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**From policy to action:
the Global Strategy for Plant Conservation –
a conservation success story**



EDITORS



Suzanne Sharrock
Director of Global Programmes



Sara Oldfield
Secretary General

Cover Photo: Collecting seeds from a rare bamboo in Yunnan province, China (Jonas Mueller)

Design: John Morgan, Seascope
E-mail: studio@seascope-design.fsnet.co.uk

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Further details available from:

- Botanic Gardens Conservation International, Descanso House, 199 Kew Road, Richmond, Surrey TW9 3BW UK. Tel: +44 (0)20 8332 5953, Fax: +44 (0)20 8332 5956 E-mail: info@bgci.org, www.bgci.org
- BGCI-Russia, c/o Main Botanical Gardens, Botanicheskaya st., 4, Moscow 127276, Russia. Tel: +7 (095) 219 6160 / 5377, Fax: +7 (095) 218 0525, E-mail: seed@aha.ru, www.bgci.ru
- BGCI-Netherlands, c/o Delft University of Technology Julianalaan 67, NL-2628 BC Delft, Netherlands Tel: +31 15 278 4714 Fax: +31 15 278 2355 E-mail: l.j.w.vandenwollenberg@tudelft.nl www.botanischetuin.tudelft.nl
- BGCI-Canarias, c/o Jardín Botánico Canario Viera y Clavijo, Apartado de Correos 14, Tafiira Alta 35017, Las Palmas de Gran Canaria, Gran Canaria, Spain. Tel: +34 928 21 95 80/82/83, Fax: +34 928 21 95 81, E-mail: jmlopez@grancanaria.es
- BGCI-China, 723 Xingke Rd., Guangzhou 510650 China. Tel: (86)20-37252692. email: Xiangying.Wen@bgci.org www.bgci.org/china
- BGCI-South East Asia, c/o Registry, Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569.
- BGCI-Colombia, c/o Jardín Botánico de Bogotá, Jose Celestino Mutis, Av. No. 61-13 – A.A. 59887, Santa Fe de Bogotá, D.C., Colombia. Tel: +57 630 0949, Fax: +57 630 5075, E-mail: jardin@gaitana.interred.net.co, www.humboldt.org.co/jardinesdecolombia/html/la_red.htm
- BGCI-Deutschland, c/o Botanische Gärten der Universität Bonn, Meckenheimer Allee 171, 53115 Bonn, Germany. Tel: +49 2 2873 9055, Fax: +49 2 28731690, E-mail: biogart@uni-bonn.de
- BGCI(US) Inc, c/o Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, Illinois 60022, USA. E-mail: usa@bgci.org, www.bgci.org/usa

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MEASURING BOTANIC GARDENS' CONTRIBUTIONS

TO PLANT CONSERVATION AND EDUCATION IN THE UNITED STATES

BGCI's databases provide invaluable tools to measure and report on progress towards the GSPC in the USA.

Background

There is a remarkable amount of plant conservation and environmental education work being carried out efficiently and effectively by botanic gardens in the United States, and BGCI US is working to support this when and wherever possible. One area of focus in 2010 involves measuring and sharing the true collective impact of this work as progress towards two national strategies and the *Global Strategy for Plant Conservation* (GSPC).

In the United States, the primary national strategy is the Plant Conservation Alliance's (PCA) *National Framework*, adopted in 1995. The PCA is a multi-sector consortium of ten federal government Member Agencies and over 275 non-federal Cooperators (including 53 botanic gardens, as well as other non-profit organizations, foundations, and for-profit companies). This successful alliance provides funding for on-the-ground plant and habitat conservation and restoration projects via a matching funds grant program, acts as a forum for the exchange of ideas, sharing of best practices, and ultimately seeks to pool resources nationally while building capacity locally, eliminating duplication of effort and increasing program effectiveness.

An additional regional strategy related to the GSPC is the *North American Botanic Garden Strategy for Plant Conservation*,

published in 2006. A number of gardens have used one or more of these strategies to help guide their planning and activities. However, rather than discussing these strategies, this article focuses on what work is being done now, and how we can best measure and report on its combined impacts.

Measuring and reporting on progress

The topic of measuring and reporting the collective contributions of botanic gardens is not new (see Havens *et al.*, 2006 for an excellent example). However it is a pressing global challenge for BGCI

in 2010, as we work to demonstrate the contributions of the world's botanic garden community towards the many different targets of the Global Strategy for Plant Conservation (GSPC). It is also a subject whose importance extends well beyond 2010 and the GSPC, as it influences how we perceive ourselves as a community, impacts planning and how we work together in the future, and enhances how we present ourselves to individuals and organizations outside the botanic garden community.

As a step towards tackling this challenge, this article attempts to summarize the work of botanic gardens in the United States using information and tools currently at-hand. It also explains ongoing and upcoming projects BGCI US and its partners are working on that will increase our ability to summarize and report on the work taking place at botanic gardens across the United States.



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| PCA NATIONAL FRAMEWORK | GLOBAL STRATEGY FOR PLANT CONSERVATION (GSPC) | NORTH AMERICAN BOTANIC GARDEN STRATEGY FOR PLANT CONSERVATION |
|--|---|---|
| A. Build partnerships to cooperatively share resources and talents | GROW PARTNERSHIPS & RESOURCES 15. Increase trained plant conservation staff, facilities 16. Strengthen plant conservation networks (national, regional, international) | E1. Increase national and international capacity for conservation and sustainable use of plant diversity E6. Better share and promote existing information to achieve plant conservation objectives |
| B. Raise awareness about the importance of plant diversity and the need to conserve it | CONNECT PEOPLE & PLANTS 14. Promote education & awareness about plant diversity, need for conservation | D1. Communicate importance of plants to visitors D2, E4-5. Engage in public-awareness campaigns, advocate and build constituency for plant conservation |
| C. Promote ecosystem management to conserve and restore native plant communities | CONSERVE NATURAL RESOURCES 4. World's ecological regions conserved (10%) 5. High plant diversity areas protected (50%) 7. Threatened species conserved <i>in situ</i> (60%) 8. Threatened species in <i>ex situ</i> (60%) & recovery programmes (10%) 10. Manage major invasive species | B1. Work collaboratively on <i>in situ</i> conservation B2. Increase <i>ex situ</i> conservation efforts B3. Increase participation in formal recovery planning B4. Conserve economically/socially important plants B5. Recognize role in invasive species management and education |
| D. Encourage scientific research and technological development | ENCOURAGE RESEARCH 3. Develop research & experience-based models for plant conservation & sustainable use | B6. Expand support and contributions to basic and applied plant conservation research |
| E. Determine and encourage appropriate and sustainable use of native plants. Document indigenous knowledge | PROMOTE SUSTAINABILITY 6. Production lands managed sustainably (30%) 9. Maintain genetic diversity of valuable species 11. No endangerment from international trade 12. Plant-based products produced sustainably (30%) 13. Halt loss of plant resources, indigenous knowledge | C1. Support and contribute to sustainable plant use C2. Raise awareness, protect cultural and local indigenous knowledge and uses of plants E2, E3. Incorporate conservation and sustainability into operations, share best-practices |
| F. Coordinate and promote data-sharing and compatible, economical & efficient databases | GATHER, MAINTAIN & SHARE DATA 1. Working list of all known species towards world flora 2. Preliminary conservation assessment – all species | A1. Work toward complete list of North American flora A2. Review and contribute to conservation assessment of North American flora |

Box 1. Relationship between three strategies for plant conservation in the United States

“ The work of your garden, regardless of size, shape or mission, is important, and we want to make sure it is counted. ”

BGCI's online databases – invaluable tools

The most comprehensive tools currently available to quantify the collective power of botanic gardens are BGCI's online GardenSearch and PlantSearch databases. Taken together, these databases provide an easy but powerful way of quantifying the positive impacts of botanic gardens. Here's how:

GardenSearch is the only global database of botanical expertise and resources in the world's botanic gardens. By searching on different keywords, the online interface of this database can be used to locate gardens in different countries with expertise in botanical research, conservation and education. Expanded off-line searching capabilities allow BGCI staff to perform more specific



Roof garden trial plots, Chicago Botanic Garden

searches, for example to identify contact information for gardens with research programs on invasive species biology and control in the United States.

PlantSearch is the only comprehensive global database of plant taxa growing in living collections. This makes it a powerful tool for the entire botanic garden community. If every garden were to upload a simple list of taxa growing in their collections to this database (a free and easy process; see Hird and Dosmann, 2010), we would be able to

determine exactly how much of the world's plant diversity is being safeguarded by botanic gardens. PlantSearch is also a useful tool for individual gardens, because any institution that uploads a list of taxa to this online database will automatically receive: (A) a free conservation assessment of their collections, (B) a way to identify potentially misspelled names in their database and (C) a way to directly connect their living collections with a global network of plant collections, botanic gardens and researchers.



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What BGCI's databases reveal

Have you ever searched in vain for answers to questions like *how many visitors do US gardens collectively receive every year, or how much of the world's plant diversity is safeguarded in US botanic garden plant collections?* Answers to questions like this are difficult, if not impossible to come by and, when available, they are often a very rough estimate at best. Having a source of quantitative information that can provide answers to these questions would be incredibly useful for the entire botanic garden community.

In the section below we present summary data generated from information currently in BGCI's GardenSearch and PlantSearch databases (as of April 10, 2010). Unfortunately, these databases do not yet provide a comprehensive analysis of all botanic gardens or living collections in the United States, but data presented here is a first step in getting there: Currently, GardenSearch contains records for 455 botanic gardens in the US, as shown on the map below.

A closer analysis of data in the GardenSearch database yields an interesting array of statistics on education and conservation programs at botanic gardens and arboreta in the United States. For example, 121 U.S.



Botanic gardens and arboreta are located in every state, and in nearly every major ecosystem, across the United States. This is a powerful presence and a significant resource. (Mapalists.com)

gardens have indicated that they have an education program, and 50 of them reported how many education staff this program employs. All totaled, we can report that at least 383 employees at public gardens in the United States are involved in education programs. As we continue to gather and update data in the GardenSearch database this number will no doubt increase. See Tables 1 and 2 for additional summary information on education and conservation work currently available in BGCI's GardenSearch database for the US.

And what can data in the PlantSearch database tell us? Currently the entire database contains 611,000 records

representing 181,000 taxa growing in 700 botanic garden collections in 112 countries around the world. While this is a significant number, there is much room for improvement, particularly here in the U.S., as this number includes collections information for only 73 U.S. botanic gardens. See below for details on how we are working to remedy this in 2010 with the North American Collections Assessment.

How to use and contribute to BGCI's databases

As powerful as these databases are, they are only as useful as the data in them. BGCI tries to update information

Table 1: Education, training and outreach summary statistics for U.S. botanic gardens and arboreta

| GardenSearch field | Summary data as of April 2010 |
|--|------------------------------------|
| Number of education staff | 383 staff (N = 50 gardens) |
| Have an education program | 121 gardens |
| Education programs for K-12 students | 52 gardens |
| Education programs for university-level | 35 gardens |
| Education programs for visitors | 89 gardens |
| Number of visitors annually | over 17 million (N = 79 gardens) |
| Number of volunteers engaged in activities | 20,000 volunteers (N = 69 gardens) |
| Amount of protected native habitat | 6,000 hectares (N = 41 gardens) |
| Amount of managed public green space | 32,000 hectares (N = 291 gardens) |

Table 2: Plant conservation and research summary statistics for U.S. botanic gardens and arboreta

| GardenSearch field | Summary data as of April 2010 |
|---|----------------------------------|
| Number of plant conservation and research staff | 359 staff (N = 28 gardens) |
| Have an herbarium | 32 gardens |
| Number of accessions in herbaria | over 15 million (N = 32 gardens) |
| Have a micropropagation/tissue culture facility | 15 gardens |
| Have a seed bank | 27 gardens |
| Plant conservation program | 63 gardens |
| Plant ecology research program | 31 gardens |
| Invasive species biology research program | 28 gardens |
| Restoration ecology research program | 21 gardens |
| Plant systematics/taxonomy research program | 19 gardens |
| Floristics research program | 17 gardens |
| Urban environment research program | 15 gardens |



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in **GardenSearch** whenever possible, but with over 2,600 botanic gardens worldwide, this is a challenging task. We need your help to make sure information for your garden is correct. For this, we've made it easy for garden staff to get free access to their institution's online GardenSearch profile, regardless of BGCI membership. Do you have a Garden Editor account? If not, visit www.bgci.org/garden_apply.php to set one up. By updating information in your institution's profile, you can ensure your contributions are counted in global analyses and reports generated by BGCI summarizing the contributions of botanic gardens to the Global Strategy for Plant Conservation in 2010 and beyond. And once you have access to your institution's GardenSearch account, it is easy to upload a simple list of taxa in your collections to **PlantSearch** to make sure your collections are counted.

“ Apply to become a Garden Editor and create or update your garden's online BGCI profile! ”

Other projects and resources

North American Collections

Assessment: For gardens in the United States, Canada and Mexico, there has never been a better time to upload collections information to PlantSearch. In 2010, BGCI US is partnering with the United States Botanic Garden and the Arnold Arboretum to carry out this assessment, using PlantSearch as an easy way for gardens to make their collections count while getting important information in return. All gardens contributing information on living plant, seed bank or tissue culture collections before August 1st will ensure that their collections will count in (a) BGCI's report to the Convention on Biological Diversity as progress towards Target 8 of the



Wetland habitat at Chicago Botanic Garden

Global Strategy for Plant Conservation (60% of threatened plants in *ex situ* collections) and (b) an upcoming report on *Conserving North America's Threatened Plants*. For more information on this project, visit www.bgci.org/usa/makeyourcollectionscount. We are grateful for the contributions of collaborators on this project, including the Center for Plant Conservation, the American Public Gardens Association, Seeds of Success program, Canadian Botanical Conservation Network, and others.

Botanical Capacity Assessment

Project: In partnership with the Chicago Botanic Garden, BGCI US has been working to quantify the botanical resources and infrastructure present in the U.S. government, academic, and private sectors (including botanic gardens), to identify critical gaps in capacity and make recommendations to fill them. We are grateful to the nearly 100 staff from botanic gardens that joined over 1,500 others from across the nation in taking surveys developed for this project. Your responses helped demonstrate the vitally important role botanic gardens play in filling gaps in botanical education, training, research and application around the United States. Find more information on this project, including a recently-published report and executive summary, at www.bgci.org/usa/bcap.

Assessing contributions to the PCA National Framework: In 2010, BGCI US will continue working with the Plant Conservation Alliance to assess



Colourful display at Chicago Botanic Garden

contributions to the PCA's National Framework to help guide its evolution in a changing climate. This nationwide, multi-sector project will utilize a combination of surveys, case studies and, for botanic gardens, information in GardenSearch and PlantSearch. This provides a fantastic opportunity to demonstrate the important contributions of botanic gardens, and is yet another reason to make sure information on your garden is up to date in these databases.

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Andrea Kramer
BGCI US Executive Director
BGCI at Chicago Botanic Garden
1000 Lake Cook Road
Glencoe
IL 60022
USA
Email: andrea.kramer@bgci.org



Ladybird Johnson Wildflower Center