



Botanic Gardens Conservation International

CONSERVATION CONCLUSIONS FROM

the 1st World Botanic Gardens Congress

***Asheville, North Carolina, U.S.A.
26th to 30 June, 2000***

The 1st World Botanic Gardens Congress was held in Asheville, North Carolina, U.S.A. from 26th to 30th June, 2000. The Congress combined the annual meetings of the American Association for Botanical Gardens and Arboreta (AABGA) and the Center for Plant Conservation (CPC) with the 6th International Botanic Gardens Conservation Congress of Botanic Gardens Conservation International. It was hosted by the North Carolina Arboretum and held at the Grove Park Inn in Asheville.

The theme for the Congress was “Partnerships within and beyond the Garden” and it brought together a wide range of organisations and individuals representing the botanic garden community worldwide to present a unique and exciting event. The Congress focussed on a broad range of issues relating to the work in botanic gardens in biodiversity conservation, environmental education and sustainable development, as well as considered methodologies and priorities in regard to botanic garden management, administration and development.

By any measurement this was the largest meeting ever held of botanic gardens. The Congress was attended by about 1,000 delegates from 42 countries.

CONGRESS CONCLUSIONS RELEVANT TO CONSERVATION

The following represents the summary conclusions from sessions held during the Congress that relate to biodiversity conservation, which were presented to all delegates at the final plenary session of the Congress.

Session Title: Integrated Plant Conservation - Determining Global Priorities

A panel of speakers presented the Gran Canaria Declaration to the Congress and reviewed its call for the establishment of a global strategy for plant conservation. Delegates considered and discussed the possible elements of such a strategy. They stressed that it should be wide-ranging and cross-cutting in scope, including: the integrated (in situ and ex situ) conservation of plants; the need for extensive programmes in research, monitoring and the management of information; the importance of public education and raising awareness of the plight of plant diversity; and recognising the social and economic benefits of plant diversity.

The conclusions of the meeting were that:

- Congress delegates welcomed and endorsed the Gran Canaria Declaration as a general framework for the development of a global plant conservation strategy and acknowledged the important decision made by the Convention on Biological Diversity at its 5th Conference of the Parties in Nairobi in May, 2000, to consider the development of such a strategy.

- The Congress agreed that botanic gardens could and must play a central role in the achievement of such a global strategy for plant conservation, in which their work can be placed within the framework of the International Agenda for Botanic Gardens in Conservation.
- The Congress resolved to forward the *International Agenda for Botanic Gardens in Conservation* to the Convention on Biological Diversity as a contribution by the botanic gardens of the world towards this strategy.

Session Title: Convention on Biological Diversity - Global Conservation Policy for Plants

This session considered the ways in which botanic gardens can address the implementation of the Convention on Biological Diversity (CBD) at an institutional level. The participants noted that the use of botanic gardens' collections and the application of their skills in areas such as botanical research, taxonomy, horticulture, environmental education and practical integrated conservation contribute significantly to its implementation. Furthermore, the participants noted that botanic gardens provide a major link between in situ and ex situ conservation and are frequently involved in national planning processes such as biodiversity strategies. Participants acknowledged that the CBD will have an increasing impact on the way botanic gardens operate in all parts of the world. Some aspects of the elements of botanic garden institutional policies relating to the CBD were considered. The value of sharing data on conservation collections and programs was also noted to make such information to CBD implementation authorities at a national level.

The Congress participants recommended that:

- Botanic gardens should develop institutional policies relating to their implementation of the Biodiversity Convention and their compliance with its provisions.
- Botanic gardens should seek to harmonise their policies with other botanic gardens relating to the implementation of the provisions of the Biodiversity Convention, particularly in areas such as access to their collections and benefit sharing.
- More botanic gardens should undertake institutional reviews, or 'CBD-audits', to identify the ways that botanic gardens are already contributing to CBD implementation and to suggest priorities for future roles.

Session Title: An Introduction to International Conventions-Finding Your Way in a Sea of Acronyms

The Congress participants recognized that botanic gardens are vital partners for government and other bodies involve in achieving biodiversity conservation and implementing environmental and heritage conventions. Conventions can provide governments with reasons to recognise the specific contributions of botanic gardens. Conventions vary immensely in their mode of operation and expected results. Delegates acknowledged that botanic gardens need to understand principles of successful partnerships and be proactive in seeking to play a role in the implementation of relevant environmental conventions. The *International Agenda for Botanic Gardens in Conservation* was recognised as providing a framework for botanic garden contributions to the implementation of these conventions.

The Congress participants recommended that:

- Botanic gardens should be active participants in the evolving work program and structures of the Convention on Biological Diversity.
- Botanic Gardens Conservation International was urged to work to enhance its role in coordinating and monitoring the contributions of botanic gardens in implementing international environmental conventions and strengthening its role as an international clearing-house for botanic gardens in conservation.
- Botanic gardens and their networks should seek to develop action plans applicable at local, regional and national levels and develop information resources relevant to the national policy and legal environment for raising public awareness on these issues.

Session Title: Information Management Software

The session focused on presenting the range of available software applications for botanic gardens currently in use in botanic gardens in several countries for the management of information, labelling, mapping and data communications. Electronic data management for botanic gardens is clearly a developing area, particularly through the use of the Internet to support inter-institutional

communications and co-operation, an essential element in supporting biodiversity conservation programmes.

The Congress participants noted:

- The range of software presented demonstrated the importance of developing innovative electronic data managing techniques for botanic gardens. The need for the development of more software applications to support fund-raising was specifically highlighted.
- Alternative approaches between using generic software applications and in-house developed software was discussed, and the participants recommended that whichever option was chosen, botanic gardens must ensure that the systems implemented is well documented, so that continuity is assured if and when staff changes occur.
- That training needs for staff in botanic garden in computer technology and information management is an urgent priority, to help ensure that data management standards are raised in botanic gardens.

Session Title: Volunteer Power in Plant Conservation

Volunteers are absolutely necessary to all aspects of plant conservation due to a scarcity of funding for positions. Training, mentorship and sense of accomplishment are essential to develop a successful program.

This session highlighted that:

- Lack of training personnel is acute in plant conservation, due largely to a lack of funds.
- Educational programs at all levels (secondary, post secondary) are important sources of labour and can contribute critical botanical data.
- Volunteers become important advocates of plant conservation.

Session Title: Extreme Measures to Meet Extreme Conservation Needs: The Hawaii Experience

The Hawaiian flora is highly endangered. 24% of native vascular plants are federally listed as endangered, 28% more are listed as threatened, candidates for listing, or species of concern, 48% of species are not yet at risk of extinction in the next few years. With 0.2% of the total land area of the US, about 50% of all US listed endangered plants are Hawaiian. While Hawaii is an extreme example, the floras of many other island groups are also in extreme jeopardy. This session considered efforts in exploration, monitoring, ex situ techniques, and restoration projects underway and integrated efforts involving Federal and State agencies, NGO conservation groups, botanic gardens, private landowners, and individual volunteers are being co-ordinated by the Hawaii Rare Plant Recovery Group organised by the CPC-Hawaii office. This has proved a successful pathway leading to restoration projects of about 25 species.

This session agreed that:

- Ex situ conservation may be the only avenue available to assist in conservation and restoration of very rare plants. In many cases continued monitoring and management (esp. pollination) may be necessary over the long-term to retain wild or restored populations.
- One should never give up – even if only one plant of a species is left all possible efforts should be made to propagate it. When more plants are available, all possible efforts should be made to retain the maximum possible genetic diversity that remains.

Session Title: Island Biodiversity Conservation – Plants on the Edge

The participants concluded that, in view of the fact that about 20% of the world's flora is made up of insular endemics, found on only 3.6% of the land surface area, and about 20,000 of these are threatened, botanic gardens should give considerable priority to saving island plants and that they are ideally suited to do this.

The session suggested that:

- Priority should be given to creating new botanic gardens on islands and to strengthening existing gardens.
- Priority should be given in botanic gardens to those threatened insular endemics with very small populations.

- Case studies of island plants would make excellent propaganda and education material for the role of botanic gardens in conservation. This should be a priority issue in education.

Session Title: Conservation of Lower Plants: New Opportunities for Botanic Gardens

A strategy needs to be put in place for the creation of conservation collections for lower plants. For bryophytes, detailed systematic studies remain necessary; the genetic variation is higher than is generally accepted. Any conservation strategy needs to take account of this. Further, the micro-propagation protocols are still experimental. Concerning fungi, gardens have to make an inventory, especially for the ectomycorrhizal species and develop codes of practice in order to protect these fungi in-situ in the garden. Concerning pteridophytes, in-situ as well as ex-situ conservation protocols have to be developed. Special emphasis has to be given to centres of biodiversity, taking account of the fact that ferns and their allies are good habitat discriminators and thus are vulnerable.

The session highlighted the following:

- Detailed systematic studies have to underpin the development of a conservation strategy as the genetic variability is higher than generally accepted and in most cases still rather unknown. This is especially necessary when developing ex-situ conservation collections.
- Within garden niches suited for cryptogams, growth can be created and garden managers have to be informed about techniques and practices in order to conserve and promote in-situ conservation of species. These collections make a most valuable resource for education. Specific education programs also need to be developed.
- In situ and ex situ conservation of pteridophytes has to put emphasis on biodiversity centres taking account of the knowledge that most pteridophytes are very vulnerable to habitat change and habitat fragmentation.

Session Title: Re-stocking Nature - Botanical Institutions as Partners in Ecological Restoration

Botanic gardens are an appropriate and important venue to do restoration studies. Many different types of partnerships are possible including universities, land-owning agencies etc.

This session highlighted:

- The need to develop partnerships with a diverse array of groups.
- The need for basic research
- The need to work at a variety of scales, landscape, community, population.

Session Title: Catalyzing Community Partnerships: A Conservation Role for Every Garden

Botanic gardens can be effective partners in projects on sustainable gardens in city landscapes, including gardens that educate, enhance and preserve diverse cultures, make cities more liveable and even provide food. Real community action and participation is needed to make projects successful. Cultural, ethnic and environmental sensitivity are all needed.

The session highlighted that:

- Botanic gardens are key partners in developing sustainable city landscapes. The International Agenda for Botanic Gardens in Conservation (IABGC) should be promoted with government and NGOs involved in sustainable and healthy cities as a flagship document reinforcing that role.
- The IABGC should be used to reinforce the capacities of gardens in supporting ethno-diversity as an important part of sustainable development.
- Botanic gardens' influence does not end at the front gate. The IABGC should be used to raise awareness of the roles of our institutions with city officials, politicians and the public.

Session Title: Education for Biodiversity Conservation

Education for Biodiversity is key to the programmes of botanic gardens, arboreta and reserves and will facilitate the implementation of CBD and Agenda 21. All relevant institutions hold many unique strengths to develop awareness and understanding of the fragile and important nature of our biodiversity.

Recommendations from this session include:

- Internal staff of institutions, including education staff should have a good background understanding of the issues/articles of CBD and Agenda 21, particularly as they relate to the expertise/collections of botanic gardens.
- Education staff should be encouraged to develop programmes that utilize a variety of approaches for their different audiences including games, role-play, sensory exploration, storytelling etc.
- Education programmes do not always need to relate heavily to scientific content but work well when incorporating cultural/artistic and ethnobotanical components.

Session Title: Towards a Conservation Ethic for Gardens

This session worked to revise draft statements on three conservation subjects: *Ex situ* conservation, cultivation of rare and/or common native species, and non-native invasive species. Five groups actively discussed the drafts and provided numerous excellent points and ideas that will be incorporated into the drafts.

This session found that:

- Even though there were international participants in drafting the statements, there was a North American bias in many items such as property rights. More international participation is needed.
- The discussion needs to move forward so a list server will develop at the University of Washington, initially of session participants. It will also be facilitated and expanded by BGCI.
- Once reasonable agreement is reached the statements and explanatory material will be presented to the Boards of CPC, AABGA and BGCI. The results will also be discussed at the IUCN Global Invasive Species Program Meeting in Cape Town, South Africa in September 2000.

Session Title: Green Housekeeping for Botanic Gardens

Botanic gardens worldwide play an important role in science, research, horticulture and education. In the past few decades have become important centers for biodiversity conservation and contribute significantly to sustainable development. Presenters during this session showcased their gardens and explained how their botanic gardens have incorporated sustainable practices into their daily operations.

This session highlighted the need for botanic gardens to:

- Incorporate sustainable practices into their daily operations.
- Build the capacity of staff to implement and have ownership of these practices.
- Develop institutional policy on sustainability practices.

Session Title: Sustaining Scientific Collections and Research in the 21st Century

The central value of plant collections - living and preserved - to the educational, scientific and conservation missions of botanic gardens and arboreta must be better explained to all stakeholders in order to ensure continued and increased support of collections and the research that derives from them.

The Congress participants noted that:

- Genuine partnerships are vital to future support of plant collections: donors increasingly expect it and the complexity and urgency of the challenge of plant conservation demand it.
- Mechanisms must be devised to ensure international plant conservation roles for small to medium sized botanic gardens and arboreta seeking to engage global conservation issues in ways that the larger institutions currently can with relative ease.
- New powerful technologies such as genomics and informatics must be embraced and incorporated creatively into botanic gardens and arboreta, thus giving new relevance and value to plant collections.

Session Title: Exotic Plants: Innocent Until Proven Guilty

Invasive exotic plant species are a serious threat to natural and managed ecosystems worldwide. Botanic gardens and arboreta have, and continue, to contribute to this problem by promoting actually and potentially invasive plants. Botanic gardens and arboreta have a clear responsibility to adopt and demonstrate to the public a strong environmental ethic.

This session highlighted the need for botanic gardens to:

- Ensure that biological diversity is protected from the ecologically disruptive effects of invasive exotic plants, re-evaluate current collections and future accessions with risk assessment programmes.
- Engage and educate fellow botanic gardens and arboreta, the horticulture industry, and the public about the importance of choosing and displaying ecologically responsible plant collections.
- Support, contribute to, and share research that identifies problems and provides solutions to the ecological problems caused by invasive exotic plant species.

Session Title: The 1990s: Public Horticulture's Decade of Natural Disasters

Public gardens are the stewards of plant collections and should ensure that best practices are in place so that the negative (destructive) impacts of natural disasters do not detrimentally effect conservation, preservation, educational and operational endeavours. Risk assessments must be undertaken now so that when the disaster strikes, plant and human resources survive in the response and recovery efforts at all public gardens.

This session highlighted that:

- As global warming and its effects are realised and better understood, gardens must be prepared for the implications of changed climate - including shifts in natural ecosystems, changes in climatic regimes, and perceived/projected increases of natural hazards and intensities.
- Gardens must share natural disaster experiences with each other in order to lessen the negative impacts and *hard lessons* on fellow gardens that have a mission pertaining to documenting, conserving and promoting plant resources.

Session Title: Preserving Genetic Diversity: NAPCC

AABGA originally established the North American Plant Collections Consortium (NAPCC) for two primary purposes: (1) to act as a mechanism for elevating the standards of curatorial management of plant collections and (2) to co-ordinate a continent-wide effort among botanical gardens for the conservation of plant germplasm and biodiversity. Interest and momentum is building.

In this session, many reasons for joining were presented and many ideas for strengthening the program were discussed as follows:

- Strengthen partnership between AABGA and the USDA's National Plant Germplasm System, which are indeed programs with common goals
- Promote the NAPCC to AABGA members and others to encourage more institutions to join. Develop target list of priority collections that especially should be encouraged to join.
- Strengthen communication with CPC and other organizations with sympathetic goals to build on each other's strengths.

Session Title: Botanic Gardens in the Caribbean: Diverse Approach to Biodiversity Conservation

The region of the Caribbean Basin is rich in plant biodiversity and endemic species. Because of its special island biogeography, the flora and natural areas of the Caribbean region are highly threatened by rapid urban development, tourism, agro-enterprises, invasive exotic pest plants, pollution, and the fact that many endemic species are found in micro-regions. Botanic gardens in the Caribbean can play a critical role in conservation and in raising public awareness.

The highlights of the session were that:

- The regional network of Caribbean Botanic Gardens for Conservation (CBGC) aims to strengthen Caribbean botanic gardens to conserve the regions biodiversity through collaborative conservation, research and educational programs, and through the sharing of resources and information.
- The IABGC endorses and welcomes the establishment of the CBGC network.
- The IABGC supports the CBGC network in its efforts to strengthen Caribbean botanical gardens in their critically important efforts to conserve regional plant biodiversity and to raise awareness of the need for biodiversity conservation within the region.

Session Title: United in our Concerns – Botanic Gardens of the European Union

This session was concerned with the European Botanic Garden Action Plan. The main conclusions during this session were that: it is essential to inform staff about the Action Plan and to describe its relevance to them; it is vital to use the Action Plan to best public relations effect and to distribute to politicians and decision makers; a means must be devised to implement the Action Plan in individual gardens and it was agreed that national networks have a role to play in getting the Action Plan implemented in gardens.

Finally, it is recognised that the role of non-EU Botanic Gardens is important and the following was recommended:

- Continued networking on a national and international level is essential.
- The work of botanic gardens in in situ and ex situ conservation measures must be increased.
- It is essential to promote the Gran Canaria Declaration to relevant bodies at national levels.

Session Title: The biodiversity of the Southern Appalachians and Conservation Strategies Underway to Protect It

Conservation efforts must be integrated in their approach and adaptive to changing circumstances. They also require a multi-disciplinary and broad geographic approach. It is important to capture the nature of regional biodiversity in detail as a foundation for research and recovery efforts.

The session highlighted the importance of:

- Integrating conservation efforts with a broad consortium of partners.
- Conservation measures based on sound inventory and monitoring in order to be effective.
- Following a comprehensive plan for conservation, such as that being developed by The Nature Conservancy.

Session Title: Rooting Out the Problem of Invasive Species

Extensive experiences from Australia, New Zealand, South Africa and Ireland presented at the Congress identified the alarming ecosystem impacts and cost of control of aliens, making specific recommendations to implement the *International Agenda for Botanic Gardens in Conservation* as below:

- The need to establish national weed lists/surveillance lists to monitor and control the impact of potential invasives.
- Develop site/species based control methods, including integrated pest management, to apply within national strategies.
- Botanical gardens to regionally comply with regulations regarding invasive aliens and to act as information/education role to public and as horticultural industry as to the identity and dangers of alien weeds.

Session Title: Science for Conservation

Botanic gardens offer unique expertise and opportunities for conservation research. There is much to be learned about the taxonomy, properties and requirements for growth of plants. International collaboration is vital for the future and the Global Plant Conservation Initiative provides a much-needed focus to this effort.

The session highlighted the need to:

- Apply the latest research methods, such as molecular biology, to understanding biodiversity at the genetic level, in addition to the species and habitat levels.
- Develop and share experience of best practice in plant conservation science so that this knowledge can be effectively applied to current and future efforts in habitat restoration.
- Promote hands-on approaches to plant conservation in situ, using the unique skills to be found in botanic gardens and related institutions.

Session Title: Ecotourism and Botanic Gardens

With increasing urbanisation, visiting botanic gardens may be the only opportunity for some city dwellers to visit a natural or semi natural setting and botanic gardens could play a role in expanding

ecotourism from the traditional non rural setting into the cities. There is potential for tourism operations to better serve the needs of large market segments by using botanic gardens while delivering the principles of ecotourism. If botanic gardens work with operators and review the potential role in ecotourism there could be excellent opportunities to expose botanic gardens to a wider audience and create a much-needed income.

The conclusions of the workshop were that:

- Botanic gardens should support the Convention on Biological Diversity and the global mission of botanic gardens by working towards developing sustainable tourism standards and practices in areas such as infrastructure and servicing.
- Botanic gardens can support nature-based tourism and ecotourism through supporting operator, tourism agencies, and forming networks and partnerships to promote local culture and regional qualities.
- Botanic gardens can contribute to conservation and sustainable development by show-casing native plants where natural habitats don't exist and raising awareness of plants, their uses and products.

Session Title: Historic Fruits – An Endangered Heritage

Tree fruits introduced into North America represent valuable genetic resources for future breeding as well as valuable cultural artefacts. Apples and pears, temperate zone species, were the focus of presentations. Conservation of such material is an important goal of plant conservation.

The session highlighted the need for:

- National collections of apple and pear collections to replace those being de-accessioned by states.
- Propagation and identification of apple and pears in abandoned and historic sites.
- The preservation of historic orchards, especially at historic public gardens.

Session Title: Medicinal Plants: Botanic Gardens Role in Global Health Concerns

There is an amazing diversity of medicinal plants with therapeutic properties. These properties need to be pharmaceutically tested and a great deal of resources will be needed to undertake this work. However, there is an intense and extensive daily use of medicinal plants around the world that needs urgent action to ensure their conservation.

The session highlighted the need for botanic gardens globally to:

- Work with people and raise awareness through educational activities.
- Develop more base line data on pharmacological research and trade, both local and international.
- Propagate and cultivate medicinal plants to supply the demands of both national and international markets.

Session Title: Community Gardens

Community gardens represent a unique opportunity to galvanise the community and to make a partnership between botanic gardens and local people. By empowering local people to participate in projects of this kind we go beyond the frontiers of the botanic garden and community garden by developing the knowledge, leadership skills and personal development of the wider community.

This session highlighted the need to:

- Ensure long-term sustainability of the community project by respecting the wishes of the their chosen remit.
- Education and awareness-raising community gardens ensure the practical application of people's contribution to global conservation through initiatives.
- Community motivated garden projects can drive local governments to acknowledge the need for gardens and actively support them both in resources and political influence.