

The main networking tool for BGEN is the BGANZ website www.bganz.org.au. The BGANZ website will become the portal for sharing of knowledge and resources, and an online forum for members to ask questions, share experiences and solve problems.

Our intention is to develop a strong online community of botanic garden staff and volunteers to share experiences and resources. This will be particularly beneficial to staff at the smaller and regional botanic gardens who have limited access to resources and expertise.

Over the coming months we will be fine tuning the BGEN online presence on the BGANZ web and inviting your participation. If you would like to join BGEN, share experiences or have items for discussion please visit the BGANZ web or contact Stephen Speer (e: stephen.speer@environment.gov.au)

BGANZ Professional Development Working Group

Paul Scannell

The BGANZ PD Working Group is delighted to announce an exciting line-up for our 2013 professional development program. These PD opportunities are available to members and non-members (slightly increased fee) and are spread across our Regional Groups to enable all members to attend at least one session.

BGANZ Council has allocated financial support to enable Professional Development Workshops at 3 regional BGANZ Conferences in spring 2012 and NZ 2013.

BGANZ Professional Development Program 2013

1. BGANZ VIC – March 19th – 21st 2013
Jerry Romanski – “Mature Tree Management” at BGANZ VIC Spring Plant Forum (March 19 – 21, Royal Botanic Gardens Melbourne.)
2. BGANZ NZ at BGCI Congress Dunedin October 2013.
Professional Development Workshop (Details TBC)
BGCI Education & Interpretation Professional Development module.
3. BGANZ NZ – Nov (TBC) 2013
Seminar - Workshop.
Date and details TBC.

PD events will be updated on the website, by e-mail and in the newsletter.

We continue to work towards an accreditation system that may be internationally recognised.

Support BGANZ opportunities and grow.

Cranium South and Gluteus Maximus North, so to speak.

BRON (BGANZ Records Officers Network)

Tom Myers

BRON report: the Records Toolkit Survey

It's been a busy time, and we would like to thank all who have responded to the Records Toolkit Survey. In all, 46 surveys have been sent in. Results are being compiled and will be made available to the network. Preliminary feedback will be given to the BGANZ council for discussion of the project.

The BGANZ secretariat, Eamonn Flanagan has been very helpful in setting up a web resource for BRON on the BGANZ website, and has copied a lot of material over to this from the original Google Site. If you are interested to see this site, please email the network: bganz.bron@gmail.com.

BGANZ – New Zealand News

Alan Matchett

Millennium Seed Bank (MSB)

NZ Plant Conservation Network (NZPCN) has signed an MoU with MSB. Discussion is underway with NZPCN to form a partnership with BGANZ – NZ as a key institutional partner. MSB seed collection protocols training in May.

Regional Membership

The 6 main gardens have agreed to act as hubs within each of their regions to initiate contact with smaller regional gardens and offering to act as point of contact and support to develop and promote links to BAGNZ and encourage participation in BGANZ activities.

Study Grant Applications

Two applications previously reported were approved, grants of \$1000.00 and \$500.00 being awarded to assist Rewi Elliot, Otari Native Botanic Garden to attend the Kew Diploma, BG Management and Gus Flowers of Hamilton Gardens with a study of volunteer activities and management in selected UK gardens.

Industry Training

Updating earlier reports to Council on changes to industry training in NZ. BGANZ - NZ has jointly applied with NZ Recreation Association The Royal New Zealand Institute of Horticulture to form an Amenity Sector Industry Partner Group within the Primary Industry Training Organisation (PrITO) framework

Parks Forum

It was noted that there are opportunities to collaborate with Parks Forum on seminars and workshops and that BGANZ affiliation is missing.

Congratulations to Hamilton Gardens in their gaining a Green Flag Award during the inaugural presentation of these awards.

Regional meetings and training opportunities

Next BGANZ – NZ meeting New Plymouth May

New Zealand Recreation Association (NRZA) - 3Ps conference 25-28 Feb 2013 in Christchurch - some BGANZ workshop papers will be presented here.

New Zealand Gardens Trust (NZGT) - Conference 6 -7 April – Dunedin

Royal New Zealand Institute of Horticulture (RNZIH) - AGM and Banks Memorial lecture – Dunedin

James Cook Bicentenary

A discussion with Dr David Galloway, Otago University to encouraging support for a NZ connection to contribute to a bi partisan celebration of James Cooks visit. The Royal Society was identified as a likely organisation to pick up on this BGANZ-NZ encouragement and support.

BGANZ Queensland Regional Group

Dale Arvidsson

Qld Botanic Trail update

Slight delay with finalising and publishing the trail brochure. Extended print from December to March – ready for Easter holidays. Thanks to Eamonn to assisting with the online presence on the BGANZQ Regional Group page.

BGANZ Victoria Regional Group

Annette Zealley

Putting the Botanic Back

In Victoria we're excited about the BGANZ VIC Plants Forum coming up from 19-21 March at the Royal Melbourne Botanic Gardens. We've a great program planned focused on heritage gardens and collections management. It's always inspiring to hear about collections being developed by regional gardens. We'll be welcoming Tim Entwisle the new CEO of the Royal Botanic Gardens Melbourne (you can read Tim's final report from Kew in the next article) with a special 'in conversation with' segment where he will share his views on the future of botanic gardens.

The Plants Forum and other network events throughout the year are fabulous opportunities to catch up with old friends and find out what is happening in different gardens. We welcome members from interstate.

I'm always inspired by the buzz in the room at our events and the information which is generously shared between horticultural professionals. We've sought Expressions of Interest for members to host events for the 2013-14 program which will be released soon.

We hope our growing list of emerging botanic gardens will soon be bolstered.

The Borough of Queenscliff has sought community submissions to develop the former Queenscliff High School site into a Botanic Garden. This site which has views over Swan Bay would include indigenous garden, community vegetable garden and open space. We look forward to an announcement this garden will be developed in the future.

REPORT FROM BGCI 8TH INTERNATIONAL CONGRESS ON EDUCATION IN BOTANIC GARDENS, NOVEMBER 2012, MEXICO CITY

Update from BGCI Education Congress, November 2012, Mexico City

Marcelle Broderick, Director Business and Visitor Services, Kings Park and Botanic Garden, Perth



Marcelle Broderick and UNAM's Carmen at the BGCI Education congress dinner - Mexico City 15 November 2012 (Carmen handmade traditional papier mache 'catrinas' to give to delegates in celebration of Mexico's Day of the Dead - Marcelle holding a blue 'catrina')

Mexico City's Institute of Biology' Jardin Botanico hosted the 2012 BGCI 8th International Congress on Education in Botanic Gardens. As key BGCI organiser extraordinaire Julia Willison reminded delegates, this was the first time that BGCI's Education Congress had been held in Latin America and the 150 delegates from 31 countries received a very warm welcome from the enthusiastic Mexican hosts and the highly professional BGCI organisers.

The Congress theme was Education and the Global Strategy for Plant Conservation and delegates participated in a stimulating week of key note speeches, presentations, workshops and posters. The Congress had five themes:

- ✦ Knowledge and understanding – plants in the spotlight
- ✦ Sustaining our natural capital
- ✦ Plants, economy and culture – have we got the balance right?
- ✦ Connecting people to plants – learning to live more sustainably
- ✦ Training and collaborating for change

A summary of the Congress can be found on the website: <http://www.bgci.org/education/bgcieducationcongress/>

Two innovative Kings Park Education projects were presented at the Congress:

- a) The Boodja Gnarning Walk, the self-guided opportunity within the Western Australian Botanic Garden. The presentation was *“Living and Learning through the Land – A Collaborative Success Story”* and
- b) The Rio Tinto Naturescape Kings Park facility, *“Connecting Children with Nature – A Place to Grow for the Future”*.

Should any readers want to read these presentations and others, the BGCI is intending to publish the conference proceedings in early 2013. Kings Park's presentations are available before that if required, just email a request to enquiries@bgpa.wa.gov.au

Some of the key issues covered in the sessions I attended are summarised as follows:

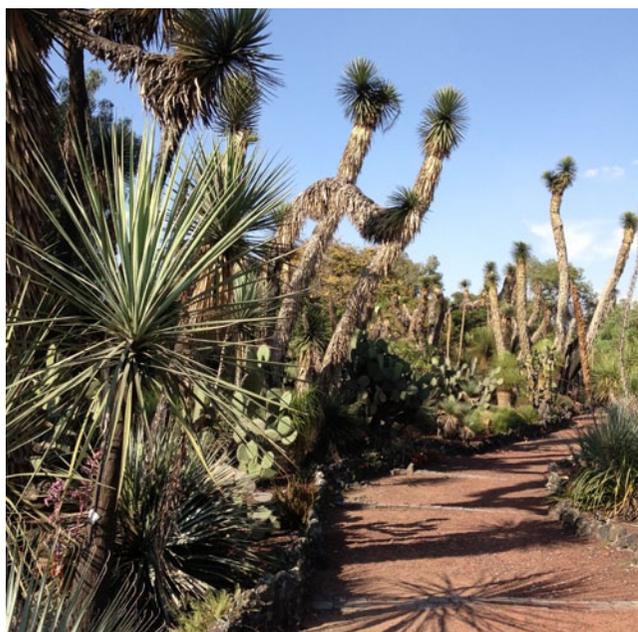
1. Global Strategy for Plant Conservation (GSPC):

Missouri Botanic Garden Director Peter Wyse-Jackson described the role of botanic gardens in the various targets of the GSPC, and particularly Target 14 relating to education, communication and public awareness.

He emphasised the need to raise awareness through experience, not just through reiteration of ideology and transfer of facts, with the now widely accepted premise of the power and long term effectiveness of providing positive nature based experiences in childhood to assist in environmental awareness and conservation actions in adulthood.



Welcome sign for participants with images of each BGCI 2012 Education Congress presenter. Photo: Marcelle Broderick



Agave and Cactus Garden – Jardín Botánico – Mexico City.
Photo: Marcelle Broderick

2. Traditional Farming – keeping food and culture linked in Mexico’s Botanic Garden:

The University of Mexico includes the Jardín Botánico within the Institute of Biology. They presented “The Milpa - Cradle of our Biological - Cultural Wealth - Know it to Conserve it”.



Demonstration of traditional foods from the – Jardín Botánico – Mexico City. Photo: Marcelle Broderick

A recent innovation was the creation and promotion of a traditional “Milpa”, the home garden orchard traditionally used in pre-Hispanic times that is being reintroduced throughout Mexico.

The Jardín Botánico is working with restaurants throughout Mexico City to reintroduce chefs to the local produce and so create a more sustainable market for the traditional farmers who use the traditional Milpa methods. This was an interesting case study of the role that a Botanic Garden can play in conserving traditional cultural elements through education and Festival events.



Asimina Vergou and Julia Willison from BGCI summarising Congress outcomes on the final day – 16 November 2012 – Mexico City.
Photo: Marcelle Broderick

3. The role of botanic gardens in actively including disadvantaged sections of the community (various case studies from Chicago and UK):

Case studies on social inclusion programs were presented from both Chicago and the UK (presenters). In Chicago, the botanic garden is providing opportunities to under-served and disadvantaged children and youth to be involved in a variety of programs based on horticultural therapy, science careers entry assistance and the development of horticultural skills. They report an outstanding success rate with many participants achieving employment in the horticultural field or being accepted into higher learning institutions for related studies.

The UK examples were more community oriented programs, including one designed specifically for the growing population of migrant women, often victims of domestic violence, who are bereft of a wider network of support.



North Mexico's Queretaro Botanic Garden's poster exhibition – Jardín Botánico – Mexico City.
Photo: Marcelle Broderick



Jardin Botánico's Director Xavier Cabello (centre) and senior staff during Congress closing address – Mexico City

Other similar programs were offered for people with disabilities and people recovering from drug or alcohol addictions. They focused on gardening and nature based experiences and reported increased confidence and networking between participants, who would plant, maintain and harvest the gardens in weekly sessions, and celebrate with a shared meal using the produce from the garden.

The key message is that botanic gardens, particularly those located in the heart of a city, can offer an essential 'bridge to nature' and can play an important social role in the community by "including the excluded".

4. Adventure play and "Thinking Walks" in Wakehurst, England:

Wakehurst Estate (part of the Kew Gardens organisation). "Creating and Adventurous Journey's Play Project" referred

to the small scale project of adding one new nature based play facility each year within the estate, to service the local repeat visitors families.

The key recommendations from this presentation were to ensure buy in from staff and volunteers prior to the project commencing, phase it in slowly to reduce impact on the grounds and staff and to increase the longevity of interest by visitors, to set realistic targets and to use local craftspeople and companies.

The "Thinking Walks" concept has been rolled out across 22,000 public schools in England as part of the "Great Plant Hunt" project. The "Thinking Walks" are tool kits which can be scaled up or down according to the age of the children, and the kits are available online. For further information: www.thegreatplanthunt.com.

5. Engaging Teenagers in Environmental Education, New York Botanic Garden and Fairchild Tropical Garden Florida:

This program focuses on education and engagement of teens in environmental awareness, science and especially plant biology. The online Fairchild Challenge system includes a toolkit of ideas and resources and is intended to change the way teens relate to the environment and live with nature. Further information: www.fairchildgarden.org/education/fairchildchallenge

The "Thinking Walks" concept has been rolled out across 22,000 public schools in England as part of the "Great Plant Hunt" project.

6. Role and Impact of botanic gardens on Tourism:

Dr Richard Benfield of Central Connecticut State University has been researching the role and impact of botanic gardens on tourism in the USA and how the high level of visitation has a positive economic impact on the surrounding areas.

An estimated 78 million people visit USA gardens every year, more than both Orlando and Las Vegas combined, and more than both Disneyland and Disneyworld combined. The average USA garden has 50,000 annual visitors, and Missouri Botanic Garden has just achieved one million visitors in a year.

There are an estimated 250 million garden visits worldwide each year (noting that Kings Park and Botanic Garden contributes an astounding six million to this figure). This high level of visitation provides excellent opportunities for botanic gardens to deliver on Target 14, of the GSPC relating to education, public awareness and engagement. Research indicates 28% of USA visitors come primarily for social reasons, 21% come for horticultural reasons (often related to getting ideas and information for their home gardens), and 16% come for the peace and tranquillity of the setting.

Further research is required into the visitor profiles, motivation and satisfaction of botanic garden visitors to target methods of communication to a potentially changing audience and to reach different target groups.

Summary: The Congress had a very full and interesting program. Education is increasingly seen as core work in botanic gardens worldwide. It was a fascinating insight into others' experiences and there was a strong sense of collaboration and willingness to share ideas and information.

Dandy Lions preschool program – presented at BGCI Congress

Relle Frances Mott, Education Officer, Royal Botanic Gardens & Domain Trust

The following article is an extract from a paper presented Relle Frances Mott on the Dandy Lions preschool program at BGCI's 8th International Congress on Education in Botanic Gardens held in Mexico November, 2012.

Celebrating its' bicentenary in 2016, the Royal Botanic Garden, Sydney (RBGS) is indeed fortunate that early governors had the foresight to set aside the land, preserving it for plant collections and pleasure gardens, in what is now the heart of the city.

Now encompassing three sites in very different environments, the Royal Botanic Gardens and Domain Trust (the Trust) is the organization responsible for the management and stewardship of the Royal Botanic Garden, Sydney and the Domain; the Australian Botanic Garden, Mount Annan; and the Blue Mountains Botanic Garden, Mount Tomah.



Dandy Lions. Photo Credit: Relle Mott



Dandy Lions in action. Photo Credit: Relle Mott

The original sixty-four hectare Sydney site adjacent to Port Jackson, boasting mature trees, wide green lawns, and important plant collections well-kept by dedicated horticultural staff, has been much loved by visitors for nearly 200 years.

As the oldest scientific institution in Australia, it continues to be at the forefront of plant sciences research and education. In a contemporary context, this extract from the Trust's mission statement clearly encapsulates the Trust's purpose: "As a *living* organization, we connect people with plants through imaginative horticulture, beautiful landscapes, transformative learning experiences and cultural events." A new strategic plan based on the acronym LIVING will guide the direction of the three gardens towards a strong future.

The Community Education team at the Royal Botanic Garden, Sydney, strives to deliver a suite of exciting programs focused on plants, their conservation and their vital role in our lives to a

local and international audience. The team comprises specialists in school environmental sciences education, Aboriginal educators, public programs officers with event management, exhibition, interpretation and curatorial skills, and our outreach program team, Community Greening. Approximately 20,000 students are engaged annually in our diverse environmental education programs.

One of these educational programs is *Dandy Lions*, a unique early childhood program, which strives to deliver environmental education to urban children and their families as weekly fun in the Garden. It offers a creative, positive nature experience, connecting, enriching and extending children through an immersive program of gardening, nature walks, botanical craft and stories.

Each week there is a new garden theme with related activities and children are free to participate to whatever level they choose. The value of messy play and getting dirty with gardening and craft activities outside is appreciated by subscribing families, many of whom live in apartments. *Dandy Lions* includes a planting activity most weeks and children gain familiarity with planting seeds, watering, growing and nurturing plants, and taking home their pots of seeds and harvested produce. Sustainability - 'reduce, re-use recycle' - is at the heart of all the activities.

Regular contact with the RBGS indigenous educators creates positive attitudes for urban families who may otherwise never have contact with Australia's first people.

The Interactive storytelling based around these garden themes engages young children with the special elements of the site such as the weeping mulberry for silk worm stories, the ponds for pirate themes, the curtain figs for stories based on mythical creatures, and the eucalypts with low-hanging branches for aboriginal legends. Imagination is stimulated and children learn to enjoy the natural world as a stage for creative play.

Another very important element of all Trust programs is the Aboriginal connection. Aboriginal plant use, bush tucker, art, storytelling, weaving, music and dance sessions are incorporated into activities, developing an affinity for Australia's ancient cultural heritage. Regular contact with the RBGS indigenous educators creates positive attitudes for urban families who may otherwise never have contact with Australia's first people.

As environmental educators, we strive to deliver quality, hands-on, fun experiences for the children exploring and enjoying our beautiful Botanic Garden. Weekly visits year-round develop strong relationships between our teaching staff, the children, their carers, and the site.

Richard Louv, author of *Last Child in the Woods* and *The Nature Principle* puts forward the premise that in the 21st century, people are losing their daily contact with nature with the burgeoning populations in cities.

Modern children's lives are over-structured, technology-focused, anxious, and existing nearly completely in the built environment. Louv documents the fact that nature as a theme and setting has been steadily disappearing from children's literature since the 1930's.

His statement that *'individuals have some connection to the land in their hearts if it happens in childhood'*, emphasizes the importance of engaging young children and their families with nature.

Interactive story telling Royal Botanic Gardens Sydney.
Photo: Relle Mott



Life with leaves...just great. Photo Credit: Relle Mott

As children participate in outdoor education programs like *Dandy Lions*, they develop confidence, construct their own identities and understandings of the natural world, and make

lifelong connections to nature, culture and place. In turn, the children and their families have a sense of 'ownership' of the Royal Botanic Garden, Sydney.

Positive memories of time spent playing, creating, growing, singing, discovering and enjoying the garden with their families will stay with these children for life. 'Place Theory' confirms the value of *Dandy Lions* attendance as preschoolers translating as support for the Botanic Gardens as adults.

The *Dandy Lions* formula can be easily recreated in other urban Botanic Gardens and is applicable to all cultures and budgets, engaging young children and their families in positive learning experiences where they can choose their activity and their level of involvement, whilst feeling safe and having fun. Minimal seed funding is required – just enthusiasm and a garden.

Dandy Lions creates nature connections for life which we hope will sow the seeds for becoming responsible adults who appreciate nature and the joy of growing plants, are inquisitive about the environment, live sustainably, advocate for conservation, and become future supporters of our Botanic Gardens – the perfect humans ensuring the green future of our planet!

The Royal Botanic Gardens and Domain Trust provides extensive online information about plant conservation and a program of botanical visitor experiences including curriculum-linked school excursions and school holiday activities.

www.rbg Syd.nsw.gov.au/education/children_and_families/dandy_lions

www.rbg Syd.nsw.gov.au/education

www.rbg Syd.nsw.gov.au/education/school_excursions

www.rbg Syd.nsw.gov.au/plant_info/Plant_databases

www.rbg Syd.nsw.gov.au/plant_info/Plant_conservation

FINAL REPORT FROM KEW

A year (or two) at Kew

Professor Timothy J. Entwisle Director, Conservation, Living Collections and Estates, Royal Botanic Gardens Kew



Tim Entwisle at Royal Botanic Gardens Melbourne, about 32 years ago, 1981.



Tim Entwisle 2012. Australia over my right shoulder literally and in 'Afloat', a bronze artwork by Hamish Black near Brighton Pier

Mid-way through 2010, I was getting restless in Sydney. Put it down to the seven-year itch, middle age, ambition, or all three. In any case, I started to look for a new job. Being Executive Director of Sydney's botanic gardens was fun and demanding but I needed a change. I was thinking quite broadly, from a university Vice Chancellor to head of the ABC!

Inevitably I was attracted back to plants: my passion and, let's face it, where I was likely to be competitive.

In July the Director of Royal Botanic Gardens Kew, Steve Hopper, emailed me a position description for something he thought I might be interested in. The job as Director of Conservation, Living Collections and Estates was not the top job, but it had a bigger budget and more staff than I had at Sydney, and...it was Kew.

I'd been approached a few weeks earlier by the executive search company and told them I wasn't interested, but I was now definitely nibbling. The job included living on the grounds at Kew Gardens, making up for the typically unattractive UK salary.

I'd have responsibility for horticulture at the most famous botanic garden in the world, Kew Gardens, as well as leading the Millennium Seed Bank and watching over the associated gardens and forest at Wakehurst Place. Taking on an £80 million maintenance backlog, which turned out to be an underestimate, was perhaps not as attractive but certainly a challenge.

In addition to an appealing job and home, we'd be living close to mainland Europe, a short train trip away from Paris and a cheap airfare away from a smorgasbord of languages and cultures. And of course I also knew Steve would eventually vacate the position

and I thought a few years in this role would prime me up, and test me, for the Director position.

On the downside the weather in London was crap and my wife Lynda had explicitly said she didn't want to live anywhere cold – Hobart had always been off our list for this reason. But then there was the sniff of Paris. Our kids had just left home so it was relatively easy to move hemispheres. In the end it was a now or never decision, and we went for now.

I don't think there is or will be another place like Royal Botanic Gardens Kew, but then there doesn't need to be; other botanic gardens can and should do different things and do them differently

Now, in January 2013, I'm leaving Kew to return to Australia. Again the timing is right, or at least not wrong. The Directorship has been decided and with Richard Deverell Kew has a quite different but fine leader. In fact we get on very well, and although with wildly different backgrounds we are (I hope he won't mind me saying) uncannily similar – convergent evolution?

I have the happy chance to return to my home state of Victoria, and to the botanic garden where the whole love affair started. It was at Royal Botanic Gardens Melbourne where I became a botanic garden groupie after a few years working as a vacation student and then a year as a horticultural assistant while I mulled over whether or not to do a PhD.

So after nearly two years at Kew I return home. Two years of working at a truly amazing place.

Full of history, intrigue, frustration, potential and what can only be described as its own very special *je ne sais quoi*, or perhaps *chutzpah*. I don't think there is or will be another place like Royal Botanic Gardens Kew, but then there doesn't need to be; other botanic gardens can and should do different things and do them differently. Kew's *chutzpah* is what gives it unparalleled potential but it's also what cements its feet firmly in Thames mud.

Plenty has happened while I've been in London.

I've kayaked in the Thames, moshed in some of London's more colourful music venues and sampled its rich literature, media and beer

Remember the Windsor-Middleton wedding in April 2011, embarrassing me with two bank holidays just after I carefully started to avoid the Easter break. There was the second Diamond Jubilee for an English Royal – the first resulted in a 15 hectare bluebell-rich addition to Kew Gardens, the second in some renovated gates (now Elizabeth Gate, on Kew Green) and a famously soggy Thames regatta. The Olympics and Paralympics of course, etched symbolically in flowers at Kew. And annual events like the Chelsea Flower show, summer art at the Royal Academy, Christmas where it makes sense.

At Kew there were orchids in Princess of Wales Conservatory in winter, succulents in flower in 'summer', autumn colour at Wakehurst Place and Kew Gardens, and at least some of the 30,000 different plants doing their thing every day of the year. I've kayaked in the Thames, moshed in some of London's more colourful music venues and sampled its rich literature, media and beer.

When I leave Kew, my job will be dismantled. It was always a slightly concocted role but a useful one for a few years at least.

The legacy, I hope, will be closer working relationships between and within the horticulture staff at both sites, and with their colleagues in Estates and the Millennium Seed Bank. They were always good mates I think but we were able to iron out a few rough patches and try a few new things.

And we did some good along the way.

A major funding campaign for the £34 million restoration of the Temperate House was well advanced when I started, and soon after I leave the final pledge should be made. Millions of pounds of government capital funds were won and spent, and various energy saving or generating projects completed, started or planned. The UK native seed hub opened at Wakehurst Place and after some tense negotiation and positioning we bought an eight hectare farm, the 'hole in the doughnut' at Wakehurst.

It seems to me that with some more staff and renewed enthusiasm, the standard of horticulture at Kew Gardens began to improve.

Life isn't a bed of roses. Or perhaps it is, but you have to put up with the thorns.

In September last year we had a visitor die when a large branch fell from one of our historic Cedars. This is the kind of thing everyone working in a public garden dreads but knows is inevitable one day, no matter how vigorously you care for your (in this case 14,000) trees. Visitor numbers were down in 2012 as a result of the Olympics, wet weather and presumably the subdued economy, meaning less money in Kew's coffers. The government continued to reduce its support as it did across departments throughout the UK.

In a familiar story, Kew meanwhile found new ways to generate revenue. Although I like the UK *climate* and its biological effects – particularly the sharp seasonal changes and starkly beautiful winter – the *weather* itself was very unattractive, although mostly in a miserable rather than malevolent way.

Now we pack up our belongings to return. We've done a bit of packing and unpacking over the two years as Lynda and I took advantage of our place in the world to travel in the neighbourhood.

We visited (together or separately) Gran Canaria, Madrid, the Pyrenees, Paris (a few times), Prague, Berlin, Scotland, Wales, Cornwall (a few times), Lancashire and Yorkshire, the Lakes District, and various gardens and counties near to London.

For work I went to Nairobi in Kenya, Incheon in South Korea, St Louis in USA and back to Australia only a few months after we'd settled in London, to Melbourne for the International Botanical Congress. We travelled together to Sydney in early 2012 and I visited Melbourne again later in the year to be interviewed for the botanic garden job.

There are plenty things still to do in London: museums, galleries, gardens, pubs, counties and countries.

At Kew it would be great to get my teeth into the science restructuring, continuing improvements in horticulture and landscaping, new interpretation, and various projects from replanting the Board Walk kidney beds through to completing the Temperate House restoration and reimagining the Thames River/Kew Palace precinct.

But I can watch from afar, happy that I've sown a few seeds on fertile ground and that Kew will tick along quite nicely as yet another antipodean heads home.

I have another botanic garden to look forward to, one that has done great things in the last two decades under the leadership of Phil Moors. I'm looking forward to putting my own stamp on things, helping it sing and dance to its own tune. I don't quite bring a world of experience but in the last two years I feel like I've experienced an important chunk of the world.

*This article first appeared on Tim's blog, Talking Plants (<http://talkingplants.blogspot.com>), on 30 January 2013

Association of Friends of Botanic Gardens (AFBG) – Connecting Friends for 20 Years

Annie McGeachy, Secretary

This year 2013 AFBG celebrates our 20th anniversary. We are delighted to say we are still here, as we have at times been concerned about our continuing viability.

The concept of connecting Victoria's regional botanic gardens' Friends groups was initiated by the RBG Melbourne Friends in 1991 during a very successful seminar. A second seminar in 1992 resulted in the AFBG Vic. Incorporation in 1993, which was administered by the Secretary, the late Lawrence Cohn, for many years.

AFBG became a national body in 2001 and we have gradually overcome the inherent complexities of communication and logistics this places on a volunteer group.

We have a current membership 54 Friends groups, (consisting of approximately 19,000 individual members and over 3,000 active volunteers). Many members have attended BGANZ national conferences and regional forums and BGANZ representatives have participated at bi-ennial AFBG conferences. With the welcome development of a closer working relationship with BGANZ and the possibility of recurrent funding, we can look forward to a positive future.

EDUCATION

Sowing the seeds of wisdom

*Janelle Hatherly is an education and interpretation specialist with over 20 years' experience in the development of educational programs and exhibitions in museums and botanic gardens
Contact Janelle at janelle.hatherly@bigpond.com*

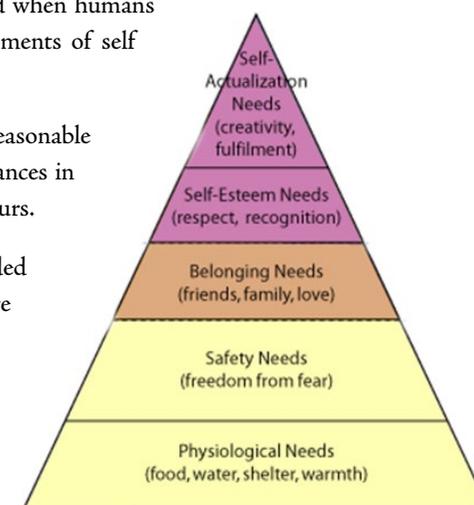
Learning is both the process and a product of thinking and when humans take it to its highest level we are rewarded with 'a-ha' moments of self fulfilment and creative output.

Thanks to those who have learnt before us, today we have reasonable explanations for why we learn, how we learn and, with advances in neurobiology, what happens in our brains when learning occurs.

A familiar and useful explanation for why we learn is provided by Maslow's Hierarchy of Needs (See Fig 1). These were postulated in 1954 by the psychologist Abraham Maslow who suggested that humans are motivated to learn in order to satisfy needs, a condition that has evolved over tens of thousands of years.

The highest level of Maslow's hierarchy requires a commitment to thinking, learning and education. People have been musing about learning and the nature of knowledge for centuries. The relationship between mind and brain continues to fascinate yet remains a holy grail.

Maslow noted that very few people become fully self-actualised because our society tends to reward motivation based on money, status, love and other social needs.



From Maslow, A. *Motivation and Personality* (2nd ed.) Harper & Row, 1970

Hierarchy of Needs – A. Maslow
Photo: From Maslow, A. *Motivation and Personality* (2nd ed) Harper and Row 1970

As children, we learn from everything we do. Children are naturally curious; they want to explore and discover. If a child's efforts receive the right support and encouragement at home and at school, they experience pleasure or success

Although we are all, theoretically, capable of achieving our full potential as persons, most of us are unlikely to do so. Yet our contemporary world is the product of centuries upon centuries of such individualistic and collaborative mindfulness. Humanity's creative achievements are all around us. And for many artists, poets, architects, scientists and other creative thinkers, the natural world has been the primary source of inspiration.

As children, we learn from everything we do. Children are naturally curious; they want to explore and discover. If a child's efforts receive the right support and encouragement at home and at school, they experience pleasure or success. This makes them want to learn more and sets them on the path to becoming creative, adventurous life-long learners.

The purpose of education is to foster a love of learning. Most of us can think back to a teacher or adult who made a difference in our lives, opened our minds to new ideas and possibilities, helped us believe in ourselves and pushed us to excel and get the best out of ourselves.

Great educators/teachers bring their own passion and joy for learning to others. They help us learn by revealing relevance and relationships and encourage us to apply rigour – the '99% perspiration' that brings self-actualisation. Those 'a-ha' moments produce creative objects and ideas for others to enjoy and use as scaffolding for their own learning.

By communicating openly and working collaboratively, an environment where it's safe to take risks is created and a learning community evolves. The age-old African proverb "it takes a whole village to raise a child" reinforces the importance of this methodology.

As far back as 1896, the Russian philosopher Lev Vygotsky showed the importance of dialogue and social interaction in cognition. His theory of a Zone of Proximal Development explains how assistance and instruction helps us scaffold knowledge and modify our world views. This laid the foundations for advances in pedagogy and for others to interpret the role of contemporary cultural institutions. Freeman Tilden's *Interpreting Our Heritage* and John Falk and Lynn Dierking's *Learning from Museums: visitor experiences and the making of meaning* are two highly relevant references for readers wanting to learn more.

By communicating openly and working collaboratively, an environment where it's safe to take risks is created and a learning community evolves

Optimum learning occurs when we take the time or make the effort to be observant and interested in the world around us; when we take on tasks or try to understand issues that extend us. It's important that these are just beyond our comfort zone but within our achievable challenge level. We can fail many times over but as long as we get accurate feedback and positive reinforcement along the way we will strive to master the challenge. When we do, we are rewarded with an 'a-ha' moment and are very pleased with ourselves.

Physiologically, performing such cognitive tasks causes an increase in dopamine release in the human amygdala (in the mid-brain) and we feel happy. This feeling of happiness motivates us to try again until we learn more ... and more. Learning promotes learning and, with practice, every individual can experience a degree of self-actualisation and identify with something bigger than them.



(a) With accurate feedback and positive reinforcement from artist Colley Whisson, I produced this oil painting.
Photo: Janelle Hatherly



(b) Costa joined the learning community (staff and Friends' volunteers) of Albury Botanic Gardens to celebrate the successful creation of their children's garden. Photo: Jodie Hutchinson

This explains the addictive power of video games and while they are basically unproductive, their mode of interaction makes computers and the internet wonderful aids to teaching and learning. The brain is programmed to pick up patterns and humans use patterns to make links, infer and experiment until a positive result is achieved.

Yet, with technology moving so fast, our very ability to think is being curtailed. Information bombards our senses and our brains can only process so much. When individuals feel overwhelmed and 'out of their depth' (or more accurately, beyond their achievable challenge level) stress-induced functional and structural changes in the amygdala are manifested as anxiety, frustration, boredom and often anti-social behaviour.

Our brains are being rewired for quick bytes of information and we find it more challenging to slow down and build focusing capabilities. Negativity to learning caused by stress is becoming a global problem.

Yet, with technology moving so fast, our very ability to think is being curtailed. Information bombards our senses and our brains can only process so much

While we can't hold on to our youth, we can hang on to the sense of wonder we had as children.

Our cultural institutions (museums, botanic gardens, art galleries, zoos, historic houses etc.) are optimal environments for life-long learning provided education is their primary role. These public places are human constructs and the collections within them represent what we as a society value. As such they provide

the ideal context for aesthetic appreciation and the deepening of understanding: places where we can reflect on the past; contemplate the present and imagine our future.

Botanic gardens might be about plants but they are defined by what people do in them. Plants and gardens touch us in many different ways and meet so many of our needs. It requires teamwork to create environments in which a diversity of plants can grow and thrive so when staff and volunteers in a botanic garden pool their wide-ranging expertise and evolve their own learning community, they create inspiring environments which are *highly* conducive to learning in the general public.

The American naturalist and scientist, E.O. Wilson coined the term 'biophilia' to describe this deep affiliation we have with nature. Botanic gardens have a role to play in providing safe environments where our spirits can be rejuvenated and we can reconnect with nature in our rapidly changing world. Drawing on diverse plant collections, good education programs in botanic gardens can muster concern about the loss of biodiversity. Visitors experience an 'a-ha' moment when they come to understand that loss of biodiversity is the most important environmental challenge we face as is the only irreversible one.

Many students experience an 'a-ha' moment in botanic gardens when they realise all of the products we use come from plants or rocks. Thus begins their lifelong connection with conservation of Earth's natural resources.

Where we are also affects how we think and behave. In the peace and tranquillity of a botanic garden all our senses are stimulated and we find time to think. We attempt to make sense of our surroundings and make meaningful connections.

We all learn differently and, more than any other cultural institution, botanic gardens can cater for all preferred learning styles. The information from each of the senses is stored in different parts of the brain but they are all interlinked by dendritic extensions of neurons. When similar interest is triggered, often later in another environment, multiple neurological pathways fire at once and memory making is strengthened. Brain imaging studies show that every time we learn a new task, we're changing our brain and growing more neuronal extensions. Neuroplasticity has replaced the formerly-held position that the brain is a static organ.

Outreach education programs involving communal gardening have empowered many botanic gardens to address environmental and social responsibilities 'beyond the garden walls.'

Gardening is hands-on and truly interactive and can be done by people of all ages, backgrounds, social status, interest levels and abilities. The rewards and sense of achievement are instant (the satisfaction of successfully planting something) and on-going (watching it grow and produce flowers or fruit). If the key to education for sustainability is to be 'futures focused', then undertaking a garden project which is underpinned by a learning ethos ticks all the boxes for sowing seeds of wisdom and self-actualisation.

More challenging, but within reach of the diverse group of individuals that make up a botanic gardens' learning community, is to help today's society learn what they need to know to be able to tackle today's complex social issues and environmental dilemmas. This is highly relevant at a time when our society is experiencing a technology revolution that is changing our world, faster and with greater impact, than the agricultural and industrial revolutions before it.

Life changing? – NMIT (North Melbourne Institute of TAFE) graduates receive inaugural horticultural scholarship to the Jerusalem Botanical Gardens (JBG)

Natalie Simmons, one of two recipients of inaugural horticultural scholarships to JBG



Natalie in West Negev Desert in spring. Photo: Ofri Bar

In March 2012 I left my home in Melbourne and moved to Israel as a recipient of the first inaugural horticultural scholarship to the Jerusalem Botanical Gardens with fellow NMIT graduate Trevor Seppings.

Trevor and I were individually going through career changes when we decided to go back and study horticulture at NMIT, both completing our Diploma of Ornamental Horticulture in 2011.

I was desperate to get out of an office environment after working in the media monitoring industry for 13 years. Trevor had spent the majority of his adult life working as a chef when he decided to pursue his passion for plants. For both of us, the move into horticulture was more rewarding than we could have imagined.



Trevor and Natalie in *Lupinus pilosus* at the JBG.
Photo: Ofri Bar

The JBG has been offering a scholarship program to horticulture graduates through organisations such as the British Friends of the JBG and the Royal Botanic Gardens, Kew, for the past couple of decades. It is an exchange of knowledge and experience that is valuable for the scholar and the gardens alike.

Opening the program to Australian horticultural graduates was initiated by former JBG curator and Melburnian Zel Lederman who saw the benefit of having Australian horticulturists working at the JBG due to the similarities in our climate and native flora. This idea was taken on by the Jewish National Fund of Australia, one of the world's oldest environmental organisations, with the aid of private donors.

I was desperate to get out of an office environment after working in the media monitoring industry for 13 years.

I was very fortunate to be finishing my horticulture diploma when program began.

The Jerusalem Botanical Gardens were established in the 1960's as part of the Hebrew University's Givat Ram campus, making it a relatively young garden. It was not opened to the public until 1985, and separated from the university in 1994.

The JBG is arranged phytogeographically and houses collections of plants from North America, the Mediterranean, Europe, South West and Central Asia, Australia, and South Africa. It also contains a tropical conservatory and one of the largest bonsai collections in the world in a newly opened bonsai display area.

Land adjacent to the gardens was purchased to develop a South American and Asian section. Plants for these sections were being propagated in the nursery awaiting the expansion. The JBG has made a concerted effort to create a landscape reminiscent of the natural environments of each region. The gardens have an almost park-like feel to them with a natural flow between the sections, and a less formal use of landscaping.

Scholarship recipients are given projects by the head botanist Ori Fragman-Sapir which they are responsible for during their tenure: Trevor was charged with the preservation and propagation of the rare plants of Israel collection, and I was given the curatorship of the geophyte collection which contained many beautiful native irises and alliums. We also undertook a number of other projects that were chosen specially to cater to our strength areas.

As a former photography and art student, I was given the opportunity to photograph plants for the database collection, and events held in the gardens. In addition to that, I redesigned and landscaped the garden entrance to the educational centre using plants from the gardening student's plant list for plant identification purposes.

My other horticultural roles included propagation in the nursery, working with the gardening team in the display garden, and mapping areas of the garden for the JBG database.

My experiences in the gardens were varied and rewarding, as were Trevor's.

Trevor was able to follow his love of Australian natives by identifying and naming 29 eucalypt species at the JBG, as well as most of the Australian plants at the Mikye Botanical Gardens in Tel Aviv. He produced a report on eucalypts and acacias from the Sydney area and southern seaboard region of NSW as a guide for the JBG to assist in plant choices best suited to the Jerusalem soil conditions.

On top of this extensive work, Trevor worked with the volunteer groups in the nursery, produced a eucalypt identification guide, and walk-and-talk guide of the Australian section. Outside of his work at the JBG, Trevor joined a community garden near our apartment where he greatly increased the vegetable production and taught the locals about good horticultural practices.

As part of our scholarship we were invited to attend field trips offered by the gardens staff and the Friends of the Jerusalem

Botanical Gardens, a volunteer group of plant enthusiasts. This was a fantastic opportunity for me to expand my photography portfolio and botanical knowledge of indigenous plants from the different ecological regions of Israel. Arriving in spring, we were fortunate to see the annual wildflower display in the western Negev Desert before the rains stopped and summer took hold.

Trevor was able to follow his love of Australian natives by identifying and naming 29 eucalypt species at the JBG, as well as most of the Australian plants at the Mikye Botanical Gardens in Tel Aviv.

We visited the mountainous Golan Heights region on the hunt for rare indigenous aquatic plants, and the Judean Mountains in the West Bank for native irises and gladiolus.



Northern Negev Desert.
Photo: Ori Fragman-Sapir



North American Section, JBG.
Photo: Ofri Bar



Iris atrofusca Northern Negev Desert.
Photo: Natalie Simmons



Fritillaria persica. Northern Negev Desert. Photo: Natalie Simmons



Geophyte collection JBG.
Photo: Natalie Simmons

On a memorable outing we accompanied the head scientist Ori Fragman-Sapir on a seed collecting trip to an area near Gaza to find rare allium, into agricultural lands in search of a rare *Silene* species, and to the Northern Negev to marvel at the black native irises growing in the hard desert sands.

The six month scholarship, which turned into seven months for me and nine for Trevor, would be the most exciting, life changing time that either of us has ever experienced.

We are sincerely grateful to all who made this opportunity possible and encourage all horticulture graduates to apply for the scholarship in the future.



Echinops sp. Golan Heights. Photo: Natalie Simmons

Innovations in Horticultural Vocational Education

Jane Grosvenor, Grosvenor Consultants and Marcus Ragus, Manager Learning and Community Engagement, Royal Tasmanian Botanical Gardens



RTBG students. Photo: Royal Tasmanian Botanic Garden

Throughout much of the world Vocational Education and Training (VET) is a growth area, with governments recognizing that developing the skills base of the population is crucial to maintaining and increasing productivity.

Growing the skills sector has its challenges in times of financial constraint; governments pressure their own departments and instrumentalities to tighten budgets, and industry and business rein in spending. In such an environment the argument used to cut expenditure may be that 'this is not our core business'.

The Royal Tasmanian Botanical Gardens (RTBG) believes that there are real opportunities for Botanical Gardens to develop as centres of learning, in both horticulture and related areas

In some industry areas the training challenge is further complicated by the nature of the industry and community perceptions. Horticulture fits in this group with an aging workforce and a non-glamorous stereotype when compared with some other professions. Botanical Gardens, as centres of horticultural excellence with diverse visitor populations, are well positioned to challenge such stereotypes.

The Royal Tasmanian Botanical Gardens (RTBG) believes that there are real opportunities for Botanical Gardens to develop as centres of learning, in both horticulture and related areas, and that this is the time for innovation and cooperation particularly in the area of VET.

Over the last three years the RTBG has been developing its own VET program, offering Certificate 1 in Agrifoods and Certificates 2 and 3 in Horticulture. From the outset this initiative has been very favourably received. Both fulltime and part-time courses are offered and are attracting a very diverse group of students including home educators, workers looking for a possible change of direction, horticultural professionals up-skilling and people there purely for their own self-development and interest.



RTBG students. Photo: Royal Tasmanian Botanic Garden

The programs have the added attraction that participants get to work at the Gardens, and what better place to experience horticulture and see its varied facets in operation.

At the RTBG students can see everything from broad on-going maintenance, through planning and development of new projects like the Tasmanian Community Food Garden currently under construction at the RTBG, to the specialist roles of horticulturalists working to conserve and preserve Tasmanian rare and threatened species and supporting worldwide efforts to develop and maintain seed banks.

Although the VET courses at the RTBG started as a logical addition to the Gardens' general education program, they have rapidly grown to become an area in their own right and something that is taking the RTBG into the community, both physically and on-line.

Physically the RTBG is being asked to support other organisations that are involved in skills development at different locations; community gardens are proving one centre of interest.

Organisations including Relationships Australia, ABLE Australia and St Vincent de Paul are partnering with the RTBG and their Registered Training Organisation, GlobalNet ICT, to provide community based training.

Certificate 1 courses offer many benefits to groups lacking in skills and/or self-confidence: they offer an ideal environment for new migrants to learn English; help in rehabilitation of people suffering from serious trauma or addiction; and can be a non-threatening way to develop literacy and numeracy. Certificate 1 student moving on to the more challenging Certificate 2 programs is evidence of success of these initiatives.

In a globally connected world Botanical Gardens have the capacity and opportunity to work together to develop high quality training materials

A very exciting development has been the growth of on-line VET offered by the RTBG in partnership with GlobalNet Academy. This started with a successful application to the Australian Commonwealth Government for funding under a program aimed at promoting the potential of the National Broadband Network (NBN) and other forms of high speed Internet.

The initial project linked three high schools to the Gardens to demonstrate that it was possible to offer quality online training in an outdoor, practical area like horticulture. From there a second round of funding has allowed further development of the schools program and there is growing interest from community groups around Tasmania looking to access similar training opportunities. This is coming from other schools, local councils, community gardens and not-for-profits working with disadvantaged groups.

The on-line program is supported by an out-reach trailer that can physically visit sites, allowing professional horticulturalists to work with students on the ground and trainers and assessors to meet students face-to-face.

Groups involved in the on-line training have also taken the initiative to come to the RTBG to experience that environment at first hand. Increasingly the RTBG is also looking at opportunities to work with other horticultural centres and training facilities to broaden training experiences available in both regional and metropolitan areas of Tasmania and beyond. Interest in the training programs has been shown by individuals and organisations both interstate and internationally.

In a globally connected world botanic gardens have the capacity and opportunity to work together to develop high quality training materials and provide the possibility for students anywhere to gain from the unique horticultural environment that exists in each garden.

Our challenge is to learn how to do this innovatively and cooperatively, and to demonstrate that such programs can be moved from the cost side of the accounting ledger to the benefit side as they bring people in to the Gardens, lift the profile of botanic garden as centres of excellence, and change perceptions of horticulture as a career of choice within our communities.

The authors of this paper would like to develop conversations with other botanic gardens that are either already involved in delivering vocational programs or interested in so doing.

Please contact either:

Jane Grosvenor - creatingcareers@me.com or
 Marcus Ragus - marcus.ragus@rtbg.tas.gov.au

Vocational Training and 'learning for life' on the Gold Coast

Kate Heffernan, Consultant, Botanic Gardens www.kateheffernan.com.au Chair BGANZ Qld



Fun on Arbor Day - Kate with Husband and Friends Volunteer Alan Donaldson and 'Sam'. Photo: Friends of Gold Coast Botanic Gardens

Gold Coast Regional Botanic Gardens (GCRBG) have been created with immense support and effort from a committed community, mostly led by the Friends. Now almost ten years since the first community planting day, the Gardens are maturing to fulfil some of the key roles of a botanic garden.

As well as seeing the transformation of a bare or in some places a weed ravaged area into a Botanic Garden, the GCRBG has been part of, and have witnessed some very different transformations. Over the years numerous youth and school groups have participated in planting or gardening and always with great outcomes.

Several programmes in 2011/12 stand out for their social and horticultural impacts.

The graduation rate was close to 100%, and the level of employment for individuals from the group testifies to the value of the programme.

In 2011, the first of four groups of State Government funded Level 2 trainees arrived on site. The Gardens were to be their classroom; a shipping container and a small demountable were brought on site for tool storage and administration, and a marquee was on standby for meal breaks in wet weather. Four programmes lasting 20 weeks each have resulted in built infrastructure, new gardens and general gardens maintenance. Regrettably now a victim of budget restraints, the Qld State Government funded the trainee salaries and project resources were purchased from the Gardens budget or through grants acquired by Friends.

Intended as a programme to help people disadvantaged in employment, each trainee was selected by council after a rigorous interview process. The graduation rate was close to 100%, and the level of employment for individuals from the group testifies to the value of the programme.

Favoured by employers because of the breadth of experience they gained at the Gardens, most trainees have progressed to full time employment within horticulture industries. Some have moved on to positions within council. And the Gardens has gained hundreds of metres of deco granite and concrete pathways, new feature lawn areas, several extensive gardens and rockeries, public seating, a community nursery, restoration works at a heritage garden (c1865 – 1930).

Introducing professional horticulture training into botanic gardens has been proven by others before, and delivered well it rewards with graduates who leave with practical skills and knowledge they can use on the job immediately.

The Botanic Gardens as a location is one of the keys to its success, and a very good on site trainer/supervisor is just as critical. Additional technical training was provided by Gold Coast TAFE with specialist machine and equipment trainers both on and off site.

When the current programme finishes in June the Gardens will be a quieter and less vital place. Gold Coast horticulturists of the future will have lost the perfect setting for training.



Botanic Garden's trainees.
Photo: Friends of Gold Coast Botanic Gardens

Ohana Youth Programme

Approached by a case workers from SCISCO (South Coast Industry Schools Coordinating Organisation) to host ten teenage boys in a Gardens Project could easily been dismissed as too challenging.

Gardens staff were tied up with day to day maintenance and unable to tackle an on-going project which was less about the value and benefit to the Gardens as it was about socialising teenagers who deserved a chance to try something totally new. Friends and SMART gardeners were willing to rise to the occasion and some of Skilling Queenslanders Trainees also participated as one to one mentors on a few occasions.

The teens were apprehensive at their first meeting with a group of retired volunteers, but quickly the barriers fell away as they realised their project was something special. They were interested and genuinely concerned for the plight of the endangered Richmond Birdwing Butterfly and surprised to learn that this giant of a butterfly they had no inkling of previously had once been common on the Gold Coast, in areas now densely populated by human families instead!

It was a summer time project and specifically selected for the teens and the Friends because the physical work would be in the shade. One day per week for several weeks was spent learning basic plant science and about the importance of habitat as well as a massive manual weeding and preparation of the planting site.

By the planting day the Friends, the SCISCO kids as they became affectionately known, and the SQW trainees had developed a very strong bond. The boys had experienced what their facilitator David Anderson described as *'one the most engaging and rewarding experiences I have witnessed a group partake in'*.



SQW Trainees pathway, grand opening day and after some growing time the Friends Centre. Photo: Kate Heffernan

According to David the boys developed knowledge of the gardens in general and their need within our community, knowledge about native species and most importantly, more knowledge and pride about the Birdwing Butterfly vine. They left with pride in their own efforts with preparing the ground and planting the vine to aid the return of the spectacular Birdwing Butterfly to the Gold Coast area.

(SCISCO, now known as Ohana Youth is a non-profit organisation working in partnership with 28 Gold Coast secondary schools, to enhance the employment, education and training outcomes for young people by coordinating an effective alliance between industry, schools, community and government. *Ohana means family; strengthening the future of our young people; leaving no one behind*).

Without the participation of Friends, the support of council and school and youth groups these Gardens projects would not have been achieved

Arbor Day – Gold Coast Style

Who can resist a few months of preparation for just one day of planting with a group of excited and noisy kids from primary and high school?

Every year since 2008 groups of 3 and 4 from up to fourteen Gold Coast schools come to the Gardens to learn about and to plant trees to celebrate International Arbor Day.

An outstanding result of these once a year days are three important plant collection zones -- Fruits of the Forest – 'the Lilly Pilly Walk'; 'Regional Bush food trees' and 'Non Regional bush food trees'. Add a total of around 200 teens and youngsters who can proudly watch their efforts transform what was a camphor laurel waste land into a very useful and attractive part of the Gardens.

The event is organised by the Friends Schools Education Officer and the planting project is coordinated through Friends of the Gardens. Site preparation is by gardens staff, and on the day supported by Friends members, trainees and some City Councillors.

Robina High School League for Life

League for Life is a program which commences in Year 9 and is designed for students who are not achieving their potential at school. The programme uses a holistic approach to schooling with rugby league, associated principles, IT and essential life skills blended to encourage students to learn.

Thirty-six Robina High School League for Life students completed a series of practical horticultural projects at the Gardens under the guidance and supervision of trained volunteers from Friends. The project involved the construction

and planting of a number of garden beds as part of the Living Collection, using only local species. It enabled the League for Life students to learn new skills, gain valuable workplace experience and at the same time discover their regional heritage in vegetation.



Robina High School trainees. League for Life (The group grew in number as weeks progressed and the word spread through the school).
Photo: Friends of Gold Coast Botanic Gardens

Working alongside professionals, vocational horticulture students and committed volunteers from Friends was a very valuable experience and the native gardens will be a lasting legacy of this partnership. It also gave the boys an insight into the horticultural industry at all levels. With cooperation and commitment from Friends, vocational trainees and a rowdy, energetic, interested and committed group of year 7 and 8 boys, an extension to a local species buffer zone planting between neighbouring residential properties and the Gardens car park was executed without incident, and with great success.

Important facts

Without the participation of Friends, the support of council and school and youth groups these Gardens projects would not have been achieved.

There are hurdles to jump with OH & S, safety induction, Child Safety Cards, tool training and basic horticultural knowledge, but from day one each time there is only goodwill. Now each of these planted areas are flourishing.

The Living Collection has been transformed and the Botanic Gardens have also been transformed. So too have the lives of a small but important number of the next generation and the adults who worked by their side.

Challenges for School Programs: Models, Content and the Personal World

Malcolm Cox, Friends of Maroochy Regional Bushland Botanic Gardens

In this article, 'We' (& 'us'/'our') refers to Botanic Garden Educators.

The latest issue [No.9.2] of BGCI's 'Roots' magazine - www.bgci.org/education/1641/ - has a focus on Inquiry-Based Science Education, and previous issues deal with other topics in similar depth. In Australia too, the broader community expects us to be exemplary science educators as well as environmental educators, and more.

The diversity of botanic garden education programs, coupled with school priorities and change such as the National Curriculum, ensures that we are constantly prepared for critical evaluation of our programs - ever ready to accept new challenges.



We came, we explored, we created - ephemeral art has a place in botanic gardens. Photo: Malcolm Cox

Botanic gardens are relatively safe settings for children who need to conquer their fears of 'wildness'

So what are our new challenges? How do we make effective changes when the challenges test our normal levels of confidence and competence?

The purpose of this article is to propose some key challenges that characterise the scope and style of botanic gardens education in Australia at present, and to pose ways we can meet them through new ways of conceptualising our role/s, and new ways of networking.

CHALLENGE 1: Moving from the Museum Model to the School Model

The Museum Model - a great place to visit:

A group of children arrives, spends several hours being ushered from point to point and plant to plant, engaged in activities that mix some Wow! With some useful information and build a desire to come back for more and to continue to be more engaged with plants, gardens and the natural world.

Classroom teachers are grateful collaborators as well as ephemeral learners. We have a high level of responsibility for the activities, but little responsibility for student learning and assessment – that is ultimately the teachers' role; similarly, there is little responsibility for teacher learning.

The School Model - a school for schools:

A school, or school system, engages us to provide a program that includes one or more botanic gardens visits by groups/classes, professional development outcomes for teachers, collaborative assessment of student learning, start-to-end links to school grounds/local communities and development of networks that will continue to grow beyond the limited life of the program.

We will still 'do activities' as part of our programs; the difference is that we will be 'the school that schools go to' in order to design and develop school-wide curriculum in areas that we can support.

Indicators of change:

Our collective practice occupies various stages along the continuum between these models. The challenge of providing teacher professional development is an established step, though teachers rarely have the time, incentive, passion or power to

move beyond their preparation for a visit or given unit of work towards seeing the botanic gardens as an agent for broader school change.

Ultimately, the School Model has to include principals, parents, a range of literacies, Learnscaping within the school grounds/community, and a sequence of assessment and evaluation that turns a simple 'excursion' into a pivotal moment within a whole-school movement.

However, this model will be incomplete if individual gardens become like individual classroom teachers, trading the inspiration of collaborative effort for the isolation of personal survival. In Australia, our challenge is to assemble a 'school model' through new levels of networking – building our separate achievements, resources and ideas into something really useful.

A common mistake our language makes for us is to perpetuate our sense of 'environment' as something external - something 'around' us

CHALLENGE 2: Choosing depth and breadth of content

There are about ten different perspectives we could adopt when looking at the plant world, but three stand out when we choose our subject matter - academic, environmental and economic.

An academic focus - Sciences, etc. as subjects:

These can be responsive to the best features of our collections, where we apply a Museum Model to pass on the knowledge scientists have provided us, or be responsive to external forces

like National Curriculum, where we apply a School Model and 'become' the setting for delivering at least a key component of a core unit.

An environmental education focus - from sustainability to NDD:

Similarly, our approaches to environmental education can range from discussion to discovery - from structured information about climate change and the role/s of plants (and people) to unstructured 'play' experiences designed to foster up-close-and-personal interactions and observations that stimulate appreciation and wonder in children suffering what we widely accept as Nature Deficit Disorder (NDD).

Botanic gardens are relatively safe settings for children who need to conquer their fears of 'wildness' and, depending on what natural settings they can offer, this may arguably be a more important role for them than providing discussion that can be better achieved at school with the insight and inspiration of personal experience.

An economic focus - horticulture and other plant uses:

The utilitarian continuum ranges from structured activities in gardening/food/fibre crafts (preferably hands-on) to relatively free exploration with a focus on skill (rather than knowledge, as in the academic focus).

Botanic gardens have contributed much to understanding the diversity of plant uses, while schools continue to develop variations on hands-on gardens and related curriculum. The Museum Model relegates botanic gardens to the role of follower when they should be leaders helping school communities develop new approaches to Learnscaping and plant crafts.

Indicators of change:

Gail Bromley (Roots, 9.2) refers to changing roles from the 'sage on the stage' to the 'guide on the side'. Standing up and talking 'at' students can produce quite different results from giving them a topic or problem and helping them explore and evaluate possibilities.

This exemplifies key differences between the Museum Model and the School Model, and suggests that the more we aspire to the School Model the more we must (1) make considered choices about how we approach each focus, and (2) exchange ideas, resources and information in new ways.

CHALLENGE 3: Defining Environmental Education (EE) for the Personal World

Environmental learning happens *from* (or *in*) our environment, *about* our environment and *for* our environment. However, our various approaches to EE are affected by our definition of environment. A common mistake our language makes for us is



Even adults want some immersion time to deal with Nature Deficit Disorder. Photo: Malcolm Cox

to perpetuate our sense of 'environment' as something external - something 'around' us.

Another is that our world consists of various environments - this approach, however, leads us towards a fragmented and potentially destructive definition of environmental education.

The alternative view has been around for decades. It contends that 'our environment' consists of three very obvious 'worlds':

1. The natural world - the physical (living & non-living) features:

It exists apart from the perceptions and predations of humans, and it is a great source of objects and phenomena to explore and discuss.

2. The social world - the features that people make; our roles, impacts, technology, etc.

We design and make objects and systems, we communicate information and ideas, and we make ourselves increasingly dependent on it. It is simultaneously regarded as the source of the natural world's problems as well as their solutions.

3. The personal world - our experiences and individual understandings.

Educationally, we have been fairly dismissive of the personal world. We readily overlook it even though it is the locus of change in our thoughts and actions.

We tend to draw curriculum content from the natural world and make connections with the social world, expecting that individual learners will 'construct knowledge', draw conclusions and make informed actions as a result, but we forget that the

reasons behind them are often forged in the fires of simple interactions and unstated emotions.

Indicators of change:

Education - 'changing the way they think' - requires something extra, something that requires levels of experience and reflection that we are often reluctant or unable to provide in botanic gardens education programs.

If we are truly concerned about NDD and changing environmental attitudes and behaviours, we should be more concerned about recognising the kinds of programs and activities that focus on the personal world.

Predictably, such programs already exist within the wealth of our practice and deserve shared critical appraisal. Finding the interest and means to recognise and promote them depends on how we perceive and approach challenges such as those described here.

The fact that this publication exists, and that BGANZ supports new approaches to networking in all aspects of botanic gardens work, is another step in the right direction. An occasional conference will not produce the sustained debate and collaborative growth that is not only required but also possible.

In conclusion, we have the collective means to develop a botanic gardens education movement with a regional-to-national identity, using our various networks to share and accept challenges and discuss new models to describe our changing programs.

[Contact the author directly for a further article linking the natural, social and personal worlds to learning in, about and for botanic gardens: judymalc@tpg.com.au]

Top of the class – Leading the way in environmental education

Rebecca Maddern, Communications Coordinator Kings Park and Botanic Garden



Jacqui Kennedy Manager Community Engagement and Visitor Services, Kings Park. Photo: Kings Park and Botanic Garden

Raising the bar in environmental education is the key to the future, according to Jacqui Kennedy, the head of Kings Park Education in Western Australia.

Jacqui Kennedy says environmental education has gained momentum and become part of our mainstream community values in the decade she has overseen Kings Park Education in Western Australia.

'People now understand how important education about sustainability and the environment is for the future of our children and the planet,' she says.

Jacqui believes these concepts are being accepted universally, rather than only at the margins of our community, marking a significant step forward in environmental conservation.

'Children will learn best if they can touch and feel their subject. Following an ant trail, finding a discarded snake skin, scooping up tadpoles from a creek

'It has become even more imperative to give kids this kind of education, as many are not experiencing nature and the great outdoors as previous generations did. Hectic lifestyles, fewer green spaces and the online world are all barriers to getting children outdoors.

Jacqui's substantial career in education has provided her with clear ideas on the best way to educate children about the value of the environment.

'Children will learn best if they can touch and feel their subject. Following an ant trail, finding a discarded snake skin, scooping up tadpoles from a creek – these experiences have so much more to offer than looking at them on a website or in a book.'



A boy exploring in Kings Park Botanic Garden.
Photo: Kings Park and Botanic Garden



Children investigate in Kings Park Botanic Garden.
Photo: Kings Park and Botanic Garden

This philosophy has become reality with the recent opening of spectacular new facilities for Kings Park Education. *Rio Tinto Naturescape Kings Park* is the jewel in the crown of the new facilities. This six hectare outdoor discovery area is believed to be the first of its kind in the world and features a running creek, natural bush and vegetation, rocks, wetlands and a series of 'living classrooms'.

'We are now able to offer children real, hands-on experiences of the natural world in our programs in fantastic outdoor discovery learning spaces.'

'We also emphasise the 'you can do it' message to students, to demonstrate that we all have a role to play in conserving our environment.'

Kings Park Education focuses strongly on 'learning by doing' and getting students out in nature to investigate and explore. All programs are presented by qualified educators and linked to the Australian curriculum.

'Teaching the next generation about our amazing biodiversity is critical, and also something we can be very proud of,' says Jacqui.

Beyond environmental education, Kings Park Education also offers local heritage and cultural programs.

'Much of Western Australia's heritage is recorded in Kings Park, from the majestic State War Memorial to an ancient Tuart tree which bears a scar believed

to have been made by a Nyoongar stone axe prior to European settlement,' explains Jacqui.

'Indigenous education programs for schools are increasingly popular, due to growing public interest and greater emphasis in the school curriculum.'

'Teaching the next generation about our amazing biodiversity is critical, and also something we can be very proud of,' says Jacqui.

Education reaches far beyond school programs in Kings Park, where public education is considered an important part of its role as a botanic garden.

Much of Kings Park's approach to public education is informal, or 'teaching by stealth,' as Jacqui likes to call it.

'We use many methods to get our messages across in an appealing way, from interpretive signage and our visitor information centre, to published materials, the event program for the annual Kings Park Festival and adoption of social media to engage with the community.

'Everyone in this generation needs some level of environmental literacy when it comes to understanding just what a unique natural environment we have and what it really takes to protect it.'

Kings Park Education Building and Programs

Marcelle Broderick, Director Business and Visitor Services, Kings Park and Botanic Garden, Perth

A recent major milestone achieved as part of the *Rio Tinto Naturescape Kings Park* project was the completion of the new Kings Park Education facilities and new programs. The facilities comprise a spectacular new eco-friendly building and the adjacent outdoor 'living classrooms' in the dedicated Education Zone of *Rio Tinto Naturescape Kings Park*. These new facilities provide ideal learning spaces to deliver Kings Park's growing suite of education programs for school children and others in the community.



Children exploring in Rio Tinto Naturescape Kings Park.
Photo: Kings Park and Botanic Garden

The innovative building is submerged below ground with its roof completely covered with earth and planted as a native garden. The other side features floor to ceiling glass walls with a panoramic view to the surrounding bush and landscaped environment.

Access is provided via a walled concrete ramp to a covered plaza that separates the buildings two components. It has an office zone to accommodate education and *Rio Tinto Naturescape Kings Park* staff and volunteers and a learning zone called The Green Room for use by schools and other groups.

The building incorporates many environmentally sustainable design elements to achieve energy efficiency and best environmental practice. These include the thermal insulation provided by the earth covered concrete walls and roof, double glazed glass walls, a north-westerly orientation with roof overhangs designed to provide shade in summer, passive ventilation through double glazed louvers, low energy lighting,



Kings Park Education. Photo: Kings Park and Botanic Garden

a solar hot water system and a 15kW solar array on the adjacent Water Corporation embankment to generate solar power for use in the building.

Computer modelling has estimated a 61% improvement in thermal performance compared with a similar building of conventional design, reducing the reliance on heating and cooling significantly.

Three art installations by local artist Pamela Gaunt are another key feature of the building and provide clever and attractive interpretation of solar power and elements of the natural environment. These include a decorative metering pole that uses columns of different coloured lights in a live demonstration of the amount of solar power being generated and the amount of power being consumed by the building at any time; coloured, backlit floor inserts comprising glass printed with root patterns and seeds of native plants; and subtle patterns painted on the concrete ramp walls replicating over-sized native seed shapes.

Among the new environmental programs on offer to an estimated 15,000 children per year are: 'Solar Powered Life' exploring renewable and non-renewable energy; 'Life in the Water' to investigate wetland habitats; and 'The Science of Conservation' exploring the role of science in plant conservation

The building development included a new car park, bus set down and access road to provide access for school buses. The car park features Kings Park's first storm water harvesting system that captures runoff from the car park and directs it into the park irrigation system, where the water is filtered and used for irrigation. Landscape planting and mulching was implemented

by BGPA staff to enhance the building development and connect the building to the living classrooms in the adjacent *Rio Tinto Naturescape Kings Park* education precinct.

Twenty new education programs with a focus on environment and local culture were developed. Among the new environmental programs on offer to an estimated 15,000 children per year are: 'Solar Powered Life' exploring renewable and non-renewable energy; 'Life in the Water' to investigate wetland habitats; and 'The Science of Conservation' exploring the role of science in plant conservation. Kings Park Education also offers important cultural heritage programs including the new 'Nyoongar Boodja – One Year, Six Seasons' education festivals held throughout the year. All Kings Park Education programs are delivered by qualified educators and are linked to the Australian curriculum. The new programs were written to align with the Australian Curriculum and the BGPA's three key take home messages:

- ✦ that Kings Park and Bold Park are very special places worth treasuring now and into the future,
- ✦ that WA has unique and precious biological diversity and
- ✦ that each of us can and should play a role in conservation.

The Kings Park Education program can be downloaded on the Botanic Gardens and Parks Authority website. See: www.bgpa.wa.gov.au/education/schools/program-overview

The new programs and facilities were officially launched on World Environment Day, 5 June 2012, by the Hon Bill Marmion, Minister for Environment; Water, and mark a new chapter in Kings Park Education's commitment to inspiring understanding of WA's unique plants, people and places and the role we can all play in a sustainable future.

Children's Garden – Concept vs. Reality

Paul Scannell, Curator Albury Botanic Gardens, NSW



Artists James Cattell and Dorelle Davidson, who brought the Garden to life. Photo: Albury Botanic Gardens and Jodie Hutchinson Photography

Do we have one or don't we? Can we find money for one?

Commonly asked questions in many botanic gardens.

How do you decide?

Talk to people who have a Children's Garden and those who use one. This is a very helpful starting point.

Problem is if you talk to me, you will have to work extremely hard for about 6 years, because we wouldn't be without one, and you shouldn't miss out on the visitors and the rewards! You only have to raise a few hundred thousand dollars and get the community behind you.....

Originally our Children's Garden Working Group put together a questionnaire, to gather replies from mums, dads, early child care experts and teachers in our community. The questionnaire had samples like below.

Q11 How does the location fit in with your concept of a Botanic Garden?

- ✦ Perfect - 9
- ✦ Great - 9
- ✦ The garden should be for everyone to enjoy - 8
- ✦ Fits in with concept - 5
- ✦ Will make children & parents/carers, experience and visit more often - 4
- ✦ A place to encourage children to become involved in plants & their environment - 4
- ✦ Excellent - 4
- ✦ Expands the Botanical Gardens to incorporate children - 3
- ✦ Accessible
- ✦ Will develop future gardeners and a love for the Botanic Gardens
- ✦ Would not want to alter the current garden's magnificence
- ✦ A friendly, welcoming space
- ✦ Enjoyable for kids, however may reduce the tranquillity
- ✦ Most suitable location
- ✦ Fabulous

- ✦ Makes children & families happy
- ✦ Makes the remainder of the garden more peaceful
- ✦ If planned properly there is definitely a place in the Botanic Gardens
- ✦ Well known place to escape the outer walls
- ✦ Place for children to escape into an imaginative world

Then you get the results from your visitors, once they start arriving after the opening day:

- ✦ Love it!
- ✦ Like it! 5th visit! Regulars
- ✦ Fence is great for parents
- ✦ Fabulous
- ✦ Awesome
- ✦ Every 2nd day Regulars
- ✦ Dino is great Houston Texas
- ✦ Very pleasing to have such a place in Albury
- ✦ Imaginative for kids is great
- ✦ Love it and the fence makes it easy
- ✦ Cool! Love the dinosaurs!
- ✦ Absolutely love it! Gobsmacked! London, England
- ✦ Vacation Care. Will bring the kids. Brill!



Dinosaur eye. Photo: Albury Botanic Gardens and Jodie Hutchinson Photography

The results are in and we are all certain that our Children's Garden is a huge success. Visitor numbers are around 300 – 400 per day in peak times and 100 – 150 during school days. Responses have shown toilets close by and more seats are needed for parents, but overall, everybody is very impressed with the Garden and especially the fact it is a Council facility.

Costa Georgiadis in his opening speech talked of the international significance of education in Botanic Gardens and the pride that Albury should have in this wonderful, stimulating and entertaining facility. Sustainability, conservation, wildlife, love of growing plants, knowledge of the importance of plants and lastly, food, glorious food, are all aspects this Garden provides.

Our "Weird and Wonderful" Art Class has been a real hit with students and teachers alike and takes very little effort by Gardens staff to present a program. Venus Fly Traps, Pitcher Plants and our local Sundews enthrall the children with stories of bugs, trapping, devouring and carnivores. Brain cacti, orchid flowers, seed pods of all shapes and sizes can all stimulate the children's artistic talents and throw in a Dinosaur or two, a Dragon Blood Tree and a Wollemi Pine and the stories are abundant.

If you are ready to roll up your sleeves and build a Children's Garden, I'm on for a chat!



Children's Garden Albury Botanic Garden.
Photo: Albury Botanic Gardens and Jodie Hutchinson Photography



Dinosaur eye. Photo: Albury Botanic Gardens and Jodie Hutchinson Photography

The Ghost of Courtney Puckey – The use of theatre and history to enhance visitor experience at Wollongong Botanic Garden

Michael Connor, Wollongong Botanic Garden



The Ghost of Courtney Puckey. Photo: Wollongong Botanic Garden

The education team at Wollongong Botanic Garden has used theatre as a powerful tool to teach and to entertain visitors to the Garden for many years. Characters such as *Captain Compost*, *The Tree Musketeers*, *The Talking Tree* and many other creations from the team can be seen roaming the Botanic Garden interacting with young visitors.

Now the general community and older students are getting a taste of this wonderful visitor experience in one of the Garden annexes through the 'Ghost of Courtney Puckey' tours. The main component of the Puckey tour is the appearance of

Mr Puckey himself. The ghost of this remarkable man interacts with the visitors sharing his views on the history, culture and ecology of this Coastal Garden annex.

Children are invited on stage to dress up and to sing. Recent audiences joined the animal characters in '*It's a Long Way to hop so-a Stop, Drop and Roll*'

What are the successful ingredients of theatre/ education in botanic gardens? Why do shows like *Captain Compost* or the *Talking Tree* appear to be so successful in engaging our young visitors and their families? The evidence supports the notion that theatre works well as a teaching method in botanic gardens.

1. Humour and Exaggerated characters: Larger than life theatrical characters, such as the *Giant Water Bugs* and the *Animals in Pyjamas*, with their bright and exaggerated costumes, use fun and laughter to help the audience absorb and remember the issues of the play.

Audience Participation: Children are invited on stage to dress up and to sing. Recent audiences joined the animal characters in '*It's a Long Way to hop so-a Stop, Drop and Roll*' during Bush Fire shows. There is a constant dialogue between actors and audience in this type of show.

Demonstrations: An in built demonstration to focus on the issues explored in the action of the play. In *The Tree Musketeers*

volunteer conservation people from the audience build a scaled down rain forest. Pollution Police Trainees clean up the creek in *Clean Up your Act*. In *No more Dodos* volunteers explore the contents of a secret parcel to work out the fate of a host of endangered plants and animals. In *Captain Compost* the children help the captain to build a compost heap that is balanced, healthy and rodent free.

So how have we applied these import features in the Ghost of Courtney Puckey?

First of all Courtney Puckey was a larger than life character. He was an obsessive, eccentric chemist/optician from England who dabbled in salt making. He settled in Wollongong in 1887, later purchased an area of land close to the city that has since become an annex of Wollongong Botanic Garden. Puckey with his long grey beard, strong Cornwall accent, dressed immaculately, in a bowler hat and waistcoat is a wonderful character for theatre.

There is also plenty of opportunity for audience participation in the Ghost of Courtney Puckey Tour. To begin with Puckey invites the audience to ask the questions like 'Can you tell us something of your family?' Members of the audience are also invited to take part in a re-enactment of the Council meeting of 1957 to decide the fate of his grand home Seafield.

There is also a planned demonstration component for the Puckey tour. This will be used with school students; they will build a model of evaporative tea tree Salt towers used by Puckey to extract salt from the sea.

The use of local History is and additional ingredient in this project: The life of Courtney Puckey is like a time for the Estate. By meeting Puckey in the flesh visitors are gaining a first-hand experience of the environmental issues related to the Estate. Participants in the tours have also shared their experiences and provided invaluable insight into the life of Courtney Puckey and his estate.



The ruins of Puckey's old Boat House at twilight.
Photo: Wollongong Botanic Garden



Puckey demonstrating an aboriginal bush medicine remedy for colds and blocked nose [crush a Red Ash leaf, add water and apply as poultice to soite of aches and pains.] Photo: Wollongong Botanic Garden

The Puckey project was launched in March 2012 to celebrate Senior Citizens, and is booked in for Seniors 2014. We have conducted a dozen tours of the Estate since that time including a twilight tours and presented the tour off site to a number of community groups including the Wollongong Historical Society and the Heritage and Conservation society.

He was an obsessive, eccentric chemist/optician from England who dabbled in salt making. He settled in Wollongong in 1887, later purchased an area of land close to the city that has since become an annex of Wollongong Botanic Garden.

The project has been work shopped at a number of BGCI Conferences in Australia and overseas. A tour through the Estate will also be used to help launch an up a coming Arts and the Eco Arts Conference in May this year. In 2014 we aim to target high school students. This will include visits to the schools and tours of the estate. It will also include family tours and presentations during school holiday periods.

What about other botanic gardens?

The possibilities are endless- e.g. the RBG Melbourne could develop a tour around one of the original directors, Baron Von Muller. He was known as Baron Von Blue Gum because of his obsession with the Tasmanian Blue Gum. If your garden doesn't have a famous individual, use a character to represent the period, for example a 19th century gardener, as long as they are able entice the audience in the experience.

Also remember provide opportunities for audience participation and develop demonstrations to involve volunteers from the audience to explore and reinforce the presentation.

1. *One elderly lady remembers being chased away from the estate by Puckey as a child. Another gentleman remembers how messy Puckey's chemist shop in Crown Street was.*

2. *Customer surveys that we have run over many years consistently indicate a very high satisfaction rate from children and their parents/ teachers. Our follow up questionnaires also show that Children remember the lessons explored and the issues presented in the plays for many months and years after they experience the shows.*

Education @ Adelaide Botanic Garden – Electronic Tablets in the Garden?

Michael Yeo, Education @ Adelaide Botanic Garden, Michael Shanahan, Manager Communications Technology



Adelaide children and their tablets. Photo: Adelaide Botanic Garden

Every teacher has experienced a student who struggles to concentrate.

More recently perhaps they have also witnessed the same child almost mesmerically focused on a play station type device, seemingly for an indefinite period, transported by the electronic device to a space where water, food or other basic essentials seem irrelevant. It was that type of thought that began us thinking,

“Why don’t we have electronic tablets in the garden?”

Some generations used feathers and ink, but there is no doubt that this generation’s preferred tool for learning is an electronic device. Some people joke about getting a person under 12 to fix the TV or computer, but the reality is that most children can navigate a TV or electronic device before they can read.

Early discussions narrowed the field to a few non negotiables. The devices need to,

- ♦ Be part of the learning process.
- ♦ Facilitate interaction with the garden, not replace it.
- ♦ Be interactive.
- ♦ Facilitate engagement.

The Adelaide Botanic Garden proved again to be innovative and insightful funding the purchase of 15 ASUS E-pads, a class set. Deliberately 15 as we wanted students to work in pairs, collaborate, consult, share and interact with each other as they travelled through the experience.

So the real challenge began here, how do we find an electronic framework at low cost, that will allow us to give information, inquire and challenge through a number of medium.

Also importantly then was to allow students to consider, respond, record and conjecture back through multiple media options . In addition the student work needed to be in a form that could be sent back to school for students and teachers to further interrogate and use as part of the teaching and learning program. The last bit is still a bit clunky, but we set out to design a “*proof of concept*”, Discovery Trail in the Adelaide Botanic Garden.

We selected Junior Primary (early years) as an audience and 2012 Australian Year of the Farmer as content for the Discovery Trail. A survey tool allowed us to place content into the trail in text, photos, audio and video.

Some people joke about getting a person under 12 to fix the TV or computer, but the reality is that most children can navigate a TV or electronic device before they can read.



Adelaide school children exploring the Adelaide Botanic Garden. Photo: Adelaide Botanic Garden

The survey tool allowed students to respond in text, voice recording, photo, video or multiple choice responses. We used an actor to present short targeted video scripts (and humour) and

children to voice record verbal instructions. The students particularly liked children their own age showing them how to use the tablet.

During the last month of 2012 we trialled the discovery trail with 2 junior primary and one primary class and collected student and teacher feedback following the experience. Initial overwhelming response from the first year 2/3 class was that they loved the gardens, smelling, feeling looking for things on and around the plants and finding out so many new things about the plants. Delving a little further we finally prompted,

“Well what about the tablets?”

“Oh yeah, they were good too.”

Regrouping and gathering our shattered collective enthusiasm and egos we realised that this was probably the best form of success. Not only had they been engaged for 2 hours (twice the length of a usual trail), but the tablets had facilitated engagement with the plants and made learning exciting, however they were not the focus.

One of the trial teachers noted that she had used the trail for 2 weeks of program activities following the visit

We have continued to refine the trail, adding insightful recommendations from students and teachers.

We have developed a resource guide for teachers and with feedback we are adding follow-up activities provided by the teachers for use by others. At the end of the trials each teacher was emailed folders with their student group responses, including, photos, video, sound recordings for use back at school.

One of the trial teachers noted that she had used the trail for 2 weeks of program activities following the visit. (Using the Australian curriculum and linking literacy, numeracy, science, history, geography and Aboriginal cross curricula priorities to the class program.)

It has been a convincing and successful concept. We are seeking funding to build a purpose built framework that will allow multiple narratives and content to be used.

Australian National Botanic Gardens – A Capital garden alive with learning

Stephen Speer, Education Officer, ANBG

Botanic gardens are a major link between people and plants. They serve to educate, engage and connect people with a diversity of plants and their stories.

The Australian National Botanic Gardens (ANBG) has been growing, studying and promoting Australian plants and their related flora for over 40 years. It has led the way in growing Australian native plants and popularising native plants for horticulture and home gardens. Alongside the horticulture and science the ANBG has a role in educating and engaging students with Australian plants, their role in the Australian landscape and cultural heritage.

As Australia's national botanic garden (ANBG), is in a unique position to engage face-to-face with school students both from across Australia and locally in Canberra and region. Over 150,000 interstate students from every Australian state and territory visit Canberra on excursion each year.

While access to students from interstate and local schools is an opportunity to engage a broad range of students with botanic gardens and Australian plants it also presents challenges. The first challenge is an awareness of the two different school markets and the need to have two different styles of education programs. Working with local teachers is a wonderful opportunity to establish long term relationships between the ANBG and local teachers and students.

Students from local schools may return several times during their primary years to experience different programs and learning opportunities. During their schooling years students can engage



Twilight at ANBG. Photo: ANBG

with plants through a range of curriculum subjects – science, geography, art, literacy.

Interstate schools visit Canberra, our National Capital, primarily with a Civics and Citizenship focus. Most expand their itinerary to visit other cultural institutions and attractions, and in doing so broaden their engagement with the many facets of Canberra. Whilst these students are exposed to a diverse range of topics, Civics and Citizenship may remain as the main focus of their Canberra visit.

Schools stay an average three days in Canberra and during this period visit up to five attractions per day. A significant challenge is to engage students with a 60 to 90 minute ANBG program that reflects the values of the ANBG and raises awareness of botanic gardens and Australian plants to the students. This at times can be difficult with only one brief visit to the ANBG during their Canberra visit, amongst the many programs students receive from a diverse range of cultural institutions.



Children get dirty at ANBG. Photo: ANBG

The approach the Australian National Botanic Gardens has taken to the challenges of education program delivery to interstate schools is to market only three school programs to interstate schools – a teacher lead program (*Secrets of Plants*), facilitated day program (*Around Oz in an Hour*) and a facilitated evening program (*Twilight: An Adventure*). These programs, whilst linked to the National Curriculum, provide a stand-alone opportunity for interstate students to visit a botanic garden and experience the diversity of the Australian flora.

Over 150,000 interstate students from every Australian state and territory visit Canberra on excursion each year

The Australian National Botanic Gardens is home to over 60,000 cultivated plants, representing around one third of Australian plant species from across the country. Several Australian landscapes are represented in the Gardens, including temperate and subtropical rainforests, threatened grassy woodlands, Eastern and Western Australian mallee, Sydney region flora, Tasmanian flora and a Red Centre Garden to be opened in spring 2013.

This diversity of ecological regions is utilised in the ANBG's school programs. *Around Oz in an Hour* takes students on an adventure across Australia as they experience the sights, stories and smells of ecological regions as diverse as Australian rainforests, grassy woodlands and arid regions.

Where else can students' transverse the diversity of Australia's ecological regions 'in just one hour'. The evening program –

Twilight an Adventure – takes students on a night time adventure where they experience the rainforest by night, spy on nocturnal wildlife across the Gardens and experience the smell, stories and solace of the Australian bush only minutes from the centre of the city.

While it may be a challenge to engage students in a 60 minute Gardens experience, (set amongst the excitement of an overnight school excursion and the diverse array of cultural attractions National Museum of Australia, Questacon, Parliament House, Australian War Memorial of Australia) it is a challenge the ANBG gladly accepts and delivers upon.

The success is seen in the faces of students who recognise a plant from their home town, be it in subtropical Queensland or South West Western Australia, and then share their experiences of this plant with the group. And in the shrieks from students during an evening program, who have not experienced the silence of the bush at night when asked to close their eyes and listen to the sounds around them. And in the teachers who return year after year with a smile on their face, more questions and with a new group of students.

Want to learn about the full range of learning programs offered by the Australian National Botanic Gardens, visit www.anbg.gov.au/gardens

The Australian National Botanic Gardens is home to over 60,000 cultivated plants, representing around one third of Australian plant species from across the country.

A place to escape, learn and be inspired! – An outdoor classroom for children at the Gold Coast Regional Botanic Gardens

Rana Baguley, Education Coordinator, Friends of Gold Coast Regional Botanic Garden



Botanic Arts and Crafts Day. Photo: Day - R. Baguley



School students engaging in Education Program. Photo: Day - P. Reilly

The Biological Science component of the Australian Curriculum offers many opportunities for teachers and students from Prep to Year 7 to explore and experience topics studied in the classroom with hands-on outdoor activities. The challenge for teachers is finding a suitable location for these activities and scheduling them into busy school timetables. Gold Coast Regional Botanic Gardens provides an accessible outdoor classroom for students to put theory into practice and enhance their understanding of the natural environment.

The Schools Program at the gardens is aligned with the Australian Curriculum and offers a choice of ten learning modules. In the Mangroves to Mountains garden students can learn about maintaining biodiversity, conservation of regional species, the interdependence between plants and animals and the role of insects in the natural environment.

The gardens lake and lagoon system provides a real example of a freshwater ecosystem, and students learn first-hand about the ecology of our waterways and the importance of developing responsible catchment management practices, while in the Sensory Garden, younger students are encouraged to explore their senses through different plant forms, colours, smells and sounds.

Gold Coast Regional Botanic Gardens are located in one of the oldest settled areas of the Gold Coast, and have a fascinating history.

'Imagine ... An Historical Journey' takes students along a time-line recreating what life was like for the traditional custodians of

the land, through to the early settlers and on to the families who lived in this area in the 1900s. If only the old, majestic trees still growing could tell their story ... they are a part of living history!

Out of term time, the Friends of the Gold Coast Regional Botanic Gardens run the very popular Botanica Quest school holiday program. The theme for this series of interactive quests is 'Dare to Discover'.

Children from four to twelve years use their senses to explore and experience the natural world of the Botanic Gardens. Recently the Friends have introduced an arts and crafts Botanica, focusing on using our abundant natural materials, to create works of art. These programs give children an early experience of botanic gardens, and also provide the accompanying parents with tools and inspiration to help their children explore and appreciate nature.

The Friends Centre, which is the main hub for visitor information at the gardens, provides changing displays to engage both young and old with natural history topics, along with information fact sheets about the flora and fauna within the Gold Coast Regional Botanic Gardens.

By bringing school children into the gardens, we are hoping to inspire an early interest in the natural world and the importance of conserving and protecting our native ecosystems. Engaging children also engages accompanying parents, teachers and carers, promoting the role the botanic gardens throughout the local community. We are all life-long learners.

Community Greening, a Royal Botanic Gardens and Domain Trust outreach program

Philip Pettitt, Education Officer, Community Greening, Royal Botanic Gardens & Domain Trust



Community Greening. Photo: RBG Sydney

Botanic gardens worldwide are recognising the significant influence they can have beyond their garden walls.

BGCI recently commissioned research into ‘Redefining the role of botanic gardens – towards a new social purpose’ and the report showcases Australia’s very own *Community Greening* program, a partnership between Housing NSW and the Royal Botanic Gardens and Domain Trust as an example of best practice.

Even more recently London Mayor Boris Johnson commented on a lotteries funded initiative, the ‘Capital Growth Program’, which has been very successful in the United Kingdom:

“Capital Growth has successfully encouraged Londoners to turn derelict, and disused areas of land into wonderful plots full of vegetables and fruit. Reaching our ambitious target of 2,012 new community food growing spaces in schools, hospitals, roof tops and housing estates across the capital is real cause for celebration.”

This shows that with lofty goals, the correct approach, strong funding and partnerships, anything is possible!

Since its inception in 2000, *Community Greening* education horticulturists have helped over 230 disadvantaged community groups across New South Wales establish communal garden projects primarily in public housing estates, on Council and church land, and in schools.

An additional 110 *Youth Community Greening* projects have involved approximately 800 youth directly, and over 1500 indirectly.

Apart from the tangible outcomes of improved aesthetics, better use of public space, food production, food security and opportunities to garden, less obvious benefits include reduced vandalism, increased opportunities for employment, increased self-esteem, improved mental health and the formation of stronger relationships between government and non-government organisations, businesses and the community in general.

The outstanding social outreach program continues to expand its client base, educating in proactive horticulture, and making a difference.

“The Bungee Jumping Caterpillars” (Bouncing out a botanic gardens’ message...)

Maya Harrison Visitors Services Officer / Education Officer MRBG

How does a caterpillar go? Dear me, does anybody know?
How does a caterpillar go... on *Omphalea* leaves the whole day long?
... They Bungee Jump!

The popularity of these Bungee Jumping caterpillars (and the moths they become) in educational sessions at the Mackay Regional Botanic Gardens, plus the ‘threatened in the wild’ plant species they live and feed upon is going to be a key to getting the conservation and preservation messages, (botanic gardens’ reasons for being) out the gate of the Gardens to the general public.

The caterpillars are going to tell their story.

Now, there have been caterpillar stories before. I’m sure everyone has heard of the Very Hungry Caterpillar, but it can’t be considered to be scientifically accurate and even gives the wrong information... Butterflies coming out of cocoons! Only Moths do that. Really!

Why have we decided to have caterpillars spread the botanic gardens messages? Why not have stories about plants, ecosystems, and habitats and include the buzzword, sustainability, as well?

Plants... well...they really aren’t that exciting!

Yes, they do some spectacular flowering at times or produce interesting seeds, but they really just stand still and grow

slowly... an action that doesn’t particularly attract your attention, especially the attention of young children.

For a society that likes ‘action’, ‘different experiences’, colour and thrills, we plan to use something that is already working with children and develop that interest and curiosity to include those messages we really want out there and show that the whole nature package can be an interesting one.

So how are we going to outreach to everyone?

Why not create an exciting children’s book? Children are read to by teachers, parents and grandparents (Adults will be reading the book as well). Present the book with correct facts and wonderful engaging illustrations in such a way that it will appeal to all ... including artists, entomologists, botanists, plant lovers, teachers needing a great resource to teach life cycles (fitting in with the Australian Curriculum) and of course, children.

We believe we have done it!

A botanic artist, who has a passion for researching all the intricacies of the plants, illustrates the story. Two Early Childhood teachers, aware of phonics, lifecycles and what makes a good story, write the text.

The story, using the thread of the caterpillars, weaves through the Botanic Gardens and introduces children (and other readers) to *Omphalea celata*, *Neisosperma kilneri*, *Graptophyllum ilicifolium* and *Actephila championiae* (even including how to pronounce these tricky botanical Latin words.) The combination of botanic

illustration, photography and ‘character’ caterpillars have you delving into every page.

So what is this story about?

Two caterpillars named ZODY and AK (put their names together and you have the same sound as the common name – Zodiac Moth – for the North Queensland Day Moth. Yes, we have a North Queensland Moth specific to our region, our botanic gardens and the special plants of the Central Queensland Coast Bioregion. What luck!



Zodiac Moth. Photo: Mackay Regional Botanic Gardens

Whoops, Bungee Jumped away from the story line for a moment there...

These two caterpillars live on our Tree Omphalea and the *Alcides metarus*, earlier known as *Alcides zodiaca*, moth caterpillars appear to eat only Omphalea species. The one tree species, *Omphalea celata* and two vines species *Omphalea papuana* and *Omphalea queenslandiae* are the caterpillar's food plants. At the Mackay Regional Botanic Gardens we have only Tree Omphalea growing and the moths found them.

These caterpillars are also affectionately and locally known as the 'Bungee Jumping Caterpillars' as that is the action they do when they feel threatened. They drop on a thread with a similar swift action of a bungee jumper. Now, do you know of a threatened plant that can excite us with such actions? These caterpillars can and we learn by close association, that the plant they live on, are special too.

Eating the same food (or food plant) I'm sure becomes very boring, resulting with cravings for something different. One caterpillar has this 'problem', this yearning to find some other leaves to eat... and his desires and his pursuits introduce us to other plant species, all I might add are 'threatened in the wild' species.

The 4 species of plants are all in close proximity to our Visitors Centre and possible for the caterpillars or people to find if they really did go searching for their leaves. Features of the plants – the spiky margins and fuchsia like flowers of the Mt. Blackwood Holly, the bright orange red fruit and miniature frangipani shaped flowers of the Ornate Fruited *Neisosperma*, the exploding seed capsules of the Koumala *Actephila* as well as its slippery curved leaf margins are all accurately illustrated and included within the thread of the story .



Illustrated Book page - *Neisosperma kilneri*

Other creatures which are already appealing to children appear too – the Yellow Flutter Dragonfly, the Spangled Drongo bird, the Ulysses Blue Butterfly and the Golden Orb Spider just as they do in the Mackay Regional Botanic Gardens.

Using our local plants, our local creatures and including threatened plant species, the moth lifecycle (with scientific like diagrams) and plant fact pages, we believe that we have encapsulated botanic gardens' messages of conserving and preserving, not only the plants, but also the creatures that depend on these plants. This children's book presents lots of different information in such a way that has you coming back to revisit each and every page and discover something else each time.

Did you know? Zodiac Caterpillars weave a thread continuously. They make a lacy cocoon amongst the Tree Omphalea leaves. The caterpillars have over 20 different colour variations from plain green to almost tartan patterns. Eggs change from cream to

pink to grey before hatching. The seed capsules of the Koumala *Actephila* explode to disperse their seeds. Mount Blackwood Holly leaves have spiky edges. There are lots more things to discover and question.

What would happen to the Zodiac Moth if our threatened *Omphalea* species ceased to be? BUT wait, you can grow a Tree Omphalea and attract this beautiful daytime flying moth to your garden or back yard. You can conserve and preserve (just like botanic gardens do) this special plant too and help a beautiful tropical moth survive at the same time.

Reading the book, you too can discover the excitement that occurs at Mackay Regional Botanic Gardens at an intimate level and really get to know these threatened species and maybe be inspired to seek out some others – be they the plants or the creatures that uses them as habitats... in your own botanic gardens. Have you got some special plants or creatures that could be used in a similar way? Go and have a much closer look. You may be surprised that messages are within your gardens if you look and listen and then share with children. Nature's messages can then grow with them.

Interested in our children's book? "The Bungee Jumping Caterpillars" will be launched on Friday May 24th 2013 as a celebration / birthday present for the Mackay Regional Botanic Gardens (MRBG).

We are 10 years old! Just a kid really.

Email us at botanic@mackay.qld.gov.au

REPORTS FROM BOTANIC GARDENS

Cairns Botanic Gardens

The Cairns Botanic Gardens Visitor Centre has been open for just over a year.

The building's unique design has generated a lot of interest and since opening it has had several accolades bestowed upon it. The most recent and highest so far, the Master Builders' National Excellence in Building and Construction Awards, national commercial construction award (\$5 million-\$10m) was presented at Parliament House in November.

Other awards the building has received include the Master Builders Queensland tourism and hospitality facilities over \$5 million, the Australian Institute of Building national professional excellence award, the Queensland Architecture Awards state commendation in the public architecture category and the Far North's Building of the Year awarded by the Australian Institute of Architects.

More importantly though, the building provides us with a wonderful opportunity to engage the public. A permanent, interpretive display greets visitors once they step inside. The 17 double sided panels discuss a range of subjects from the local flora and fauna, ecosystems and environment to botanical science, ethnobotany and botanical art.

In the same space are a couple of interactive touch screens where visitors can further explore the subjects on the panels, explore the garden's attractions and plan their visit. The Centre also has an information counter and gift shop.

Under the same roof is a multifunction space where we install temporary interpretive displays and hold workshops and lectures. This past year has seen 3 temporary interpretive displays (4 months apiece), 8 lectures, 40 workshops, 10 Friends of the Botanic Gardens' Talk and Walks and several seminars. The Visitor Centre has become the hub of the gardens and is a busy place 7 days a week.

Another benefit that resulted from the relocation of the Botanic Gardens' offices is the transfer of the old building to the Friends of the Botanic Gardens. Members now staff the building daily offering information and guided walks and open the existing library to the public.

REGIONAL GARDENS: NEWS IN BRIEF

Queensland



After the rains.
Bundaberg Botanic
Garden. Photo:
Bundaberg Botanic
Gardens

Damage caused by Ex Tropical Cyclone Oswald:

Bundaberg Botanic Gardens

Bundaberg Botanic Gardens has suffered not only from being about 70% inundated by floodwaters but also being the chosen path for fast flowing water when the river broke its banks. The force of the water and hundreds of tonnes of debris smashed through the eastern area of the garden through one of our lakes, Chinese Garden and the recently installed wetland area.

The most immediate task has been to remove the many hundreds of tonnes of river sand brought in and deposited in drifts and dunes up to 2 metres in depth [this has proved very useful in many repair tasks around the town].

Our pumps and irrigation systems are all out of action, not an immediate problem but soon will add to the difficulties we face in maintaining what we have left. We have lost many of our trees, still too early to estimate how many, and in the longer term many more will succumb to the effects of inundation and soil borne pathogens.

We are also enjoying the company of some other new visitors in the form of thousands of flying foxes seeking refuge [temporary we hope] their usual homes being destroyed or uninhabitable like so many of their human cousins, currently they are contributing a whole new 'layer' to the landscape.

On the bright side we have received delivery of vast quantities of rich alluvial silt which in the long term will enrich lawn and garden areas.

The garden's staff is obviously distressed at the impact on all their good work. But they are feverishly striving to return things to some semblance of normality, I am very proud of their efforts. Included are some photos of the worst affected areas to provide some impression of the situation.



After the rains. Bundaberg Botanic Garden.
Photo: Bundaberg Botanic Gardens

Gladstone

Some trees lost at Tondoon BG – but most damage occurred regionally to infrastructure

Gold Coast

100 odd 2 – 5 year old trees blown out, especially gum tree corridor along ridgeline. 3 very mature trees across neighbours fences and tennis courts, debris everywhere, closed for 5 days and some sections still closed while waiting for council tree crews to remove hanging limbs. No flood damage although some areas were up to 1 m under water it was slow moving. Deco pathway was washed out with over 350mm rain received...

Highfields Peacehaven (Toowoomba)

Debris and general damage but no significant.

Mackay

4 trees lost, mainly minor damage and minor flooding of the lagoons for a day or two.

Maroochy RBG

Lost a huge tallowwood across 'fern grove display area' causing damage, other tree damage to branches and a few down. Areas closed but gardens stayed open.

Mt Tamborine

Closed for 2 weeks, 4 mature trees lost, damage to pathway railings and fences. No major infrastructure lost. Rainforest walk damaged by flood waters and trees across boardwalks. Flood waters lifted water lily pads from lake and blocked pipes under stone bridge backing up and causing water damage. Pump broken. Message from Brain Davison – the volunteers have done a wonderful job cleaning up and gardens will be back to normal in a few weeks. Close to a metre of rain recorded on site.

Noosa BG

A dozen large trees lost. As we are a young garden this was disappointing, some of them were among our 1st planting.

Redlands IndigiScapes

Main botanic /ornamental gardens slight damage, 5 rainforest trees lost including Mayors first planted trees, fence damage. There was significant tree fall within the bushland area and along the walking tracks. Estimate 40-50 trees have fallen partially or completely over the walking tracks. Most of these are 10-15 year old casuarinas that we're near death from old age. There were only a few 'significant' tree losses. The two main walking tracks were reopened on Tuesday 5th February. Other areas remain closed a week or two.

No official word received as yet from Rockhampton which experienced localised damage and flooding from the storm event, then long term flooding of the Fitzroy River one week later again isolating the city.

CALENDAR OF EVENTS

BGANZ Victoria Plant Forum 2012

19 -21 March Royal Botanic Gardens Melbourne

Fascination of Plants Day 2013 18th May

www.plantday12.eu/

BGANZ New Zealand

15 -16 November Auckland Botanic Gardens

BGANZ 6th Biennial Congress 2013

20-25 October 2013, Dunedin, New Zealand

In conjunction with the BGCI 5th Global Botanic Garden Congress

BGANZ AGM

October 2013 Dunedin New Zealand

BGANZ Professional Development

19 March BGANZ VIC

Jerry Romanski - "Mature Tree Management" at BGANZ VIC Spring Plant Forum

BGCI 5th Global Botanic Garden Congress

20-25 October 2013, Dunedin Botanic Garden, New Zealand

It is likely other activities will be scheduled either side of these times. Further details will follow nearer the time of the Congress in 2013

International Horticulture Congress

17 – 22 August 2014, Brisbane –the "Olympics" of horticultural science www.ihc2014.org/



www.bganz.org.au