

*Investing
in Nature*

A Partnership for Plants in Canada



CONSERVING PLANT DIVERSITY:
The 2010 Challenge
for Canadian Botanical Gardens

Investing in Nature

A Partnership for Plants in Canada



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Governor's Garden, Chateau Ramezay Museum



Recording annual blooming dates for PlantWatch, Harriet Irving Botanical Gardens



Ethnobotanical Interpretive sign, Memorial University of Newfoundland Botanical Garden

Executive Summary

Conserving Plant Diversity: the 2010 Challenge for Canadian Botanical Gardens reviews the progress on plant conservation and education related to sustainability by botanical gardens, places the *International Agenda for Botanic Gardens in Conservation* and the *Global Strategy for Plant Conservation* into context, and indicates how Canadian gardens can contribute to achieving the 19 targets of the *North American Strategy for Botanic Gardens in Conservation*.¹

This update to the 2001 *A Biodiversity Action Plan for Botanic Gardens in Canada* provides a framework for planning the next five years of conservation and education projects by the Canadian botanical gardens community.

Progress and successes on the recommendations and targets of the previous two Canadian botanical gardens action plans (the 1997 *Partnerships for Plants* and the 2001 *Biodiversity Action Plan*), are reviewed. New recommendations for immediate contributions by this community toward conservation and sustainable use of plant diversity are presented. Intended outcomes are indicated in detail in the measurable targets grouped under five key themes:

THEME 1:

Conserving and promoting the sustainable use of natural plant diversity

THEME 2:

Enriching biodiversity education

THEME 3:

Supporting the foundations of research

THEME 4:

Encouraging best policies and practices

THEME 5:

Cultivating partnerships, resources and capacity

Acknowledgements

This action plan was produced as a component of the Investing in Nature: A Partnership for Plants in Canada project, a partnership between Botanic Gardens Conservation International, Montreal Botanical Gardens, Royal Botanical Gardens and the Canadian Botanical Conservation Network, with funding provided by HSBC holdings plc.

An immense amount of work has been contributed by many people to the development of the various strategic documents referred to in this action plan update, especially since 2003. In particular, the development of the *North American Strategy for Botanic Gardens in Conservation* has been the work of numerous individuals within the American Public Gardens Association (formerly AABGA), Botanic Gardens Conservation International, the Canadian Botanical Conservation Network, the US Center for Plant Conservation, botanical gardens throughout the Americas, and participating NGOs and other organizations. Space prohibits listing all of these contributors in this update. Needless to say, the work of contributing what we can in Canada to this important international effort would not take place without the collaboration and interest of our international colleagues.¹

The Biodiversity Convention Office of Environment Canada has kindly provided translation of this document into French.

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Top right cover photo of Thread-leaved Sundew (*Drosera filiformis*): Dr. R. Evans, Harriet Irving Botanical Gardens.

Design by Irene Feddema, www.ifdesign.ca

¹ For details see Galbraith, D. A., and K. Kennedy. 2006. The development of a strategic plan for a regional network of botanic gardens for Conservation: the North American experience. BGJournal 3: 9-10.

Introduction

Botanical gardens around the world are increasingly being called upon to participate in and promote the conservation and sustainable use of biological diversity — to protect and promote the world of plants for the benefit of people and the planet. For example, in the past four years the United Nations' Convention on Biological Diversity has expressly recognized the role of botanical gardens in achieving ambitious goals set for 2010 by the *Global Strategy for Plant Conservation* (GSPC).



Bog Nature Trail, Memorial University of Newfoundland Botanical Garden

The approximately 25 botanical gardens in Canada have been cooperating on a variety of projects related to education and to conservation of plant diversity. In 1995 the Canadian Botanical Conservation Network (CBCN) was formed as a project of Royal Botanical Gardens (RBG), Environment Canada and McMaster University to undertake communications and projects to protect endangered species and promote the role of botanical gardens in conservation. In 1996 the network held a three day meeting, the results and recommendations of which were published as *Partnerships for Plants* in 1997. In 2001, with the support of Environment Canada, CBCN and RBG produced the *Biodiversity Action Plan for Botanical Gardens and Arboreta in Canada*.²

Important initiatives since 2001 make an update desirable. These include the *International Agenda for Botanic Gardens in Conservation*, the *Species at Risk Act* in Canada, the development of the *GSPC* and its adoption by the Convention on Biological Diversity in 2002. In 2005, nineteen plant conservation targets for botanical gardens in North America were adopted by four major gardens associations as the *North American Strategy for Botanic Gardens in Conservation*.

WHAT IS A BOTANICAL GARDEN

Many different kinds of institutions hold, catalogue and makes living plant material available for researchers and also puts it on display for the public. While there is no "standard" definition of a botanical garden that includes all of their various attributes, one definition developed has been used in several publications, including the *International Agenda for Botanic Gardens in Conservation*.³

*"Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education."*⁴

Taken broadly, botanical gardens can therefore include institutions that call themselves botanical gardens or arboreta *per se*, as well as zoological parks or any other institution which fits this definition.

² Galbraith, D. A. (ed.). 2001. Biodiversity Action Plan for Botanical Gardens and Arboreta in Canada. Royal Botanical Gardens, Hamilton, Ontario, Canada.

³ Wyse Jackson, P. S. and L. A. Sutherland. 2000. International Agenda for Botanic Gardens in Conservation. Botanic Gardens Conservation International, U.K.

⁴ Wyse Jackson, P. S. 1999. Experimentation on a large scale - an analysis of the holdings and resources of botanic gardens. BGCNews 3:(3). Botanic Gardens Conservation International, U.K.

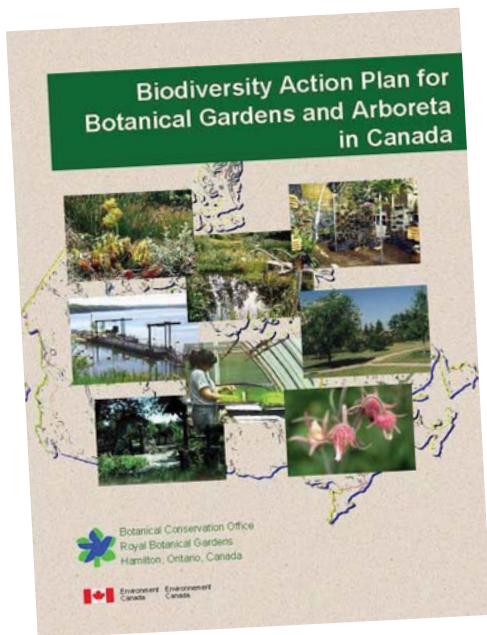
THE INTERNATIONAL AGENDA FOR BOTANIC GARDENS IN CONSERVATION (2000)

The International Agenda for Botanic Gardens in Conservation was published by Botanic Gardens Conservation International in 2000. Intended as a successor to the 1989 *Botanic Gardens Conservation Strategy*, the *International Agenda* provides a comprehensive review of the many contributions that botanic gardens are making to all aspects of conservation, from *ex situ* protection of species at risk, to educational programs supporting natural areas and sustainable use programs.



White Baneberry, *Actaea pachypoda*

Since the introduction of the *International Agenda* over four hundred individual botanical gardens and networks have issued endorsements of the agenda. This registration process allows individual institutions to express their commitment to the principles expressed in the *International Agenda*. Collectively it also demonstrates that the interest in the community is strong. At the time of this update, over 25 institutions in Canada have registered.



A BIODIVERSITY ACTION PLAN FOR BOTANIC GARDENS AND ARBORETA IN CANADA (2001)

The *Biodiversity Action Plan* of 2001 was developed around five major themes and presented over 40 individual recommendations and objectives by which botanical gardens could contribute to the goals of conserving plant diversity and enhancing education about biodiversity.

As of the end of 2005, substantial progress has been made on at least half of these recommendations, through the work of individual botanical gardens, agencies and institutions concerned with plant conservation generally, and through the work of botanical gardens networks, associations and related projects. The largest number of contributions have undoubtedly come about because of the *Investing in Nature: A Partnership for Plants in Canada* project of Botanic Gardens Conservation International and its funding partner HSBC Holdings plc, with implementing partners CBCN, Montreal Botanical Gardens, Royal Botanical Gardens, and through contributions to the project by the Museum Assistance Program of the Canadian Department of Heritage.

What is the 2010 Challenge?

In a world which is experiencing economic and population growth there is also continuing disparity between rich and poor and increasing pressures on natural areas and biodiversity. Although the alleviation of poverty has been a serious concern for many years there also has been little attention paid to linking natural living resources and sustainable economic improvement. That situation is changing. In 2005 a major report entitled *The Wealth of the Poor*⁵ made the case that biodiversity is the primary resource of the majority of people in developing countries. Not only is biodiversity the source of daily nutrition, fuel and raw materials for trade for many; it is the only resource many can use to improve livelihoods and well-being.



Wild Geranium, *Geranium maculatum*

Linking conservation and sustainable use to improve wellbeing is not new. Several international agreements provide ample reasons for both governments and non-governmental organizations to pay attention to plant conservation and sustainable use. These agreements, the *International Agenda for Botanic Gardens in Conservation*, the UN's *Millennium Development Goals (MDG)*, the CBD's *GSPC*, and the *North American Strategy for Botanic Gardens in Conservation*, all bring renewed attention to the unique role of plants and plant conservation in the early years of the twenty-first century.

These broad goals at the international level focus attention on the plight of developing nations, and on the value plant diversity holds for all humanity. As we examine the ways that Canadian gardens can contribute to conservation and improvement of human well-being, it's also worth remembering that within Canada there are communities that directly rely upon local biodiversity for many cultural, medicinal and nutritional needs.



Vegetable patch, New Brunswick Botanical Garden

⁵ World Resources Institute (WRI) in collaboration with United Nations Development Programme, United Nations Environment Programme, and World Bank. 2005. *World Resources 2005: The Wealth of the Poor — Managing Ecosystems to Fight Poverty*. Washington, DC: WRI.



Wetland Interpretive Trail, Montreal Botanical Garden

The community of botanical gardens and other institutions engaged in public horticulture in Canada is modest, and faces a big challenge. The year 2010, now only four years away, was chosen in 2001 as the target for attainment of the ambitious goals of the *GSPC*. In addition, it is the target year for attainment of the MDGs.

The 2010 Challenge is a call to the botanical gardens of Canada to respond anew to the *GSPC* targets especially. Can Canadian botanical gardens fulfil their potential to contribute to these targets? In the final five years of the first decade of the 21st century the challenge provides these institutions with the chance to demonstrate and renew their social and scientific relevance.

Although international agreements such as the *GSPC* are the responsibility of governments, there is also growing recognition that government action alone is not sufficient. The best evidence of this is the Global Partnership for Plant Conservation (GPPC), established in 2004 as a group of organizations supporting achievement of the *GSPC*. The CBD has welcomed the efforts of the GPPC toward attaining the *GSPC* goals.



Finders and Keepers Gallery, Canadian Museum of Nature

To attain significant plant conservation goals by 2010 is a challenge. Canada cannot achieve these goals alone, but it can make meaningful contributions to the global effort. Botanical gardens and like-minded organizations involved in conservation and sustainable use cannot achieve these goals in isolation either. However, if as a community we can respond to the challenge now, we will be able to take great satisfaction in 2011 in knowing that our contributions have been part of the solution.

BOTANICAL GARDENS AND NATURAL AREAS

In Canada more than 70 percent of all botanical institutions own natural areas, where native plant communities live within their natural habitats. These areas are in some cases used for educational or recreational purposes, and for research on wild plant populations. In their natural contexts, plant communities interact with pollinators, grazers and other organisms that are at best disrupted by placing plants into garden settings. A survey of botanical gardens in Canada conducted by the Plant Conservation Committee of APGA in 2000 found that among 22 botanical gardens, over 1,600 hectares of natural ecosystems



Grindstone Creek Estuary restoration project. Photo: D. Galbraith, Royal Botanical Gardens

were protected within land owned by the institutions themselves. These ranged in size from a few hectares to over 1,000 hectares. A similar survey of institutions in the United States at the same time found under 50 percent of institutions there owned natural lands properties, a reflection of the different origin and demographics of the gardens in the two countries.

Natural lands are extensively used for educational purposes, both by botanical gardens educators and also by those from other institutions. Tens of thousands of school children attend these programs on an annual basis across Canada. In some cases, trips to local botanical gardens may be the only exposure to environmental education available to students.



Assiniboine Park Conservatory

Action Plan Themes and Recommendations: Toward 2010

In order to assist botanical gardens in achieving their most significant contribution toward the challenging goals set for 2010, Investing In Nature: A Partnership for Plants in Canada reviewed the various documents and undertook consultations with stakeholders in 2005 and 2006. Integrating the targets of the *North American Strategy*⁶ with those of the 2001 *Biodiversity Action Plan*, as well as incorporating recommendations from stakeholders and network participants has resulted in the recommendations below. They are presented under the thematic headings of the 2001 plan, but in no particular order within each. "The network" is meant to include CBCN, the Canadian Biodiversity Educators Network and BGCI.

Recommendations linked to relevant previous plans are indicated by the following codes:

- [NAS ##] refers to target ## under the *North American Strategy for Botanic Gardens in Conservation*
- [BAP ##] codes refer to recommendation ## presented in the 2001 *Biodiversity Action Plan for Botanical Gardens and Arboreta in Canada*
- "QT" refers to quantitative targets included in the *North American Strategy*

RARE AND ENDANGERED PLANTS INITIATIVES AT LES JARDINS DE METIS / REFORD GARDENS, GRAND-MÉTIS, QUÉBEC

Ornamental gardens are better known for their collections of exotic plants than for their conservation of indigenous ones. Les Jardins de Métis (Reford Gardens) are an estate garden located on the banks of the St. Lawrence River east of Quebec City. Planted in the 1920s by plant lover and garden enthusiast, Elsie Reford, the gardens today are home to collections that include lilies, gentians, peonies and roses as well as the Tibetan blue poppy.

For several years, the gardens have also been working at the preservation of rare and endangered plants. The gardens' implication began with a series of studies, including an analysis of the role of the gardens in the *ex situ* conservation of native plants as well as inventories of the native and endangered plants in the region. Initiatives that have been completed include the creation of a website (www.jardinsmetis.com/jeu) on endangered plants for schoolchildren and an interpretative walk designed to educate visitors about the beauty and fragility of such plants. Work is ongoing on the creation of appropriate environments for the cultivation of some of the endangered plants endemic to the seashore and mountainous regions of the Gaspé peninsula.

Since planning for the project began in 1999, initiatives by the Quebec government and collaborative efforts undertaken as part of the *Biodiversity Action Plan for Botanical Gardens and Arboreta in Canada* has led to growing public awareness about habitat preservation and the protection of endangered plants. In consequence, *ex situ* conservation is less an imperative, but remains an objective which Les Jardins de Métis pursues and shares with local and regional partners.

- Alexander Reford, *Les Jardins de Métis*



Wetland habitat, Reford Gardens

⁶ Wyse Jackson, P. S. 1999. Experimentation on a large scale - an analysis of the holdings and resources of botanic gardens. *BGCNews* 3:(3). Botanic Gardens Conservation International, U.K.

Theme 1: Conserving Canada's Natural Plant Diversity

PROGRESS AND SUCCESSES

Botanical gardens have been participating in the conservation of plant diversity in Canada for many years. Emphasis on conservation became an organized priority for the community in the mid-1980s with the Canadian Plant Conservation Program. By the end of the 1980s the *Botanic Gardens Conservation Strategy* added its voice for plant conservation programs at the international level.

One of the proposals for the initial development of CBCN in the mid-1990s was that it could directly contribute to plant conservation itself. Three recommendations were made at the 1996 CBCN workshop that specifically addressed the theme of conserving native plant diversity in Canada. It was recommended that botanical gardens and CBCN should participate in recovery programs for endangered species. Since 1997 several gardens have become involved in recovery teams or have their own projects. CBCN has not itself become directly involved in recovery work. It was also recommended that CBCN should encourage preservation of important sites for plants *in situ*. No direct action on this has been taken to date by CBCN, but it has been addressed by individual institutions. Finally, it was recommended that CBCN should promote the development of native plants gardens or sections in gardens. Several such projects have been developed by member gardens.

The 2001 action plan listed fourteen recommendations for conserving Canada's natural plant diversity. These were grouped under two main headings: developing a national program for the identification, preservation and study of native plants, and supporting habitat conservation and species-at-risk recovery projects with dissemination of appropriate plant information and, if needed, plant material. As of 2005 progress has been made toward several of these including meetings in 2000 and 2001 at Devonian Botanic Garden and at Montreal Botanical Garden establishing the idea that major institutions could serve as regional plant diversity resource centres.

Several gardens participate in recovery planning for endangered plants and habitats. For example, these include the "Urgence Conservation" program of Montreal Botanical Gardens, the rare plant conservancy program of Jardins de Metis/Reford Garden, work by the Northern Plant Diversity Centre at Devonian Botanic Garden, the Limestone Barrens Habitat Stewardship Program of Memorial University Botanical Garden, and monitoring and recovery projects for species at risk within the natural lands properties of Royal Botanical Gardens and the Niagara Parks Commission.

The 2001 plan recommended that gardens participate in setting priorities for *ex situ* and integrated conservation programs. Individual institutions have been self-selecting their participation, as resources and capacity permits, in recovery programs. Since 2001 the prioritization for recovery of species at risk has become a mandated function of the federal government under SARA. The action plan also recommended that collection and storage of seeds could be a service provided by the botanical gardens community if needed for recovery. This is being undertaken by some individual gardens, and in cooperation with the Millennium Seed Bank and Plant Genetic Resources Canada.



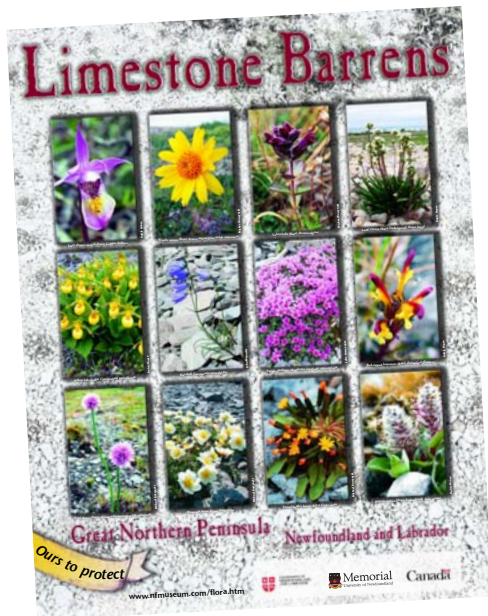
Long's Braya, *Braya longii*. Photo: Memorial University of Newfoundland Botanical Garden



Photo: Milner Gardens and Woodland



Nature trail, Mitis River Park



CONSERVING ENDANGERED SPECIES IN NEWFOUNDLAND

Memorial University of Newfoundland Botanical Garden is helping to protect rare native plants that grow only in western Newfoundland. As a member of the Limestone Barrens Conservation and Recovery Team, the garden cultivates these unique plants for research, education, and habitat restoration. As well, the team works with local people on stewardship projects to protect and restore the special habitat.

Community groups across Canada are helping plants survive.



Oxen Pond Nature Trail, Memorial University of Newfoundland Botanical Garden

Conserving Canada's Natural Plant Diversity RECOMMENDATIONS FOR 2006–2010

- 1.1 The scope of this theme should be expanded to support the role of Canadian botanical gardens in the conservation and sustainable use of global plant diversity. In future the title of this theme should be changed to "Conserving and Promoting the Sustainable Use of Natural Plant Diversity."
- 1.2 The network should aid gardens to link to organizations leading *in situ* conservation, and promote and participate in protecting natural areas, habitats and ecosystems at the local, national, regional and international levels. [NAS B1; QT 30 percent of gardens supporting international conservation.]
- 1.3 At the national level, there should be a better link between botanical gardens and conservation programs like SARA, COSEWIC, RENEW, and data sources. [NAS A2] This linkage could be provided by either a formal agreement with recovery authorities or by a consistent approach by the network to promote the role of the community.
- 1.4 The network should lead a new effort to promote research partnerships in pure and applied conservation biology including gardens. [NAS B6] Although the intention of being involved in plant conservation and sustainable use initiatives is noble, participation is severely limited by resources. The main limit to participation in programs is staff time. Partnerships with like-minded NGOs, university researchers or departments, and with government agencies can help with these goals at minimum direct cost.
- 1.5 The network should regularly survey gardens in Canada on participation in SAR recovery, habitat restoration and stewardship, including international conservation, and investigate resources to increase participation if appropriate. [NAS B3 and subtargets; QT 20 percent of gardens participating in formal recovery programs.] By undertaking a regular review, collective progress toward 2010 targets can be tracked and expressed. An initial survey should take place in 2006 and include a process to update results later. Participation in recovery teams should be included among key performance indicators for the botanical gardens community.
- 1.6 The network should survey the status of relevant *ex situ* collections and their conservation utility in Canada, including contact with recovery planning. This will aid in priority-setting and development of new proposals. This should include seed banking, tissue culture, live plants and other methods, and linkages between other collections nationally and internationally. [BAP 3.2.1; NAS B2 and subtargets] This recommendation should also be implemented in 2006, with updates through 2010 and beyond.
- 1.7 The network should review involvement of gardens in economically and socially important plant diversity in Canada, and work with gardens to promote participation in conservation of medicinal, economic and ornamental plants, including heirloom varieties. [NAS B4 and subtargets]
- 1.8 The network should participate with gardens and other organizations to consider a system of unified signage for plants at risk in collections. [BAP 1.1.6] This should include both native species and also species at risk from around the world.

Theme 2: Enriching Biodiversity Education

PROGRESS AND SUCCESSES

The botanical gardens of Canada contribute enormously to educating the public about the wonder and importance of plants. Both formal and informal education are mission priorities for many gardens. This central role of education was recognized in both the 1997 and 2001 recommendations.



Exploring Morgan Arboretum

Two specific recommendations related to education were brought forward by the 1997 workshop. It was recommended that educational materials about endangered plants and plant conservation should be developed and disseminated. Actions since 1997 have included the "CBCN for Kids" pages on the CBCN website, and "Investing in Nature: A Partnership for Plants in Canada." It was also recommended that stewardship and conservation programs should be aimed at developing interests in conservation in young people.

The action plan of 2001 listed several recommendations for botanical gardens enriching educational programs. Progress on this theme has been strong since 2001, especially through the "Investing in Nature: A Partnership for Plants in Canada" program. The goal of establishing rare plants gardens or interpretive exhibits at major gardens to emphasize the important role of ecological context, has been achieved in some cases by individual institutions and also through Investing in Nature. This project has also made contributions to all of the other objectives under this theme, including training and educational programs and materials available at institutions and on web sites, creation of resources for educators, making information available on local restoration and conservation activities, and compiling and linking resources on current research.

Other recommendations included provision of public education to increase appreciation of our native plant heritage. This recommendation has been supported through both Partnerships for Plants in Canada and also Green Legacy, a travelling museum exhibit on rare plants launched in 2002 by the Canadian Museum of Natural and RBG with support from the Museum Assistance Program of the Canadian Department of Heritage. The creation of plant facts databases on rare native plants is being undertaken by Environment Canada under its commitment to RENEW and COSEWIC and through the SARA Registry. Several botanical gardens have contributed to these efforts.

ROYAL ONTARIO MUSEUM (ROM), DEPARTMENT OF NATURAL HISTORY, BOTANY AND MYCOLOGY

Royal Ontario Museum maintains two herbaria: TRT, The Green Plant Herbarium with holdings of Vascular Plants and Bryophytes; and TRTC, now the Mycological Herbarium. The collections support active research into plant and fungal evolution and phylogeny, and are each involved in initiatives to document the biodiversity of Ontario and elsewhere. Databasing of collection records is ongoing. As part of that initiative The Green Plant Herbarium is a partner in the Northern Ontario Plant Database project (www.northernontarioflora.ca) whose mandate is to make specimens from Northern Ontario available on the World Wide Web.



In addition to making specimen data available, ROM botanists are committed to education and to making information on Ontario plants accessible to the public. In 2004 the ROM botanists produced *The ROM Fieldguide to Wildflowers of Ontario* (T.A. Dickinson, D.A. Metsger, J. Bull and R. Dickinson, ROM and McLelland and Stewart, 2004) This book includes 550 common Ontario species and features 1,000 full-colour wildflower collections, most of which are from ROM's collections.

- Deb Metsger, Royal Ontario Museum

EDUCATIONAL OUTREACH — “SHOOTS WITH ROOTS”



Photo: Milner Gardens and Woodland

At Milner Gardens and Woodland in Qualicum Beach, British Columbia, school-aged children (Shoots) work beside adult volunteers (Roots) to explore the wonders of the natural world. During garden programs and school visits, kids and adults have fun while they learn about what plants need to survive, why we need plants, and how people can help plants.

Learning to garden connects us all with the importance of plants.

ADOPT-A-PLANT ALBERTA

Adopt-a-Plant Alberta is a new initiative to involve plant enthusiasts in the collection of information on the status of endangered species. Many plants may be at risk of extirpation within the province, but the quality and quantity of information available may not be sufficient to fully assess species status. Adopt-a-Plant Alberta offers an exceptional opportunity for amateur botanists to learn about rare plants and at the same time contribute to the understanding of provincial plant ecology and distribution. Participants adopt a provincially rare plant of their choice. Experts then train them to identify and find it, and once found, how to gather data about its location and local environment that will be useful in its conservation. All the data submitted will be housed in the conservation database of the Alberta Natural Heritage Information Centre and be used for provincial efforts to protect the plant.

Initial response to an advertisement that was meant to gauge interest has been overwhelming. About 50 volunteers have stepped forward to date. The program has received funding from three sources so far. The monies received have been used to hire a “grant writer,” expertise to help develop a priority list of plants for “adoption” and a volunteer coordinator to supervise the upcoming field season’s activities, and assist volunteers in their search for the elusive rare plant!

This programme is a good example of a cooperative effort between various institutions and non-government agencies: Alberta Natural Heritage Information Centre, Devonian Botanic Garden, Alberta Native Plant Council, Alberta Fish and Wildlife, and Species at Risk Programme.

- Rene Belland, University of Alberta Devonian Botanic Garden

Enriching Biodiversity Education RECOMMENDATIONS FOR 2006–2010

- 2.1 The network should continue to emphasize the importance of plant conservation in formal and informal education programs at botanical gardens by seeking new resources, promoting networking and supporting meetings of educators. The Partnership for Plants in Canada program held a highly successful meeting in 2004 and another is planned for 2006. Facilitating regular communication should be of the highest priority for the network.
- 2.2 The network should conduct an assessment of the range and participation in education programming in botanical gardens across Canada as key performance indicator for the community’s contribution to biodiversity education across Canada. Individual gardens and the network should work co-operatively to support and share existing programs that promote professional best practices in conservation. [NAS E1]
- 2.3 Gardens and the network should continue to promote conservation messages in their interpretation and expand efforts to actively engage Canadians in conservation. Possibilities include broadening participation in existing partnerships and public-awareness events and seeking new resources. [NAS D1 and D2]



Muttart Conservatory

Theme 3: Supporting the Foundations of Research

PROGRESS AND SUCCESSES

Recommendations in the CBCN workshop report of 1997 in support of the capacity of botanical gardens in Canada to be of relevance to research included:

- Publication of a directory of plant conservation activities in Canada (achieved by CBCN in 2000)
- Publication of a list of botanical gardens collections in Canada (achieved by CBCN in 2001)

BGCI has also contributed toward these goals through its online database listing botanical gardens, their collections and conservation programs.

Of the five themes in the 2001 plan, this has been the most difficult to achieve because of the financial reality facing botanical gardens. It is almost entirely up to individual institutions and their partners to find resources to support research. The 2001 action plan made general recommendations about encouraging research, including the development of an annual report on science and research at botanical gardens across Canada, and an annual report on plant collections in Canada. As of 2005 neither of these specific recommendations have been achieved.

RECOMMENDATIONS FOR 2006–2010

- 3.1 The network should compile and distribute results of publication of research projects conducted by botanical gardens among institutions, including a list of publication titles produced each year. [BAP 3.1.2]
- 3.2 With assistance from the network, individual gardens should support the Flora of North America (FNA) project, including linking FNA into education programs and assisting with taxonomic review where capacity permits. [NAS A1]
Individual institutions should also issue letters of support for the project to aid in securing funding.
- 3.3 Gardens should share and regularly update their plant records with the BGCI global database of plants in cultivation. [NAS B4 Subtarget 3; QT 75 percent of gardens]

ETHNOBOTANY RESEARCH AND THE CONTROL OF DIABETES

Montreal Botanical Garden's ethnobotanist Alain Cuerrier is part of a team researching how plants can help control diabetes. The team works in northern Quebec where many Cree people have this disease. By combining traditional Cree knowledge with current research, they have found that several plants from the boreal forest can help.



Blueberries, *Vaccinium angustifolium*

Every day we use many medicines developed from plants.

CANADIAN WILD PLANT SPECIES CONSERVED AT CANADA'S NATIONAL SEED BANK

Plant Gene Resources of Canada (PGRC), Canada's national seed bank, has a new program focused on the *ex situ* conservation of Canadian wild plant species. The primary objectives of this program are to develop a diverse collection of seed of Canadian wild plant species, to develop or refine protocols for regeneration of wild plant species, to study seed longevity under *ex situ* storage



Sorting seeds of endangered Wood-poppy. Photo: D. Galbraith, Royal Botanical Gardens

conditions, and to make seed available for research purposes. Some examples of wild plant genera of interest to PGRC include wild relatives of crop species (*Iris*, *Helianthus*, *Panax*), wild grasses (*Agropyron*, *Poa*, *Zizania*), and wild forbs (*Agastache*, *Astragalus*, *Arnica*, *Baptisia*, *Chamaelirium*, *Chimaphila*, *Euphrasia*, *Gentiana*, *Heuchera*, *Hydrastis*, *Polygala*, *Rhodiola*, *Sanguinaria*, *Scutellaria*, *Valeriana*). Collaboration with interested individuals and organizations is encouraged. Input can include the identification of species to be included in the program, help in identifying locations for, and the timing of seed collection, help with seed collection, and collaboration in developing protocols for regeneration.

For further details, please contact Dr. Richard St-Pierre, Plant Gene Resources of Canada, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK, Canada, S7N 0X2; Tel: 306 956-2840; Fax: 306 956-7246; Email: stpierre@agr.gc.ca; Web: www.agr.gc.ca/pgrc-rpc.

- Dr. Richard St-Pierre,
Plant Gene Resources of Canada

PLANT CONSERVATION AND THE SHERWOOD FOX ARBORETUM

The Sherwood Fox Arboretum (University of Western Ontario) is represented on five recovery teams: Carolinian Woodlands, Tallgrass, Walpole Island, Lake Huron Dune Grassland (Pitcher's Thistle) and Wood Poppy. There are active recovery activities already being done or planned at or through the Arboretum for Walpole Island and Wood Poppy and Carolinian Woodlands. SFA and Walpole Island Heritage Centre have an active partnership through the Walpole Island Ecosystem Recovery program that



Wood-poppy, *Stylophorum diphyllum*
Photo: D. Galbraith, Royal Botanical Gardens

includes restoring community connections with the land. In partnership with ReForest London, SFA produced and distributed 3000 copies of a brochure "Choosing the Right Tree in London, Ontario" in 2005. This highlighted invasive species to be avoided in tree plantings and promotes native trees. The brochure was well received by local nurseries, some of whom have changed their stock in response. A re-issue is planned for 2006, with the addition of a similar brochure on shrubs. The SFA has had a partnership with the Walpole Island Heritage Centre since 2003 that includes indigenous culture, information, training and capacity building to conserve and restore wild plant communities. SFA also has partnerships that promote activities in plant conservation with local groups including ReForst London, Trees for Tomorrow, EnviroWestern.

- Dr. Jane Bowles,
Director, Sherwood Fox Arboretum

Theme 4: Encouraging Best Policies and Practices

PROGRESS AND SUCCESSES

The recommendations with regards to best practices in the 1997 CBCN workshop proceedings largely address the relationships between indigenous peoples, plant conservation and botanical gardens in Canada. A few individual institutions have built partnerships with indigenous communities on conservation activities and stewardship issues. Examples since 1997 include:

- development of a First Nations Garden and an ethnobotanical research program with First Nations communities at Montreal Botanical Gardens (1998–)
- an ethnobotany project with Six Nations and Royal Botanical Gardens (2002– 2005)
- co-operation between Devonian Botanic Garden and the Enoch Cree Nation to preserve traditional plant knowledge (2002–2005)

The 2001 action plan listed four recommendations to enhance professional best practice among Canadian botanical gardens. Through the network and associations, regular informal consultations make use of expertise at institutions across Canada. A major meeting of botanical gardens in Canada took place in 2004 under the Investing in Nature: A Partnership for Plants in Canada program, and another is planned for 2006. Meeting opportunities have been developed every year at the annual conferences of the AABGA/APGA, and in 2002 the association held its annual conference in Canada.



Botanical gardens are centres of expertise in plant identification. Photo: Royal Botanical Gardens



First Nations Garden, Montreal Botanical Garden

RECOMMENDATIONS FOR 2006-2010

- 4.1 The network should lead a coordinated invasive species effort among gardens. This should include addition of existing voluntary codes of conduct, development and promotion of appropriate guidelines and policies, establish educational programs and training aimed at detection and prevention of invasive species problems, and promoting the role of botanical gardens as leaders in the fight against invasive species. [NAS B5 and subtargets; QT 80 percent of gardens involved; 100 percent with actively managed collections.]

The network should inform nurseries of the problems associated with the continued sale of highly invasive horticultural plants. As part of this a list of deleterious species should be drawn up as well as a list of alternative species as replacements. Best practices on discarding plant propagules and the movement of soils could also be developed and made available to nurseries for distribution to clients.

- 4.2 Botanical gardens and the network should develop new approaches to promoting the need for sustainable use of plant resources, including public awareness, professional standards and best practice, and raising awareness of laws such as CITES among stakeholders. [NAS C1 and subtargets]
- 4.3 The network should raise awareness of the NAS targets and help gardens make use of this action plan update. [NAS F1]
- 4.4 The network and individual gardens should continue collaborating with indigenous, cultural and local use initiatives for wild plants and support community needs for education, information, and capacity-building efforts to support sustainable use and conservation of wild plant communities. [NAS C2 and subtarget]
- 4.5 The network should develop educational and training materials to promote sustainability, conservation ethics and environmental awareness within all levels of botanical gardens. [NAS E2]
- 4.6 The network should organize and maintain a roster of plant conservation experts in Canadian botanical gardens, and promote awareness of this expertise in plant conservation to relevant conservation partners. [BAP 4.3.2]
- 4.7 As a primary priority, the network should facilitate regular communication between botanical gardens to address plant diversity and conservation issues. [BAP 4.4.1]



Friends of the Garden Plant Sale, UBC Botanical Garden

PUBLIC CONTACT WITH ENDANGERED SPECIES: "PATH TO BIODIVERSITY" AT MONTREAL BOTANICAL GARDENS



Montreal Botanical Garden

The "Conservation Emergency" program provides a unique opportunity to appreciate the wealth of local plant life and to get a close look at plants that are difficult to observe in the wild. Both visitors and staff are reminded of the importance of plant conservation, protecting natural habitats, and in promoting sustainable development practices. As the project's long-term goal is to address and facilitate plant conservation more from the population level than just from the species level, the "Path to Biodiversity," is also an ideological path. Projects such as this demonstrate the role botanical gardens can play in education, environmental protection and biodiversity conservation.

Montreal Botanical Garden is currently attempting to establish collaboration with the Quebec Chapter of the Nature Conservancy of Canada to work towards reintroducing two or three plant species in natural habitats protected by the Nature Conservancy. In a broader context, this project can also be a model for regional *ex situ* conservation efforts across Canada. While there is no Canadian equivalent of the Centre for Plant Conservation, botanical gardens in Canada do have the opportunity to develop collaborations and partnerships between both federal and provincial agencies responsible for endangered species recovery planning. For more information: www.ville.montreal.qc.ca/jardin/urgence

- Laurel McIvor and Michel Labrecque



Canadian Heritage Garden, VanDusen Botanical Garden

Theme 5: Cultivating Partnerships, Resources and Capacity

PROGRESS AND SUCCESSES

The 1997 CBCN workshop proceedings listed approximately ten recommendations with regards development of CBCN as a national entity, and the kinds of products the network should produce or promote. To one extent or another, all of these recommendations have been acted upon through the development of CBCN, including the development of network options and new sources of funding support. Finding support for both the programs of individual institutions and to support the development and operations of the network itself is the biggest challenge faced by the network in 2006. Other recommendations included:

- publication of three or four issues of newsletter per year (achieved most years since 1996)
- establishment of the permanent CBCN website (achieved in 1998)
- establishment of the CBCN-L list server (achieved in 1998)
- establishing CBCN as an incorporated, registered charitable organization (achieved in 1998)
- membership in CBCN should be promoted to include botanical gardens, museums and other organizations (there are currently 20 institutional members)

EX SITU CONSERVATION AT MONTREAL BOTANICAL GARDENS

In Quebec, as elsewhere, the conditions that offer suitable habitat for a wide diversity of biological life also attract a large and growing human population. In addition to land use competition, unique plant communities along the St. Lawrence River are under further stress by artificially high water levels that maintain the waterway as a major shipping and transportation corridor. As natural habitat disappears, many plant populations have been lost and species that were naturally rare are now becoming vulnerable to or threatened with extinction. As a result, 375 plant species in the province of Quebec have been designated as endangered or vulnerable, and almost 65 percent (243 species) grow in habitats in the southern part of the province.

As a centre for botanical research and public education in the heart of southern Quebec, Montreal Botanical Garden saw an opportunity to make a significant contribution to regional plant conservation efforts. Montreal Botanical Garden is not only one of the largest botanical gardens in North America, but it also hosts one of the largest botanical research programs in Canada and has an extensive education department. Developing an *ex situ* conservation project was considered an appropriate and valuable way of integrating conservation with the garden's research and education mandate. With financial support from the Quebec Action Fund for Sustainable Development and in partnership with the Institut de recherche en biologie végétale, Friends of the Montreal Botanical Garden and the Montreal Biodome, Montreal Botanical Garden established the "Conservation Emergency" program in 2001.

Sixty-six new species found in Southern Quebec have been incorporated into suitable habitats in established display gardens that offer appropriate physical conditions for the development of these fragile plants, such as the First Nations Garden, the Shade Garden, or the Alpine Garden. For more information: www.ville.montreal.qc.ca/jardin/urgence

- Laurel McIvor and Michel Labrecque



Montreal Botanical Garden

A major meeting of botanical gardens in Canada took place in 2004 under the Investing in Nature: A Partnership for Plants in Canada program; another is planned for 2006. Meeting opportunities have been facilitated at the annual conferences of AABGA/APGA, and in 2002 the association held its annual conference in Canada.

In 1997 it was recommended that CBCN establish an advisory council to help steer the project. This was achieved in 1997 but has not been used since. Consultations around the world have continued but at an informal level as needed. It was recommended that CBCN serve as a national forum for exchanging information on plant conservation issues and practices, and that CBCN develop pilot cooperative research, educational and practical projects involving members and stakeholders. This work has also been ongoing since the mid-1990s, including projects of major gardens cooperating as an informal consortium and the Partnership for Plants in Canada program.

Networking capacity has increased substantially since 2001 through the Investing in Nature: A Partnership for Plants in Canada project. However, it is critical to understand that this program will conclude at the end of 2006. This project has focused primarily on support to the educational capacity and community within botanical gardens, but the program has also facilitated exchanges related to plant conservation and other issues including development of a regional approach to plant diversity in Canada, and further building national networking and connections.

RECOMMENDATIONS FOR 2006–2010

- 5.1 In partnership with individual gardens, the network should take a leading role in contributing to national dialogue and policy with regards plant conservation. New resources and programs must be developed to support botanical gardens' participation in plant conservation and raising awareness. [NAS E4]
- 5.2 The network and individual gardens should form new alliances to promote the importance of plant conservation, and better share and promote existing information and resources. [NAS E5 and E6] Of particular importance is cultivation of partnerships with existing initiatives such as the Plant Conservation Alliance, FNA and other networks.
- 5.3 The network should provide an active forum for leading gardens to share information, raise awareness and offer guidance to other institutions through on-going websites, newsletters and meetings. [NAS E3]. Regular updates on a range of plant conservation programs should serve as key performance indicators of progress toward the goals of the *GSPC* and the Canadian action plans.
- 5.4 Botanical gardens in Canada should come together to form a single network or association. CBCN should draw up a strategic plan in 2006 to address network development through 2011.
- 5.5 A business plan must be developed to support the CBCN strategic plan. While seeming to be a general recommendation, the importance of the development of new, sustainable resources for the network and the community cannot be overstated. Among the main lessons of the Partnership for Plants in Canada program has been that even a small grant can be a big boost to the capacity of individual institutions. Under this program, small grants were made available to help individual institutions develop educational and plant conservation programs (2003–2004) and to put in place new content for web sites on plant conservation (2004–2005).

TREES FOR TORONTO PROJECT

Queen's Park, the 'People's Park', was established in 1860 as the first municipally-run public park in British North America. As popular today as when first established, sports enthusiasts, nature lovers, picnickers and commuters all are drawn to the shelter of the trees in this bustling yet serene location.



Endangered Red Mulberry, *Morus rubra*.
Photo: Royal Botanical Gardens

The Trees for Toronto Project was established by the Royal Ontario Museum and the City of Toronto to plant trees in Queen's Park and to create a Tree Identification and Awareness Program as replacement for trees removed during the course of the Renaissance ROM Project. An inventory and health assessment conducted during the summer of 2004 found that there were 290 trees in Queen's Park representing 45 species. Through the use of interpretive signage, species plaques and a 'Trees for Toronto' website, Queen's Park will become, in effect, an urban arboretum and a model for future initiatives. An initial suite of trees was planted in Spring 2005. The project will be launched with an additional planting trees native to Ontario in Fall 2006.

- Deb Metsger, Royal Ontario Museum

EX SITU CONSERVATION OF CROP DIVERSITY IN THE AMERICAS

The six Regional Plant Genetic Resources (PGR) Networks of the Americas (NORGEN, REMERFI, CAPGNET, TROPIGEN, REDARFIT and REGENSUR) are currently involved in the development of an inter-regional strategy for the *ex situ* conservation critical crop diversity in the Americas. The main objective of the strategy is to move towards a more efficient and effective approach to *ex situ* conservation of key crops of priority to the region, with a focus on the wild species and the traditional cultivars and landraces. The strategy will guide the networks in setting collaborative activities and will also be a useful framework for the Global Crop Diversity Trust to guide it allocation of funds (more information on the Trust at: www.startwithaseed.org).

An important first step of the strategy is the compilation of information on the PGR collections in the Americas, filling in gaps and identifying priority crops. The development of the Regional Conservation Strategy for the Americas is currently coordinated by Dr. Campbell Davidson, NORGEN Coordinator and Program Director, Genetic Resources of Agriculture and Agri-Food Canada.

- Brigitte Laliberté,
Global Crop Diversity Trust

Afterward

The year 2010 will be a watershed for botanical gardens around the world, just as it will be for every institution, agency and organization interested in promoting conservation and sustainable use of biodiversity for intrinsic values and for improvement of human well-being. The success of these varied communities in responding to the challenges of the *Global Strategy for Plant Conservation* as well as the Millennium Development Goals will be assessed by their achievement of specific targets by 2010. In some cases these targets will be achieved. In others more work will remain to be done well past 2010.

In either case, the challenge of having a defined deadline and measurable targets represents a sea change in efforts to promote conservation. Indeed, the adoption of *GSPC* by the CBD in 2002 was the first time that defined, measurable targets were included in global conservation initiatives related to biodiversity.

Just as the navigator of a ship must plot her vessel's course over time and determine whether certain way-points have been reached, achieving targets such as those established within the *GSPC*, NAS and this update requires adaptive management: the adjustment of programs as time goes by to achieve the overall objectives.

Whether the botanical gardens of Canada can live up to the 2010 challenge will depend on careful planning, choosing tactics that can adapt to available sources of support, and the coming together of the community to focus on networking and development of projects that individual institutions could not be undertaken alone.



"Butterflies Go Free" exhibit,
Montreal Botanical Garden



Educational activities at the Tree House,
Montreal Botanical Garden



Wetland restoration project.
Photo: D. Galbraith, Royal Botanical Gardens



Studying plants. Photo: D. Galbraith,
Royal Botanical Gardens

NATURALIST KNAPSACKS: ENJOYMENT AND LEARNING

Many visiting families view our Interpretive Centre as the “Living Prairie Museum,” and spend the majority of their time exploring indoors. To encourage children to take the opportunity to explore the true Living Prairie Museum, the 32-acre tall-grass prairie preserve to the north of the Interpretive Centre, we developed a program called Knapsacks for Young Naturalists.

Naturalist Knapsacks are now available to all visitors. ‘Discovery items’ in the knapsack include magnifying glasses, binoculars, weather equipment, measuring tools, probes, nets and collection boxes. Using these tools, visitors are persuaded to feel the cottony plume of the anemone, to listen for the sound of a grasshopper, to bend down to catch the spicy aroma of sage, or to share the story of Bobby Bluestem. Activity workbooks compliment the new self-guided trails and engage the children and adults in unique methods of observation, recording and drawing.

The high-tech youth bags were donated through fundraising efforts. We hope they encourage nature education, creativity and imagination and promote activities where families teach one another how to truly experience the natural world around them.

- Jonina Ewart and Lori Nichols, Living Prairie Museum, Winnipeg



Making outdoor discovery easy and fun.
Photo: J. Ewart, Living Prairie Museum



The Green Legacy travelling exhibit carries rare plant information across Canada. Photo: D. Galbraith, Royal Botanical Gardens



Wetland interpretive sign, Toronto Zoo



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Plants for the Planet

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Canadian Botanical
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le réseau canadien pour
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