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Plant Conservation: Facing Tough Choices

SARA OLDFIELD

Worldwide it is estimated that one-third of all plant species are threatened with extinction. This figure is the best guess of botanists compiling data from fieldwork, herbarium specimens, and expert opinion. Taking into account the anticipated impacts of climate change, the rate of plant extinctions is expected to increase rapidly. Unfortunately, the silent loss of plant diversity receives relatively little attention from politicians and the media, and there is very limited allocation of financial resources to reverse the trend of plant loss. The capacity for botanical conservation is also declining at the same time that the biodiversity crisis deepens. We need to make tough choices about the plant species we conserve and the methods of conservation that are accorded priority. In the face of mounting pressure on conservation budgets, botanic gardens have a key role to play, and they need to emphasize their commitment to plant conservation.

One reason for hope is that an overall plan exists. In 2002, governments worldwide agreed to the Global Strategy for Plant Conservation (GSPC), with the goal of halting the current and continuing loss of plant diversity. The strategy was developed under the auspices of the Convention on Biological Diversity (CBD)—the international treaty designed to ensure the conservation and sustainable use of ecosystems, species, and genetic resources, with equitable access to the benefits arising from biodiversity. The GSPC was innovative within the framework of the CBD in that it set ambitious targets for action. The deadline for 16 plant conservation targets to be reached was 2010, and this year, which is also the United Nations' Year of Biodiversity, is the time to take stock. At a recent meeting of the CBD held in Nairobi, the GSPC was hailed as one of the

convention's success stories. Although the loss of plant diversity has not been halted, the strategy has worked to catalyze and integrate action from local to global levels.

Reported progress toward meeting the GSPC targets has been variable. A report prepared as part of an in-depth review of the GSPC was published in 2009, assessing advancement for each target. The report was based mainly on input from government agencies and international organizations that support the strategy (Secretariat of the Convention on Biological Diversity 2009). It noted that despite the familiar constraints of limited institutional integration at the planning level and limited financial and human resources, substantial progress had been made in reaching half of the 16 targets. Progress has been made, for example, toward target 1, which calls for a working list of all known plant species—an important baseline for measuring the success of plant conservation in the future. Coordinated by the Missouri Botanical Garden and the Royal Botanic Gardens, Kew, the most comprehensive list of plants, including almost all published scientific names at the species level, will be made available online later this year. At least 80 percent of the names on the list will be marked as accepted (the correct name for a known plant species) or as a synonym.

Global progress toward target 2, however, which calls for a preliminary assessment of the conservation status of all known plant species, has been less successful. This information is urgently needed to show more accurately the scale of the plant conservation problem and to help inform choices. Plant information is out there, but it has not been assembled in an authoritative way. Thus we remain with only the best guesses of concerned botanists on the number of plants under threat.

Targets 7 and 8 of the GSPC call for 60 percent of threatened species to be protected *in situ* and *ex situ*, respectively. Assuming the relevant information is available on threatened species, how do we decide which 60 percent to save? Do we protect the species that are closest to extinction, or those that have the greatest chance of survival? The species most vulnerable to climate change—montane species and those with narrow endemics—or those likely to adapt to changing conditions? Plants of direct use to humans for food or medicine, or those with a critical role in providing ecosystem services? The debate has hardly begun and there are no easy answers. Arguably, the people who live closest to threatened plant species and whose livelihoods are dependent on plant diversity should make the decisions. But globally threatened species are usually accorded priority value by donor agencies, and international conservation agencies wield much of the clout in conservation decisionmaking.

In terms of the GSPC, *in situ* conservation has proved hard to monitor at the global level. Few national parks, particularly in the most biodiverse countries, have plant species inventories. There are few clear mechanisms for collecting and monitoring data on target 7 at a national level, and none at an international level.

Monitoring progress on GSPC target 8 relating to *ex situ* conservation is relatively straightforward; most botanic gardens and arboreta maintain records on their accessions. Currently, we know that about 30 percent of globally threatened plant species are held in living collections or seed banks of botanic gardens. Plant information recorded in more than 600 botanic gardens is held in an online database maintained by Botanic Gardens Conservation International (BGCI) that was specifically

designed to measure progress toward GSPC target 8. Botanic garden records in this PlantSearch database can be compared with the 1997 International Union for Conservation of Nature (IUCN) Plant Red List, which recorded more than 34,000 globally threatened species, or the 2010 IUCN Red List, which records significantly fewer threatened species using the more rigorous assessment categories and criteria developed after 1994. Using this as a starting point, gap analyses can determine which threatened plant species are in cultivation. BGCI has looked in more detail at selected groups of tree species, including Magnolias, oaks, and maples; these groups were selected because recent assessments of their conservation status have been published, and the groups include many species of ornamental and landscape value and interest to botanic gardens and arboreta. Of course, they also provide valuable ecosystem services, including carbon sequestration, and there is an imperative for restoration of endangered species in the wild.

Recently, researchers have called for greater emphasis to be given to *ex situ* conservation of plant species in response to climate change. In the past, *ex situ* conservation has often been considered a poor substitute for the

real thing; it does, however, provide a relatively cost-effective insurance policy for an uncertain future. If we are not sure which species to conserve, or how, ensuring that all higher plant species are in well-documented living collections or seed banks might be a good strategy, as well as maintaining as much of the wild as is practically possible.

Botanic gardens around the world have generally embraced the GSPC and are using it to calibrate their own work in plant conservation. As well as taking the lead in *ex situ* conservation, botanic gardens are increasingly working beyond their garden walls, helping, for example, with community-based plant conservation programs in urban areas and in areas of high natural biodiversity. Community outreach provides opportunities to debate plant conservation priorities with local stakeholders.

In October of 2010, governments that are signatories to the CBD were scheduled to meet in Nagoya, Japan, for the 10th Conference of the Parties. They were set to debate a new strategic plan for preserving biodiversity moving beyond 2010. The issue of funding for implementation of the strategic plan was a likely sticking point, as were political trade-offs over issues of access and benefit sharing. A revised version of the GSPC with updated targets to account

for the impact of climate change was likely to be approved with little significant debate. It was highly unlikely, however, that new funding would be found for the strategy; a prioritization exercise may be urgently needed. Botanic gardens should play a major part in this debate. They have the means to engage with a wide audience and to coordinate actions at a local-to-global scale. They hold material of endangered species of documented wild-source origin for research and potential restoration. As threats to the wild increase, and attempts to live more sustainably gain little ground, a back-up plan keeping options open to inform future choices becomes increasingly desirable.

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For botanical outcomes of the CBD meeting, see www.bgci.org.

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