



Proceedings of the

BGCI 7th International Congress on Education in Botanic Gardens

Durban, South Africa 1st-5th November 2009

Published by Botanic Gardens Conservation International April 2011

Editing team: Chris Hobson, Julia Willison

Botanic Gardens Conservation International

Descanso House, 199 Kew Road, Richmond, Surrey TW9 3BW, UK.

Telephone: +44 (0)20 8332 5953

Fax: +44 (0)20 8332 5956

Email: info@bgci.org

Acknowledgements

The Congress organisers would like to thank the following organisations for their generous support and hard work in developing and running the Congress:





Durban Botanic Gardens

Congress Planning Committee members Chris Dalzell, Donavan Fullard, Linette Ferreira, Margaret Cooke, Di Higginson Keath, Nicky Dixon and Martin Clement.

Durban Botanic Gardens staff, guides and members of the Friends.

Nizipho Mazibuko and her team of student volunteers from the Durban University of Technology EcoTourism Department.

For the French translation of the Congress website:

Maïte Delmas, Museum National d'Histoire Naturelle, Paris, France Réjane Limet, Bordeaux Botanic Garden, France Jeanette Breton, St Jean-de-Luz, France Mélissa Garrigue, Bordeaux Botanic Garden, France Loïc Ruellan , The Conservatoire Botanique National de Brest, France

Contents

Acknowledgements	iv
List of Authors	ix
Summary report for the Congress	1
Achieving the GSPC & MDGs through education	6
Tamar Arbel Elisha (Ramat Hanadiv, Israel). The holistic experience at Ramat Hanadiv Park.	7
Loic Ruellan (Brest, France). Partnerships and Conservation	9
Karin van der Walt, Vusimuzi Lukhele, Erich van Wyk & Willem Froneman (Lowveld, South Africa). <i>Developing propagation protocols for conservation and education: project MGU</i> .	15
Suzanne Sharrock (BGCI, UK). <i>Community-based plant conservation – a new approach for botanic gardens?</i>	19
Katia Astafieff (Nancy, France). <i>Making children aware of the problem of invasive species: an educational approach in partnership with a natural history museum.</i>	22
Maria Bellet Serrano, García Guillén, & Irene Fernandez de Tejada y Garay (Madrid, Spain). Strategy for the scientific training of teachers: the role of the Royal Botanic Garden, CSIC Madrid.	26
Geneviève Beraud-Bridenne , Maïté Delmas & Yvette Delpopolo (Paris, France). <i>The Botanical Gardens of the National Natural History Museum of Paris: an exceptional educational tool.</i>	32
Lauren M. Gardiner (Kew, UK). Education through real conservation: the Writhlington School Orchid Project success story and how it can be replicated.	37
Lauren Evans, Belinda Hawkins, Suzanne Sharrock, Stella Simiyu & Julia Willison (BGCI, UK). <i>The Knowledge Café: Education and the Global Strategy for Plant Conservation – facing the future.</i>	44
The Decade of Education for Sustainable Development (ESD)	48
Steve Meredith (Adelaide, Australia). The Quest: a vehicle for integrated learning.	49
Alice H. J. Maltby & Nicholas J. Wray (Bristol, UK). A journey through time: the story of evolution brought to life.	53
Esther García Guillén, María Bellet Serrano, Irene Fernández de Tejada y Garay (Madrid, Spain). <i>Celebrating the 300th anniversary of Linnaeus at the Royal Botanic Garden, CSIC.</i>	58
Cath Armstrong (Bedgebury, UK). Acting as ambassadors for conifers.	61
Susan L. Wagner (Illinois, USA). Endangered trees: a global story.	65
Kate Trzaskos (Pennsylvania, USA). A collaborative approach to program development in public gardens.	68

Janelle Hatherly (Sydney, Australia). <i>Big answers to big questions: are tranquil green spaces the perfect places for public debate?</i>	73
Dilan Bayindir (Istanbul, Turkey). A children's gardening project model based on sustainability.	80
Janelle Hatherly (Sydney, Australia). Beyond the garden walls: greening the urban environment and cultivating communities.	84
Alice Notten, (Cape Town, South Africa). Theme gardens in the National Botanical Gardens of South Africa: interpreting biodiversity and climate change and empowering visitors to make a difference.	89
Sharon A. Myrie (New York, USA). Programme enrichment during tough times: how do you turn your vision into reality?	96
Alla Andreeva (Moscow, Russia). Plant-based education: can we see any progress?	101
Sarah Kneebone (Muscat, Sultanate of Oman). <i>Jewel of Arabia – developing education at the Oman Botanic Garden</i> .	105
Andre Graziano (Sao Paulo, Brazil). Parque do Povo – the People's Park.	110
Richard Benfield (Connecticut, USA). What botanic garden managers want and what the tourist wants – 179 degrees difference?	114
B. S. Aliyu & F.B. Mukhtar (Kano, Nigeria). <i>Environmental education from an Islamic perspective: a panacea to sustainability.</i>	132
M. A. B. Dilhan, J. Amarasinghe, R.M.C.S. Rathnayake & T.D. Weerasinghe (Sri Lanka). <i>Rehabilitation of slash and burn agricultural lands in the dry zone of Sri Lanka by low-cost silvicultural methods.</i>	140
B. Rathinasabapathy (Coimbatore, India). <i>Engaging eco clubs in India's natural heritage: botanical garden as a place for environmental education: a case study from Tamil Nadu.</i>	145
Rémi Saxe (Nancy, France). The sustainable development village.	150
Ways of learning towards environmental justice	153
Réjane Limet (Bordeaux, France). <i>Sustainable development in a district of Bordeaux: when children become the main link between a botanical garden and their neighbourhood.</i>	154
Judy Fox (Cambridge, UK). <i>How the Cambridge University Botanic Garden Schools' Learning Programme keeps active learning, environmental sensitivity and social justice in mind.</i>	158
Climate change and environmental action	167
Katia Astafieff (Nancy, France). Understanding climate change: a course for children based on writing a story.	168
Katrina Nitschke (Adelaide, Australia). A garden for a changing climate: the SA Water	172

Mediterranean Garden.

Donavan Fullard (SANBI, South Africa). Climate change panel discussion: introduction.	175
Workshops	177
Rémi Saxe (Nancy, France). Elderly people: as preferred mediators for the younger generation?	178
Sarah Kneebone (Muscat, Sultanate of Oman). Oman Botanic Garden: using generic learning outcomes to support education for sustainable development.	182
Diane Woodcock (Doha, Qatar). Using poetry to develop ecological literacy.	193
Posters	199
Brenda M Onyancha (Nairobi, Kenya). Enhancing education for sustainable development at the Nairobi Botanic Garden.	200
Didier Roguet (Geneva, Switzerland). <i>The Ethnobotanical Garden of the Park of Hann, Dakar, Senegal.</i>	201
Loïc Ruellan (Brest, France). Le Conservatoire botanique national de Brest.	202

List of Authors

S. ALIYU Department of Biological Sciences, Bayero University, Kano, P.M.B. 3011, Kano State, Nigeria. Email: balasidi@yahoo.com

J. AMARASINGHE IFS - Popham Arboretum, Dambulla, Sri Lanka

Alla **ANDREEVA** Botanic Garden of Moscow State University ("The Apothecary Garden"), Moscow, Russia. Email: edubgmu@gmail.com

Tamar ARBEL ELISHAHead of Visitors and Interpretation, Rothschild Memorial Gardens and NaturePark, Ramat Hanadiv , Israel

Cath **ARMSTRONG** Bedgebury National Pinetum, Goudhurst, Cranbrook, Kent TN17 2SL, UK

Katia **ASTEFIEFF** Conservatoire et jardins botaniques de Nancy, 100 Rue du jardin botanique, 54600 Villers-les-Nancy, France. Email: katia.astafieff@grand-nancy.org

Dilan **BAYINDIR** Nezahat Gökyiğit Botanic Garden, Tekfen Sitesi, Kültür Mahallesi, Aydınlık Sokak, A Blok, No:7, Etiler-Beşiktaş, İstanbul, Turkey. Email: dilanbayindir@gmail.com

María **BELLET SERRANO** Scientific Culture Unit, Real Jardín Botánico, CSIC, Murillo, 2. 28018 Madrid, Spain. Email: bellet@rjb.csic.es

Geneviève **BERAUD-BRIDENNE** Director, Museum national d'Histoire naturelle, 43 Rue Buffon, Paris F-75005, France.

Maïté **DELMAS** Department of Botanical and Zoological Gardens, Museum national d'Histoire naturelle, 43 Rue Buffon, Paris F-75005, France. Email: delmas@mnhn.fr

Yvette **DELPOPOLO** Museum national d'Histoire naturelle, 43 Rue Buffon, Paris F-75005, France.

M. A. A. B. DILHAN IFS - Popham Arboretum, Dambulla, Sri Lanka

Irene **FERNÁNDEZ DE TEJADA Y GARAY** Scientific Culture Unit, Real Jardín Botánico, CSIC, Murillo, 2. 28018 Madrid, Spain

Judy FOX Cambridge University Botanic Garden, 1 Brookside, Cambridge CB2 1JE, UK. Email: jmf62@cam.ac.uk

Donavan **FULLARD** Deputy Director: Biodiversity Education and Empowerment, National Biodiversity Institute, South Africa. Email: d.fullard@sanbi.org

Esther **GARCÍA GUILLÉN** Scientific Culture Unit, Real Jardín Botánico, CSIC, Murillo, 2, 28018 Madrid, Spain

Lauren M. GARDINER Royal Botanic Gardens, Kew, UK. Email:l.gardiner@kew.org.

Andre GRAZIANO São Paolo City Hall, São Paolo, Brazil. Email: atgraziano@uol.com

Janelle **HATHERLY** Botanic Gardens Trust Sydney, Mrs Macquaries Rd., Sydney, NSW, Australia. Email: janelle.hatherly@rbgsyd.nsw.gov.au Sarah **KNEEBONE** Oman Botanic Garden, Office for Conservation of the Environment, Diwan of Royal Court, P.O. Box 246, Muscat 100, Sultanate of Oman. Email: sarah.kneebone@oman-botanic-garden.org

Réjane **LIMET** Responsable du service éducatif et évènementiel, Jardin botanique de Bordeaux. Esplanade Linné, 33000 Bordeaux, France. Email: r.brun@mairie-bordeaux.fr

Neok Chein LOW Singapore Botanic Gardens, National Parks Board, 1 Cluny Road, Singapore 259569

Vusimuzi LUKHELE Lowveld National Botanic Garden, Nelspruit, Mpumalanga, South Africa. Email: a.mamatsharaga@sanbi.org.za

Alice H. J. **MALTBY** Friends' Marketing and Publicity Officer, Clevedon BS21 7JX, University of Bristol Botanic Garden, Hollybush Lane, Stoke Bishop, Bristol BS9 1JB, UK. Email: alice.maltby@btopenworld.com

Steve **MEREDITH** Schools Education Manager, Botanic Gardens of Adelaide, North Terrace, Adeladie, South Australia, Australia

F B **MUKHTAR** Department of Biological Sciences, Bayero University, Kano, P.M.B. 3011, Kano State, Nigeria. Email: balasidi@yahoo.com

Sharon A. **MYRIE** Vice President, Education Department, Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, NY 11225, USA. Email: Sharonmyrie@bbg.org

Katrina **NITSCHKE** Manager, Community Education and Public Programs, Botanic Gardens of Adelaide, Adelaide, South Australia, Australia. Email: nitschke.katrina@saugov.sa.gov.au

Alice **NOTTEN** Interpretive Officer: Kirstenbosch National Botanical Garden, Private Bag X7, Claremont 7735, Cape Town, South Africa. Email: notten@sanbi.org

Brenda M **ONYANCHA** National Museums of Kenya, Nairobi Botanic Garden, P.O.Box 40658, Nairobi, 00100 Kenya.

R. M. C. S. RATHNAYAKE Department of Botany, University of Kelaniya, Sri Lanka.

B. **RATHINASABAPATHY** Project Coordinator, Coimbatore Zoological Park and Conservation Centre, 1318, Avinashi Road, Peelamedu, Coimbatore-641 004, Tamil Nadu, India.

Didier **ROGUET** Conservatoire et Jardin Botaniques de la Ville de Genève, Chemin de l'Impératrice 1, P O Box 60, 1292 Chambésy-Genève, Switzerland. Tél. +41 (0)22 418 51 00. Email: Didier.Roguet@villege.ch

Loïc **RUELLAN** Educator, Conservatoire botanique national de Brest, 52 Allée du Bot, 29200 Brest, France. Email: animation@cbnbrest.com

Rémi **SAXE** Conservatoire et jardins botaniques de Nancy, 100 Rue du jardin botanique, 54600 Villersles-Nancy, France. Email: remi.saxe@grand-nancy.org

Suzanne **SHARROCK** Global Programmes Director, Botanic Gardens Conservation International, 199 Kew Road, Richmond, Surrey, UK. Email: suzanne.sharrock@bgci.org

Kate **TRZASKOS** School & Youth Programs Coordinator, Longwood Gardens, Kennett Square, Pennsylvania, USA. Email: kwachtmeister@longwoodgardens.org

Susan L. **WAGNER** Vice President of Education and Information, The Morton Arboretum, Lisle, Illinois, USA. Email: sklatt@mortonarb.org

Karin VAN DER WALT Lowveld National Botanic Garden, Nelspruit, Mpumalanga, South Africa. Email: a.mamatsharaga@sanbi.org.za

Erich VAN WYK Lowveld National Botanic Garden, Nelspruit, Mpumalanga, South Africa. Email: a.mamatsharaga@sanbi.org.za

Diana **WOODCOCK** School of the Arts, Virginia Commonwealth University in Qatar, Qatar. Email: dwoodcock@qatar.vcu.edu

Winnie WONG Singapore Botanic Gardens, National Parks Board, 1 Cluny Road, Singapore 259569

T. D. WEERASINGHE Department of Botany, University of Kelaniya, Sri Lanka.

Nicholas J. **WRAY** Curator, University of Bristol Botanic Garden, Hollybush Lane, Stoke Bishop, Bristol BS9 1JB, UK. Email: nicholas.wray@Bristol.ac.uk

Janice YAU Singapore Botanic Gardens, National Parks Board, 1 Cluny Road, Singapore 259569. Email: janice_yau@nparks.gov.sg

Summary report for the Congress

Julia Willison

Botanic Gardens Conservation International, (BGCI), UK

Theme: Achieving the GSPC and MDGs through education

Botanic gardens are perfectly placed to lead the way in the critical fields of communicating, educating and raising public awareness of plant diversity and plant conservation. They are the ideal instrument to translate global conservation messages into locally relevant stories and solutions.

The contribution that botanic gardens have made towards the achievement of Target 14 of the GSPC is considerable; this was acknowledged in the in-depth review of the GSPC, where significant progress towards this Target 14was noted.

The Congress showed that the education programmes of botanic gardens are also contributing towards other targets of the GSPC. These included Target 1 on the completion of a global checklist of plant names, Target 10 on the control of alien invasive species, Target 13 on the sustainable use of medicinal plants, Target 15 on capacity building and Target 16 on networking and skill-sharing.

It was felt that the theme of education should be embedded within all post-2010 Targets, and that, ideally, all botanic garden departments should have regard education as part of their work – making everyone in the botanic garden an advocate for plants. Just as we need to be more holistic in our messages, perhaps we need to be more holistic in our working practices. This includes considering our colleagues within the botanic garden as a new audience for education.

There was little mention of the MDGs, particularly in areas such as poverty alleviation and empowering women. Nevertheless, the MDGs address some of the world's most pressing concerns and it is important that botanic garden education programmes are linked to these. Do we need to think further about how botanic gardens can demonstrate the links between plant conservation and poverty alleviation? We need to make clear the challenges presented by the MDGs from an education perspective.

It was felt that, although high-level targets provide useful frameworks for action, it is essential that words are not a substitute for practical action.

Knowledge Café on the GSPC (key points raised)

- Most of the GSPC targets are related to the management of conservation: although educators are not responsible for management, they are essential for raising awareness and knowledge of each of the GSPC targets.
- The role of educators in botanic gardens is to link science with public programmes and communications.
- There can be barriers or gaps in communication within gardens between science and education. It is the role of both sides to understand the issues and priorities facing each other in order to collaborate and communicate plant conservation issues effectively.
- Taxonomy and associated conservation assessments are often complicated and not easily understandable to a broad global audience with apparently weak international collaboration and communication.

- Networking and building relationships is vital to enable communication within and between botanic gardens to work towards commonalities, especially for smaller gardens with limited resources.
- It is important to engage the public in innovative ways. There is a need to de-jargonise the targets
- There is a sense of immediacy: instead of waiting for targets to be realigned, educators must act on the issues using appropriate language and innovative ways of engaging with their communities.
- There needs to be a considerable cross-over with communication, public awareness and marketing. But botanic gardens are often not as adept as communicating with the general public as they are with schools and teachers.
- It is important to look 'outside the garden walls' and think beyond what one's own institution is doing, to successfully communicate important issues.
- Target 14 is a cross-cutting target and should not be seen as stand-alone it should be embedded within all targets.
- Conservation, biodiversity, financial and education strategies should be integrated within botanic gardens
- Education and awareness should be embedded within all botanic garden departments to ensure collaboration. For example 'the advocacy of plants' could be built into the job description of every botanic garden staff member.
- The GSPC should fit in with other frameworks, e.g. Millennium Development Goals, and not be seen as separate or peripheral.

Theme: The Decade of Education for Sustainable Development (ESD)

The UN Decade of Education for Sustainable Development (2005–14) offers an opportunity to rethink the manner in which we approach global challenges, especially at a time when the economic, social, environmental and cultural realms of global society are faced with daunting challenges. Today more than ever before, the need for a holistic approach to learning and teaching becomes both vital and urgent. Botanic gardens provide a unique interface between the natural and social sciences. Therefore their potential to make a meaningful contribution to the Decade of Education for Sustainable Development is significant and it is vital that botanic gardens work together to achieve the same goals. The presentations within this theme at the Congress demonstrated the breadth and depth of education work that is being carried out in botanic gardens to address environmental and development issues. Talks and discussion at the Congress made it clear that, in order to contribute to the paradigm shift needed in thinking, learning and teaching for a sustainable world, that fundamental issues related to biodiversity loss need to be moved to the centre stage in botanic garden education.

Through presentations and workshops, we saw the imaginative and unique ways in which botanic garden education across the globe is connecting people to plants, whether through highlighting flagship species such as orchids, overcoming 'plant blindness', or by confronting controversial issues in bold exhibitions and campaigns. Botanic gardens are creatively addressing specific audiences through methods such as

- intergenerational learning between grandparents and grandchildren
- engaging children through children's gardens and story-telling
- reaching out beyond the garden walls with community greening focusing on the importance of horticulture

• using technology to enhance plant-experiences.

To educate for sustainable development in botanic gardens, programmes must achieve a dynamic dialogue that is constantly evolving as we confront the growing challenges facing society and the planet.

Theme: Ways of learning towards environmental justice

The Congress emphasised the challenges that face botanic gardens in questioning the inequities that result in environmental degradation. Although there was only one session on 'Ways of learning towards environmental justice', cross-cutting issues recurred throughout the Congress that highlighted how education programmes in botanic gardens are finding solutions to link both social and environmental concerns. By engaging communities, schools and companies, botanic gardens are encouraging changes in behaviour and challenging prejudice. Education programmes are channelling the energies of diverse communities to increase their awareness of the value of the environment and connecting people with nature. By helping communities to grow food themselves, botanic gardens are encouraging them to think about issues related to food security and the impact of fair trade on livelihoods.

Botanic gardens can be key agents of change and, as this Congress has shown, this potential can be strengthened by sharing knowledge and experience. In her keynote speech, Stella Simiyu described the need for botanic gardens to address the challenges of the 21st century within the context of our own botanic gardens and by collaborating: to address the dual challenges of biodiversity loss and climate change within the bigger picture of poverty, food security and plant usage.

Theme: Climate change and environmental action

Fundamental to the delivery of a positive response to climate change are effective education and public awareness initiatives, particularly ones that address adults, given the time frame for preventing dangerous climate change.

Children in some countries are very well informed about climate change, but educating adults and policymakers is a more challenging but critically important task. Currently active policy-makers can change the course of climate-change. The question for botanic gardens is how to engage with them.

Since it is hard to imagine a more important imperative than maintaining those ecosystem services that are underpinned by biodiversity and threatened by climate change, conservation should be embedded within every education message

There is a need for urgent, substantiated, targeted and positive messages that will enable individuals to take meaningful action.

'The Age of Stupid'

The Congress viewed the film 'The Age of Stupid' (director Franny Armstrong) which looks back from the year 2055 to see how human actions in 2009 were affecting climate change. The film was provocative and challenging in its presentation of six human stories that are widely illustrative of climate change and its complexities. The film presented:

- the drivers of climate change
- a proposed global solution in the form of a global contraction and convergence policy
- the importance of a portfolio of renewable technologies to provide us with clean energy

- an array of individual choices such as not flying, performing a carbon audit on your home and lifestyle, consuming less, eating less meat, buying local produce, campaigning for strong policy measures to provide clean energy
- The multiple difficulties in tackling climate change were presented, including 'not in my back yard' thinking and how developing countries can be expected to follow a clean development path when the West is not cutting emissions. Why should people in India be denied cheap air travel?

The film provoked a range of reactions from delegates such as:

- Wanting to share more widely
- Promoting a feeling of discomfort
- Concern that Latin America was not addressed
- Feeling that insufficient solutions were offered
- Renewed sense of urgency to take action
- Questions about its impact across an international audience.

Overall, given the grave threat of climate change, it was felt that this film was a positive contribution to the Congress, stimulating debate and much discussion amongst delegates.

Key Congress thoughts

- **Make your voice heard** the GSPC offers botanic gardens a place at the global policy table. We need to take advantage of this, since the education of policy makers is of fundamental importance to conservation at this time.
- **Botanic gardens are brilliant** they have historic local knowledge of peoples, land, plants, climate change impacts, adaptations, solutions and so can make conservation, biodiversity and environmental issues uniquely relevant to local people.
- **Make it personal** make people connect with what they see at an individual level. Create deeply personal memories and images that will be cherished. This will ensure that your conservation message will be remembered too.
- Make the plants personal naming plants creates a connection, and this in turn helps create stewardship of plants.
- Be aware of your audiences and target messages to them do not just go for the 'low-hanging fruit'.
- Embed education within all garden staff work remits rally against 'them and us' tendencies.
- Bring conservation into every communication
- Look beyond the garden walls make sure your work is contextualised to the outside world and demonstrates relevance. As botanic gardens, are we stuck in the past? What added value do we bring?
- Simple ideas are often the best help grandparents to educate their grandchildren. They are the best kind of educators!

- See the 'whole' adopt an ecosystem approach to conservation, a whole garden approach to education.
- **Give people tools and actions** empower them so that they can change things, so that they can imagine and action a different future.

"Taken for granted patterns of thought are passed on automatically to the next generation via the education system. Only by subjecting the worldview to critical thinking can we begin to address the challenges we face"

Webster and Johnson, 2008