

Public Garden

THE JOURNAL OF THE AMERICAN PUBLIC GARDENS ASSOCIATION

Vol. 26, Spring • 2011



**SMALL GARDENS UPDATE
and MORE**

WHAT IS THE

CONSERVATION
VALUE OF BOTANIC GARDEN PLANT COLLECTIONS ?

A Baseline Assessment for the World and North America

ANDREA KRAMER AND ABBY HIRD

Well-documented, genetically diverse living plant and seed bank collections at botanic gardens and similar organizations are providing a critical insurance policy against extinction for many of the estimated one hundred thousand plant species now threatened with extinction worldwide. But how many species are safeguarded in collections, and how many are not? Unfortunately, we at Botanic Gardens Conservation International (BGCI) don't know the answer to this question, but we have a growing number of tools in place to help answer it and tackle the challenges ahead.

Our Contributions to the Global Strategy for Plant Conservation

Today, botanic gardens have a global mandate, ratified by nearly every country in the world, to provide a safety net against extinction for the world's threatened plants. The Global Strategy for Plant Conservation (GSPC) was adopted by the Parties to the Convention on Biological Diversity in 2002; its development and adoption were largely due to the efforts of the global botanic garden community, and we now play a key role in achieving the sixteen outcome-oriented targets it contains to halt the loss of plant diversity worldwide. Directly relevant to botanic gardens and their collections, the GSPC's Target 8 set a goal that *60 percent of threatened plants would be in accessible ex*



The Wollemi pine (*Wollemia nobilis*), a conservation collection success story. After being discovered in 1994 in Australia, this incredibly rare species was successfully propagated and is now conserved and interpreted in botanic garden collections around the world.



Interpretation of a rare buckwheat (*Eriogonum ovalifolium* var. *vineum* – part of the Center for Plant Conservation’s National Collection of Endangered Plants) growing in the living collections and held in the seed bank at Rancho Santa Ana Botanic Garden.

situ collections by the end of 2010 as a first step toward providing a global safety net for threatened plants. While resources to meet this important target are often limited, the individual and collaborative work of botanic gardens and conservation organizations has made great progress in building conservation collections of threatened species. Now that the 2010 deadline has come and gone, have we achieved this ambitious target?

Measuring Global Progress

When the GSPC was adopted in 2002, BGCI launched a free online database (PlantSearch) as a means for the global botanical community to easily measure basic, taxon-level progress towards Target 8. In 2010, BGCI analyzed the data in PlantSearch and found that only 23 percent of the world’s threatened plants are known to be maintained in cultivation or seed banks worldwide. These results are

presented in a recent report on botanic gardens and the implementation of GSPC Target 8 (Sharrock et al. 2010). While this indicates positive progress, these results are also a call to action as they fall well short of the 2010 target of 60 percent. And as of October 2010, the GSPC has been updated, and we have a new target to reach: Target 8 now sets a goal to conserve 75 percent of the world’s threatened plants in accessible ex situ collections by 2020. Clearly we have a lot of work to do to meet this goal.

In addition to meeting Target 8 at a basic taxonomic level, we need to work harder to ensure that living collections of threatened plants are of known source material and both genetically diverse and representative of the species. Without proper documentation and genetic representation, the possibility of using that plant material for research and reintroduction efforts will be severely

limited if not impossible. We do know that the more than seven hundred critically threatened species maintained in ex situ collections by members of the Center for Plant Conservation in the United States meet these conservation requirements. And as technology advances (including the ongoing development of online databases which contain accession-level collections information for gardens, such as PlantCollections™), we will be able to gain a better understanding of the source and diversity of other collections and work strategically to build their conservation value.

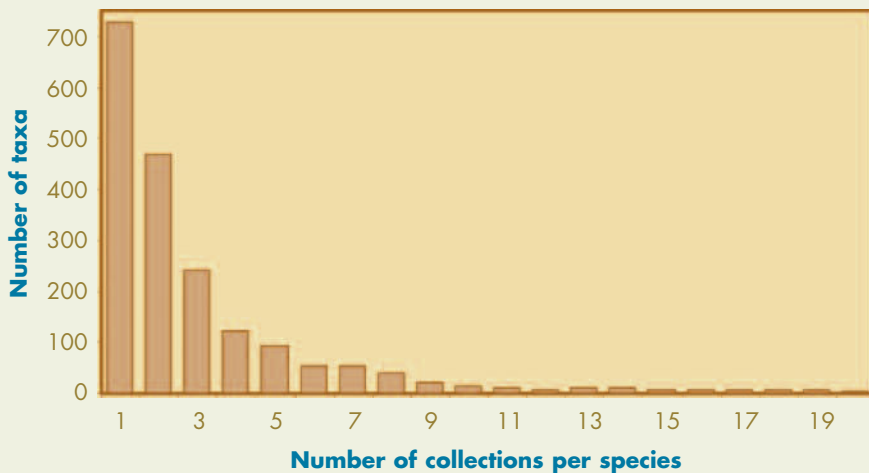
Measuring North American Progress

In 2010 we also carried out the North American Collections Assessment¹ to measure progress toward the GSPC’s Target 8 specifically within the North American botanical community (including botanic institutions in the United States, Canada, and Mexico). This project resulted in the compilation of threatened species lists from all three countries (including NatureServe global threat ranks, IUCN Red List ranks, and Mexico’s Red List), and utilized tax lists submitted by more than two hundred institutions to the PlantSearch database to identify how many threatened species are being maintained in North American botanical collections.

Results of this data were recently published and distributed as a report online and in print (Kramer et al. 2011). Data analyses show that some 35 percent of the nearly five thousand most threatened species in North America are maintained in either living collections or seed banks on

NUMBER OF LOCATIONS

where threatened plant species are maintained



Number of locations where threatened plant species native to North America are maintained. The majority of threatened plant species are found at only one or two institutions in North America.

the continent. (Note: This number is likely a slight underestimation, as only around 30 percent of the known public gardens and other botanical institutions with living collections in North America participated in the assessment. Many institutions that were unable to participate did not have sufficient staff or technological resources to provide an electronic list of taxa in their collections.) These results indicate that we have a lot of work ahead to ensure 75 percent of North America's threatened species are in accessible *ex situ* collections by 2020.

Future Work

Not all collections provide equal conservation value. While most collections of threatened plants can make important contributions to broader plant conservation efforts by serving as a point of reference for interpretation and visitor education, not all collections provide conservation value at the research or reintroduction level. Living collections can serve as a source of material for research on propagation, cultivation, physiology, ecology, and genetics, but the value of such research will be greatest if wild-collected, source-identified plant material is used. And finally, collections will only have direct conservation value if they are not only wild collected but also genetically diverse and representative collections (such as those maintained by members of the Center for Plant Conservation). Unfortunately, we do not know the full conservation value of many of the collections included in the above assessments, and we must resolve this in the future. This will require continued integration of collections and their associated accession data, as well as targeted acquisitions efforts. Given the increasing threat posed by extreme and changing weather events as well as new pests and pathogens to the long-term survival of wild populations and *ex situ* collections, it is imperative that strategic and collaborative planning take place throughout the North American botanical community to ensure an effective safety net is squarely in place for our threatened species.

To find out how you can participate in future assessments, visit www.bgci.org/usa/MakeYourCollectionsCount, or e-mail Andrea Kramer for details at andrea.kramer@bgci.org.

References

1 The North American Collections Assessment was led by Botanic Gardens Conservation International US in partnership with the United States Botanic Garden and the Arnold Arboretum of Harvard University. Additional funding was provided by the Wallace Genetic Foundation, and collaboration with many organizations and botanic gardens throughout North America (including the American Public Gardens Association, Center for Plant Conservation, Canadian Botanical Conservation Network, and Mexican Association of Botanical Gardens) made this project possible. We thank all contributors for their support and participation.

Kramer, Andrea, Abby Hird, Kirsty Shaw, Michael Dosmann, and Ray Mims. 2011. Conserving North America's Threatened Plants: Progress report on Target 8 of the Global Strategy for Plant Conservation.

Botanic Gardens Conservation International U.S. <http://www.bgci.org/usa/makeyourcollectionscount>.

Sharrock, Suzanne, Abby Hird, Andrea Kramer, and Sarah Oldfield. 2010. Saving plants, saving the planet: Botanic gardens and the implementation of GSPC Target 8. Richmond, UK: Botanic Gardens Conservation International. http://www.bgci.org/files/Worldwide/GSPC/target_8_report.pdf.

Andrea Kramer is executive director of Botanic Gardens Conservation International US (BGCI US), based at Chicago Botanic Garden. She is also the chair of APGA's Plant Conservation Professional Section. Abby Hird (abby_hird@harvard.edu) is a BGCI US research associate, based at the Arnold Arboretum of Harvard University. They work with botanic gardens and partners in the US to advance plant conservation and connect with BGCI's global conservation network and resources.



"Samara Turning with the Wind"

A collaboration with Mt. Cuba Center and sculptor André Harvey

RODNEY ROBINSON LANDSCAPE ARCHITECTS, Inc.
30 Hill Road – Bancroft Mills | Wilmington, Delaware 19806 | 302.888.1544 | www.rrla.com