The Convention on Biological Diversity
Plant Conservation Report

A review of progress in implementing the Global Strategy for Plant Conservation (GSPC)

Foreword

It is a pleasure for me to contribute a foreword for this important report documenting the progress that has been made worldwide towards the achievement of the Global Strategy for Plant Conservation (GSPC). The adoption by the Convention on Biological Diversity of the Strategy in 2002 was a major achievement for biodiversity conservation worldwide. It provided much needed and urgent recognition not only of the importance of plants for humanity but also of the critical threats faced by tens of thousands of plant species throughout the world. The unique importance of plants as essential renewable natural resources and as the basis for most terrestrial ecosystems demanded that such a strategy was required to help halt the loss of plant diversity and raise new awareness of the threats faced by plants.

The Strategy was also an extremely innovative advance fo r the Convention too as it incorporated for the first time a series of targets for biodiversity conservation, aimed at achieving measurable plant conservation outcomes by 2010. The catalytic role of the Strategy in stimulating new programmes and initiatives at all levels has been significant too, linking a wide range of organisations and institutions in support of the Strategy. It is clear that much new plant conservation action has been encouraged and supported by the GSPC to date, including the generation of substantial new resources for biodiversity conservation that would not otherwise have become available without the Strategy.

This report shows that substantial progress has been made towards reaching some of the GSPC targets, although for others it has been limited and will require renewed effort by the international community if they are to be achieved.

The establishment of a Global Partnership for Plant Conservation (GPPC) in 2004 as a voluntary initiative to bring together international, regional and national organisations in order to contribute to the implementation of the GSPC has been widely welcomed too and this report is a testament to the important contributions of the Partnership and its members.

This report provides a useful and welcome synopsis of progress to date. In reading the report carefully my impression is that a good beginning has been made in tackling the huge task of safeguarding plant diversity worldwide, but it is only a beginning. The urgency of this work is without question; if we do not succeed in conserving tens of thousands of wild plants, of importance for food, fibres, medicines, fuel and a multitude of other purposes, there will be far fewer natural resources to support future generations. It is also urgent that work should begin too in ensuring that the work of the Strategy continues beyond 2010, to help maintain the momentum and genuine enthusiasm for the Strategy that has been a hallmark of its first six years, as well as to ensure that the focused approach to urgent plant conservation action continues in the decade up to 2020.

I am pleased to offer congratulations to those involved in the preparation of this report, as well as to encourage all those able to contribute to plant conservation to redouble their efforts over the coming years.

Peter Wyse Jackson
Chairman
Global Partnership for Plant Conservation (GPPC)

13th March, 2008
Dublin, Ireland

Key Messages from the Plant Conservation Report

1. Plants are a vital component of biodiversity, sustainable and healthy ecosystems. They provide a range of ecosystem services, from production of oxygen and removal of atmospheric carbon dioxide emissions, creation and stabilisation of soil, protection of watersheds and provision of natural resources including food, fibre, fuel, shelter and medicine.

2. Two thirds of the world's plants species are endanger of extinction with pressure from the growing human population, habitat modification and deforestation, overexploitation, spread of invasive alien species, pollution and the growing impacts of climate change.

3. The Global Strategy for Plant Conservation (GSPC) whose goal is to halt the current and continuing loss of plant diversity; has provided a solid foundation for real and significant progress in plant conservation throughout the world. The implementation of the GSPC has demonstrated the importance of diverse networks, collaborations and the crucial role played by strong cross-sectoral partnerships within the context of the Convention on Biological Diversity.

4. The Strategy, in addition, provides a useful entry point for Parties to address issues of poverty alleviation and foster the achievement of the Millennium Development Goals at national level and global level while ensuring that communities continue to derive benefits from plant diversity, a need so clearly highlighted by the recent findings of the Millennium Ecosystem Assessment.

5. While in some instances a national approach to implementation of the Strategy has been default and most pragmatic option, in other instances, a regional approach has provided a more rational approach through development of regional targets, based on national and/or regional priorities, capacities and capabilities. In both options, the need to reach beyond the botanical and conservation communities to integrate the Strategy into agricultural, forestry and other land management policies, as well as poverty reduction initiatives and development strategies has been emphasized.

6. While substantial progress has been reported for eight of the sixteen targets, while limited progress has been made so far in the achievement of others, notably on target 2 (completion of preliminary conservation assessments), target 4 (ecological regions conserved), target 6 (conservation of biodiversity in production lands), target 12 (sustainable use of plant-based products) and target 15 (capacity and training for plant conservation). Accelerated and increased investment in target 15 is critical for the overall achievement of all the targets by 2010.

7. The emerging trends of climate change pose an even more serious threat to the conservation and sustainable use of plant diversity and may compromise gains made this far if not urgently addressed. A rise in global temperature will increase the extinction rate of plant species. There is therefore a real need to look beyond 2010, building on the framework of and achievements made during the implementation of the current Strategy.

Introduction

The Essential Role of Plant Diversity

Plants are universally recognised as a vital component of biodiversity and global sustainability. For example, plants provide food (around 7,000 species are used for food), fibre, fuel, shelter, medicine. Healthy ecosystems based on plant diversity provide the conditions and processes that sustain life and are essential to the well-being and livelihoods of all humankind. Ecosystem services provided by plants include but are not limited to:

- The production of oxygen and assimilation/sequestration of carbon dioxide in both terrestrial and oceanic systems that currently removes about 50% of anthropogenic CO2 emission;
- The creation, stabilisation and protection of soil essential for most of the Earth's productive agricultural systems and the major carbon pool in the terrestrial biosphere, and
- The creation and protection of watersheds, slowing run-off rate of precipitation and promoting water infiltration and purification.

Plants also form the basis of the trophic pyramid in all terrestrial and most marine ecosystems on which we and all other animal species inevitably depend.

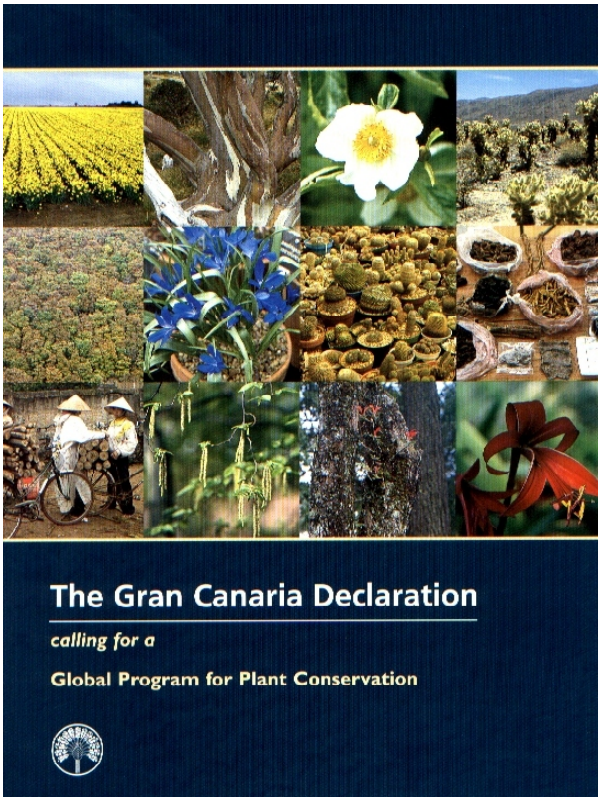
In addition, plants provide a vast multitude of natural resources for humanity, especially in the developing world. They provide the basis for all of our food, most medicines and many other materials essential for our daily lives.
The overall trends and status of plant diversity

An accurate picture of the status of plants and the trends that are impacting on them is difficult to determine. Indeed we do not yet know the exact number of plant species in the world (estimated currently at 370,000 known species).

However, it is predicted that as many as two-thirds if the world's plant species are in danger of extinction in nature during the course of the 21st century (Gran Canaria Declaration - 2000).

Extinction and declines in plant diversity is due to a range of factors including population growth, high rates of habitat modification and deforestation, overexploitation, the spread of invasive alien species, pollution and climate change (Millennium Ecosystem Assessment 2005).

The Millennium Ecosystem Assessment noted that approximately 60% of the ecosystem services evaluated are being degraded or used unsustainably. The degradation of ecosystem services often causes significant harm to human well-being and represents a loss of a natural asset or wealth of a country. The assessment also noted a continual decline in the status of provisioning services of the environment, especially wild foods, timber, cotton, wood-fuel, genetic resources, and medicine. It is clear that the overall trend for plant diversity is declining.

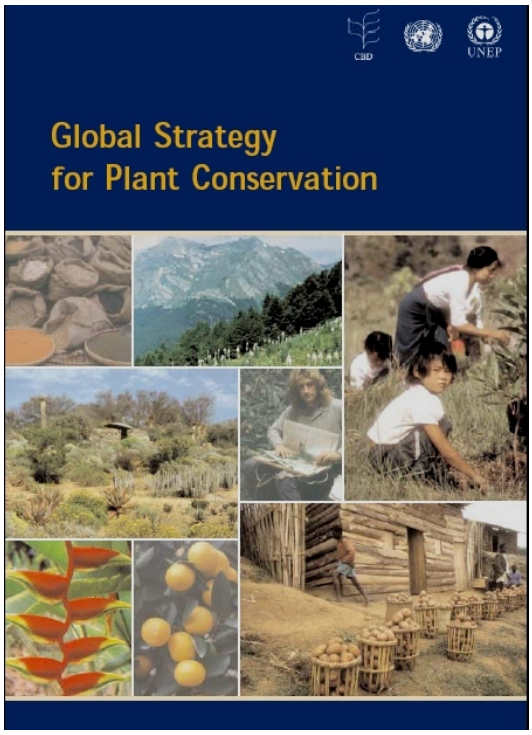


[1] Wilson, E.O. (1992). The Diversity of Life. Penguin, London, UK. 432 pp.
[2] http://www.underutilized-species.org/documents/PUBLICATIONS/gfu_icuc_strategic_framework.pdf

The Global Strategy for Plant Conservation (GSPC)

At the 16th International Botanical Congress in St Louis, Missouri in 1999, the congress called for plant conservation to be recognised as an outstanding global priority in biodiversity conservation; given the continuing loss of plant diversity and the fundamental role played by plants for sustenance of human life and other biodiversity.

In response to this call, in 2000, Botanic Gardens Conservation International (BGCI) convened an ad hoc group of leading botanists and conservationists, representing a range of international and national organisations, institutions and other bodies from 14 countries. The outcome of this meeting was the Gran Canaria Declaration (2000), outlining the need for a global initiative to address the loss of plant diversity. As a result of this call for action, it was proposed that a Global Strategy for Plant Conservation should be developed and implemented through the framework of the Convention on Biological Diversity (CBD).



Goal: "to halt the current and continuing loss of plant diversity"

A 16 target framework was developed and adopted by the sixth Conference of the Parties for the CBD in 2002 addressing the five themes of the GSPC:

- Understanding and documenting plant diversity;
- Conserving plant diversity;
- Using plant diversity sustainably;
- Promoting education and awareness about plant diversity, and
- Building capacity for the conservation of plant diversity.

Since its adoption, the implementation of the GSPC has gone ahead throughout the world through an impressive combination of local, national and international initiatives.

This Plant Conservation Report outlines progress made to date, from 2002 to 2008. The Report also highlights the urgent challenges and some priorities for further implementation up to 2010, as well as providing a background and rationale for further global initiatives in plant conservation beyond 2010.

A Summary of the in depth review of the Implementation of the Strategy by the Convention on Biological Diversity (CBD).

The Global Strategy for Plant Conservation was adopted in 2002 (annex to decision VI/9) with the ultimate goal to halt the current and continuing loss of plant diversity. It includes 16 outcome targets to be met by 2010. In line with the multi-year programme of work of the Conference of the Parties up to 2010, adopted through decision VII/31, an in-depth review of the Global Strategy has been carried out, based on (i) information compiled from the third national reports, additional information submitted by Parties and other stakeholders and partners; (ii) input from the meeting of a liaison group convened by the Executive Secretary in collaboration with the Global Partnership for Plant Conservation, held in Glasnevin, Dublin, from 23 to 25 October 2006.

The review indicates that, in line with its objectives, the Global Strategy has provided a useful framework to harmonize and bring together various initiatives and programmes in plant conservation at both the national and regional levels. The Global Strategy has been notably successful in stimulating the engagement of the botanical and plant conservation communities in the work of the Convention, through inter alia the establishment of national, regional and global networks, including in particular the Global Partnership for Plant Conservation, launched at the 7th Conference of Parties to the Convention. The Global Strategy has also stimulated the development of new projects and initiatives and helped to mobilize resources for the implementation of its targets.

The findings of the Millennium Ecosystem Assessment provide a further rationale for implementing the Strategy, including at the national level, with a view to securing plant resources and their provisioning services and allowing communities to continue to derive benefits from plant diversity, especially for food, medicines, fuel, fibre, wood and other uses. In addition, the context of national implementation of the Global Strategy provides opportunities to address the Millennium Development Goals especially poverty reduction (Goal 1), the health crisis (Goal 6) and environmental sustainability (Goal 7).

Efforts are being made to facilitate national implementation of the Global Strategy including through the development of national strategies and targets, and/or the integration of the Global Strategy targets into national plans, programmes and strategies including the national biodiversity strategies and action plans (in response to decision VI/9, paragraphs 3 and 4). Currently, however only less than 10% of the Parties have developed national strategies and/or targets, or incorporated these into their national biodiversity strategies and action plans.
Constraints to the national implementation of the Global Strategy include limited institutional integration, lack of mainstreaming, and inadequate policies and legal frameworks at the planning stage; and at the operational level, lack of data, tools and technologies, limited sectoral collaboration and coordination, limited financial and human resources. The review indicates also that further implementation of the Global Strategy should include considerations related to: (i) climate change, a driver of biodiversity loss increasing in intensity in recent years; and (ii) the impacts of nutrient loading

on plant diversity.

With the key challenges for plant conservation now identified, it should now be possible to focus on enhanced implementation of the Strategy up to and beyond 2010. This should include reaching beyond the botanical and conservation communities to address the wider impacts on plant diversity from agriculture and climate change, integrate the Strategy into poverty reduction initiatives and development strategies, and consider the ways in which Strategy can be developed beyond 2010. (see Annex 1: SBSTTA Recommendation XII/2 on the in depth review of the Strategy (2007).

Progress in the National and Regional Implementation of the Global Strategy for Plant Conservation

Information on the implementation of the Strategy at the national level is based on information from the national focal points for the Convention and for the Global Strategy for Plant Conservation, reports on the establishment and implementation of national and regional strategies, and responses to the third national report.

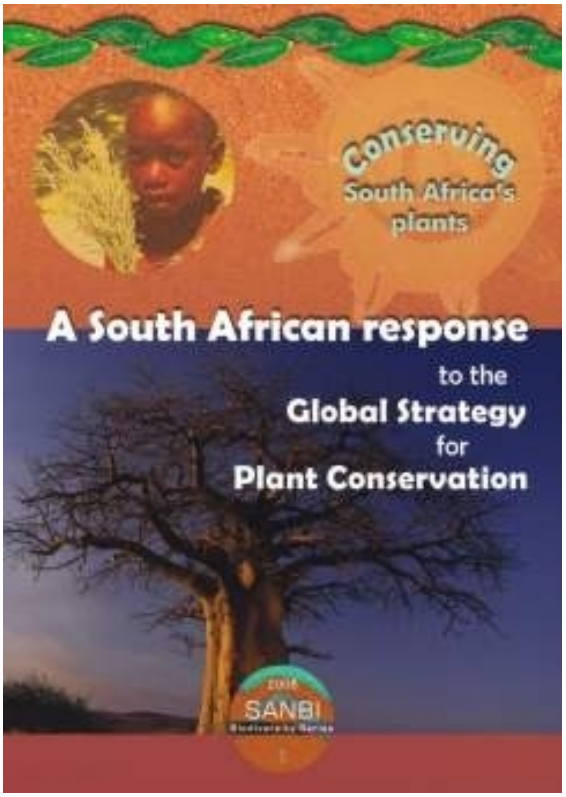
A. National reports

In response to paragraph 10 of decision VII/10, the targets of the Strategy were integrated into the format of the third national report under Article 26 of the Convention on Biological Diversity. To date, one out of three Parties has set one or more national targets corresponding to the global targets and integrated these into relevant plans, programmes and strategies.

Workshop to develop the national GSPC Strategy in China, Beijing, 2006 (Photos: Stella Simiyu).

Less than 10% of Parties reported having set national targets, baselines, milestones and indicators related to the whole Strategy. This makes it difficult to analyse and consolidate the information provided into a global status report on the progress in implementation of the Strategy. Most Parties mentioned activities being undertaken at national level that were of relevance to the targets of the Strategy but did not provide a precise indication of the status of implementation of those activities in terms of specific indicators and milestones. Also, a large number of responses were of qualitative in nature rather than providing quantitative indications.

For all targets, the main constraints were: technical (lack of data, tools and technologies), financial (limited funding available), institutional (poor sectoral coordination and limited institutional capacity and capability) and regulatory (lack of appropriate supporting policies and legal framework).



[3] http://www.botanicgardens.ie/gspc/gspc.htm,
[4] http://www.botanicgardens.ie/gspc/gspc.htm
[5] http://www.plantlife.org.uk/uk/plantlife-saving-species-global-strategy-PDCC2006.html
[6] http://www.sanbi.org/biodivseries/1strategyplantcons.htm.

B. National focal points for the GSPC

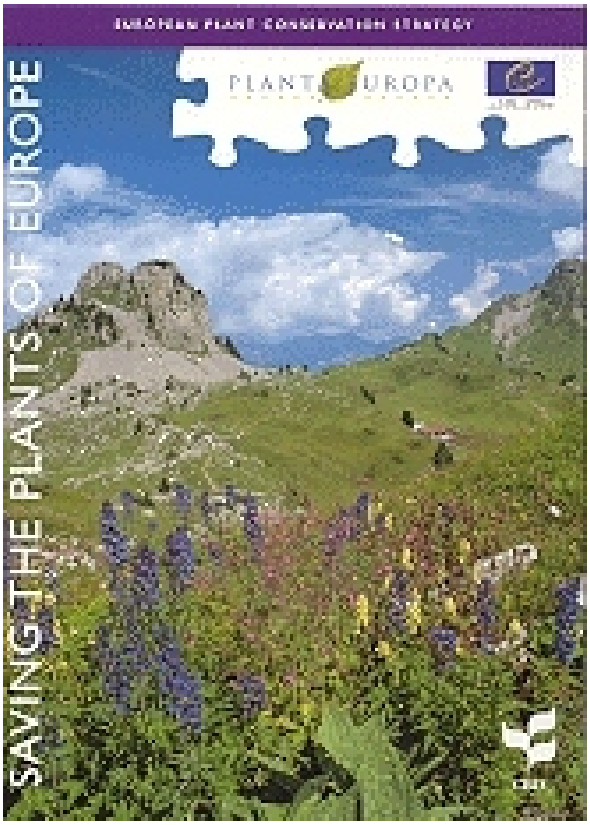
At its seventh meeting, the Conference of the Parties encouraged Parties to nominate focal points for the Strategy, or to designate them from among the existing focal points (decision VII/10, para. 6) so as to facilitate national implementation of the Strategy. To date 61 Parties have nominated national focal points for the Strategy/. These national focal points have played a key role in building awareness on the need for national strategies and targets. They have also been instrumental in, bringing together various stakeholders through national workshops and consultations to establish national baselines in plant conservation and sustainable use and in facilitating the development of national responses to the Strategy. Some of them have participated in liaison group meetings related to the Strategy as well as regional and international meetings and presented their national experiences and challenges, including at the first meeting of the Global Partnership for Plant Conservation in Dublin, Ireland.

C. National and regional strategies

In accordance with paragraph 4 of decision VI/9, various countries have developed national and/or regional targets and developed national Strategies, using the global targets as a flexible framework. These include Ireland /, China, the Philippines, Seychelles / and the United Kingdom of Great Britain and Northern Ireland /. South Africa / has developed a national response that provides a status report on the national implementation of the Strategy and a summary of actions that have to be taken to achieve the targets by 2010.

Colombia had developed a national plant conservation strategy that pre-dated the GSPC. In Germany, Honduras, Malaysia and Spain, initiatives aimed at developing national strategies are under way. Brazil / has developed a set of national targets on the basis of the global targets for the Strategy and the sub-targets discussed in the Convention's framework for the assessment of progress towards the 2010 biodiversity target. While the initial response to the development of national and/or regional strategies by Parties has been slow, there is now a growing momentum using various approaches including national workshops and consultations. In some countries, such as the United Kingdom, the global targets have been adopted in the national context, whereas in others, e.g. Seychelles and Brazil, they have been viewed as a flexible framework from which national targets have been developed. There are now valuable experiences at national and regional level that could be used as models for the development of national strategies and targets. These experiences will be included in the toolkit requested in paragraph 7 of decision VII/10 to further enhance the development of national targets and strategies.

At a regional level, the targets adopted by the European Plant Conservation Strategy have been harmonized with the Strategy during its mid-term review in 2004. The final review in 2007 provided an insight into the progress, challenges and opportunities for implementation of the Strategy at



[7] http://www.mma.gov.br/index.php?ido=conteudo.monta&idEstrutura=72&idMenu=2337
[8] http://www.plantlife.org.uk/international/plantlife-policies-strategies-epcs.html
[9] http://www.bgci.org/worldwide/bg_targets/
[10] http://www.bgci.org/worldwide/bg_targets/
[11] http://www.azh.org/conservation/northamericanbotanicgardenstrategy2006.pdf
[12] http://www.rbg.ca/cbcn/en
[13] http://www.anbg.gov.au/anpc
[14] ttp://www.nzpcn.org.nz/
[15] http://www.centerforplantconservation.org/
[16] http://www.plants2010.org

the regional level. As a result, a new Strategy for the period 2008-2014 has been developed/ and will be launched at the ninth Conference of the Parties to the Convention on Biological Diversity. Other initiatives, which have focused on developing regional strategies and/or responses, include the IUCN- Species Survival Commission's Arabian Plant Specialist Group which held two regional meetings to explore the potential for an Arabian Regional Plant Conservation Strategy (in 2004 and 2005) and the Latin American Botanical Congress, which reviewed potential opportunities for regional and/or national responses to the Strategy.

Non-governmental partners have also been active in enhancing national, regional and global implementation of the Strategy. For example, targets based on the Strategy have been developed as part of the International Agenda for Botanic Gardens, / the African Botanic Gardens Network, /, the North American Botanic Gardens Strategy for Plant Conservation /, the Canadian Botanical Conservation Network /, the Australian Network for Plant Conservation, / the New Zealand Plant Conservation Network / and Centre for Plant Conservation (United States of America) /, the Brazilian Botanic Gardens Action Plan, amongst others.

The Executive Secretary in collaboration with members of the Global Partnership for Plant Conservation, assisted the Parties in particular the developing country Parties, in the development of their national targets and strategies, by organizing , a number of training and capacity-building activities, including the African Regional Expert Training Course in the Implementation of the Strategy (2004), the Caribbean Regional Workshop on the Strategy (April 2006), the Global Leadership in Plant Conservation Workshop in China (November 2006) and the Asian Regional Workshop on the Strategy (April 2007). In addition, the Global Partnership for Plant Conservation organized the Plants 2010 Conference in Dublin, Ireland, from 22 to 25 October 2005, whose focus was to strengthen national implementation of the Strategy.

The Carribean Regional GSPC training workshop in Montserrat hosted by the SCBD, BGCI, JNCC and RBG Kew with support from Department for Environment, Food, Rural Affairs and Agriculture, UK (Photo Credit: RBG Kew).

One of the world's most remarkable plants, the fully underground orchid (*Rhizanthella Gardneri*) from the south west Western Australian biodiversity hotspot produces a tulip like cluster of small orchid flowers from a leafless underground plant. The GSPC has facilitated action to save this critically endangered orchid as an ex situ collection of seed and plants as part of a major program by Kings Park and Botanic Garden to secure ex situ, seed and mycorrhiza of all orchids from the south west Western Australian biodiversity hotspot.

Photo: K. Dixon

Target 1:

A widely accessible working list of known plant species, as a step towards a complete world flora

Introduction

A working list of known plant species is essential for biodiversity management. It is an inventory of resources and a means of organising information in a logical and retrievable way. It also helps prevent duplication of effort and accidental oversight when planning conservation action. The name of a plant is the key to information about its uses, conservation status, relationships and place within ecosystems. Most plants have more than one name. The target seeks to link the accepted Latin name for a particular species to all its other names (synonyms). The accepted name is a unique identifier for species without which it is impossible to find the information necessary to plan and manage the sustainable use and conservation of plants, and understand their role in ecosystems. Thus a working list of known plant species has a very broad range of potential users. has a very broad range of potential users.

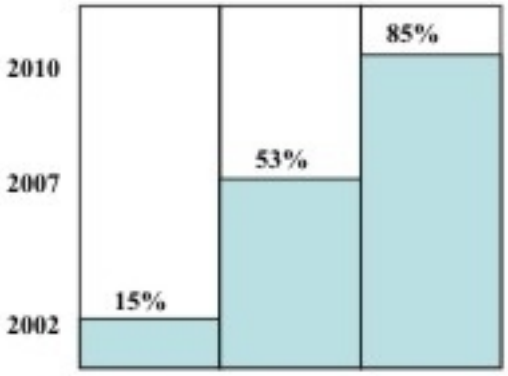
Taking a medicinal plant example, in a recent study of the medicinal uses of the genus Plectranthus, the five most used species are referred to using a name other than the current accepted name in 80% of literature citations. The medicinal uses of the plants within this genus can never be effectively studied without an adequately referenced synonymized list.

Completing or even measuring progress towards the other 15 targets of the GSPC is extremely difficult or impossible in the absence of a working list of the accepted names of known plant species. For example, Target 2, "to measure and achieve a preliminary assessment of the conservation status of all known plant species", can be tackled on the basis of current knowledge, but a comprehensive assessment cannot be achieved without a backbone list of those species to be assessed. Likewise, Target 7, "to conserve 60 percent of the world's threatened species in situ", and Target 8, "to conserve 60 percent of threatened plant species in accessible *ex situ* collections.....", also depend on having a correct and accurate list of accepted names and their synonyms as a robust baseline.

Plectranthus barbatus, a widely used medicinal plant
Photo Credit: Alan Paton

Progress

Taking a medicinal plant example, in a recent study of the medicinal uses of the genus Plectranthus, the five most used species are referred to using a name



other than the currently accepted name in 80% of literature citations. The medicinal uses of the plants within this genus can never be effectively studied without an adequately referenced synonymized list.

Completing or even measuring progress towards the other 15 targets of the GSPC is extremely difficult or sometimes impossible in the absence of a working list of the accepted names of known plant species. For example, Target 2, "to measure and achieve a preliminary assessment of the conservation status of all known plant species", can be tackled on the basis of current knowledge, but a comprehensive assessment cannot be achieved without a backbone list of those species to be assessed. Likewise, Target 7, "to conserve 60

In 2006 Benin became the first country in the West-African region to have an up-to-date Flora in its official native language. By means of this book, Benin's various endangered ecosystems can be researched, described and managed more effectively.

percent of the world's threatened species in situ", and Target 8, "to conserve 60 percent of threatened plant species in accessible ex situ collections…", also depend on having a correct and accurate list of accepted names and their synonyms as a robust baseline.

Progress

Globally, good progress has been made with working lists for just over half of all plants available on-line.

Working lists for mosses, ferns and gymnosperms are close to completion, and working lists exist for about half of the 370,000 flowering plants. At current rate of progress the target will be around 85% complete by 2010. However, there is a high possibility of complete coverage by the end of 2010 by making use of existing resources such as the International Plant Names Index and TROPICOS.

The Chinese Virtual Herbarium
http://www.cvh.org.cn/
provides immediate on-line access to the wealth of data associated with several million plant specimens maintained in Chinese herbaria and related botanical databases.

Several large botanical institutions are engaged in synthesising global working lists from existing sources. In recent years, developments by the Species 2000&ITIS Catalogue of Life Partnership (CoL) and Global Biodiversity Information Facility (GBIF) have done much to provide the technological means for serving the content of a widely accessible list of known species via the Internet from a variety of sources .

The shortage of taxonomic skills remains a barrier to effective implementation of the Convention.

There are also various large regional Flora projects that provide useful baselines and, through large botanical institutes with a regional or global outlook, have become an important mechanism for stimulating the production of regional checklists, such as the African Plants Initiative which brings together over 50 institutions
Production of working lists of known plants is greatly facilitated by increasing access to botanical literature and to herbarium type specimens. Several countries have produced national inventories of their floras. The main constraints continue to be lack of funds, limited investment in taxonomy, lack of institutional capacity, lack of legislative framework, lack of taxonomists/experts and poorly maintained collections.

Future

The large majority of plant families for which there is no working list available are either cosmopolitan or pantropical in distribution. However, progress to date suggests that neither broad distribution nor large numbers of species in a family are insurmountable problems in compiling working lists. Such lists have already been compiled for the eight of the ten largest and most widely distributed families such as Orchids and Grasses.

Target 2

A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels

Introduction

An assessment of which species are threatened allows resources for species conservation to be prioritized. However, despite the importance of this target, only a small fraction of plant species has been assessed in a globally comparable way at this time.

This is the only target in the strategy that is explicitly designed to include national and regional components in addition to a global assessment. The global target is imperative, but the need for national and regional assessments will need to be considered according to national priorities and capacities. The global assessment can provide context for all national prioritisations, whilst national and regional assessments can be more focussed on providing input to legislation and on species groups of concern.
r the Strategy. The new method was launched in 2007, and hence progress towards the target cannot be measured yet, but it will hopefully cause a rapid acceleration in assessments towards 2010.

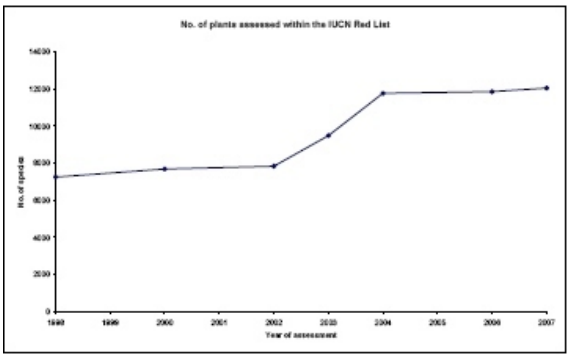
Another contribution to this target is the Sampled Red List Index project which will produce 1500 full IUCN Assessments for each of the major plant groups: bryophytes, pteridophytes, gymnosperms, monocots and dicots. For gymnosperms, there are fewer than 1500 taxa so in total, around 7000 assessments will be added by 2010.

There are clear economic arguments for target implementation, and these go beyond providing a prioritization of resources. National assessments can focus on threats to traded species and other species of socio-economic importance, such as crop wild relatives and medicinal and aromatic plants. Livelihoods are dependent on all three levels of biodiversity: ecosystems, species, and genetic diversity. Impoverishment of ecosystems due to gradual threats emerging to the component species, and to the component genetic diversity, is as important as the extinction of species.

Saintpaulia nitida; one of the threatened African Violet species, from Tanzania (photo credit, RBG Kew).a

The dominant method for assessment, particularly at a global level, has been the IUCN Red Listing process. However, it is unlikely that the target can be reached using this process, and hence it should be stressed that it is a preliminary assessment that is called for, and that this need not be a full Red List assessment.

Progress



Source: IUCN, 2007.

The indicator shows that at a global level there has been a gradual increase in the number of species included in the IUCN Red List. However, given an

Assessing Magnolias

Some two thirds of known magnolia species are found in Asia, with over 40% occurring in southern China. Popular as ornamental plants in gardens around the world, magnolias in the wild are a source of timber, food and medicines for local communities. The evaluation of the conservation status of the Magnoliaceae, using the IUCN Red List categories and criteria was carried out by a group of experts brought together by the IUCN/SSC Global Trees Specialist Group. The evaluation was based on the analysis of distribution data for each species complied from various sources.

Underpinning the report was a comprehensive mapping exercise, which now provides an excellent baseline for future monitoring and conservation planning. The Red List identified 131 wild magnolias as being in danger of extinction, from a global total of 245 species.

estimate of approximately 370,000 flowering plants, the global assessments still only include 3-4% of plant species. More encouraging progress has occurred at a national level. During the consultation on this target, 52% of countries indicated that they had completed some form of Red List assessment. This figure is known to have increased since the consultation, and would be even greater if assessments other than Red Lists were included. It is not known how comprehensive some of these national assessments have been, which makes it of considerable concern that a full global assessment is lacking to provide context to these national priorities. In response to the need for a more rapid global process, focussed on providing a preliminary assessment, IUCN has developed a new method named 'Rapid List' (see end of target 3 for further details). This method was developed specifically as a response to the need articulated by the GSPC, and can be regarded as a

The IUCN Plant Red List

The Red List is making progress in increasing its number of plant assessments. All known cycad species have now been assessed, and there is also complete coverage of the conifers.

In 2003, 1,164 plant species from Ecuador were included in the Red List of which 813 were threatened. Ecuador is extremely important for plant conservation, with four highly diverse regions - the Galapagos archipelago, the coastal lowlands, the Andes, and the Amazon - all squeezed into an area the size of Italy.

Cycads, the oldest seed plants on earth, are now also amongst the most threatened plants. Two species have already gone Extinct in the Wild, and more are likely to join them. Again, in 2003, 303 cycads were evaluated and 155 of them (more than 50%) were threatened.

Botanists were excited by the discovery of a new conifer, Xanthocyparis vietnamensis, in Viet Nam in 2001, but the species has been assessed as Endangered based on its restricted range and ongoing deforestation in the area. www.iucnredlist.org

significant achievement for the Strategy. The new method was launched in 2007, and hence progress towards the target cannot yet be measured, but it will hopefully cause a rapid acceleration in assessments towards 2010.

Another major contribution will be the Sampled Red List Index project which will produce 1500 full IUCN assessments for each major plant group: bryophytes, pteridophytes, gymnosperms, monocots and dicots. For gymnosperms there are fewer than 1500 taxa so in total around 7,000 assessments will be added by 2010

Full IUCN Red Listing remains a popular approach to target implementation due to its high public profile; target outputs lend themselves to public awareness campaigns as a part of Target 14, and there have been significant achievements in raising awareness of threatened species. There has also been progress in increasing capacity for making assessments, with a number of training initiatives worldwide, as a part of implementing Target 15. Fieldwork and taxonomic publications are also more focused on making status assessments than they were prior to the Strategy being adopted.

Major constraints include lack of funding for field work and to support assessment activities leading to inter alia insufficient research and data; lack of experts (taxonomists/plant experts); limited collaboration; incomplete taxonomic knowledge of some families; limited herbaria and ex situ facilities, and lack of an active global or regional assessment initiative for vascular plants.

Future

It will remain important for Parties and the global community to be able to prioritise the resourcing of species conservation. Sustainable development requires that species are not being threatened by over-exploitation and trade, and this requires a method for assessing threat. It is clear that an accelerated rate of global assessment is urgently needed if we are to come close to achieving this target by 2010. The new RapidList method, being promoted by IUCN, may help in achieving this acceleration.

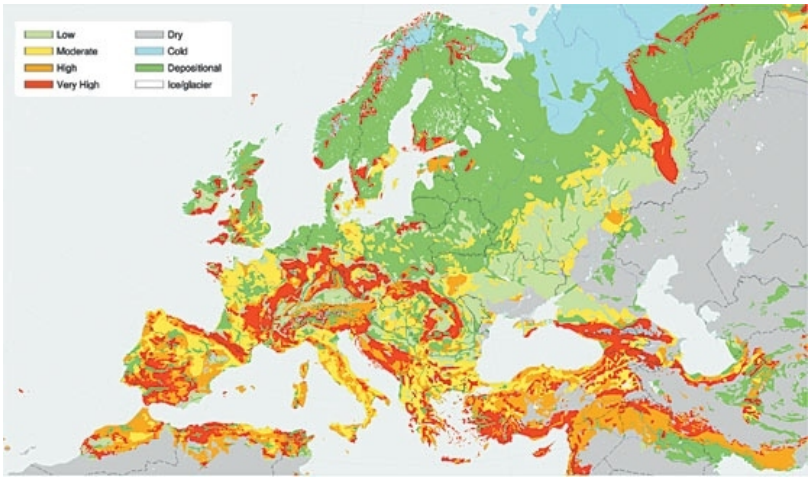
Climate change will increase the threats posed to species, and we will need to greatly improved data accessibility and analysis methods if we are to cope with the challenges it will pose.

Target 3:

Development of models with protocols for plant conservation and sustainable use, based on research and practical experience

Introduction

The aim of this target was to enhance the development of tools and protocols relevant to all aspects of plant conservation, but with an emphasis on those that have been tested and hence based on research and experience, optimised for use by plant conservation practitioners. While this may focus on optimising existing tools and adapting them to local needs, improved access to such tools was also pivotal to this target.

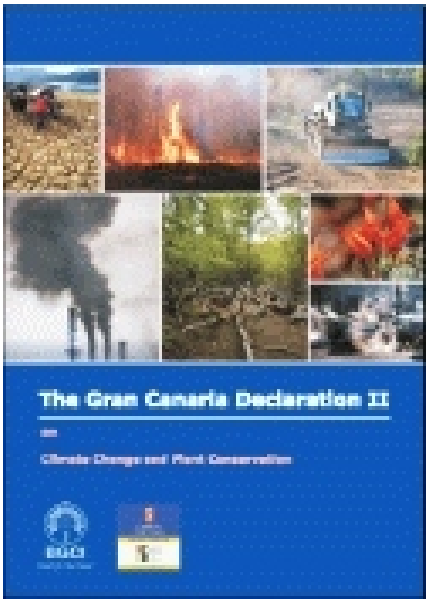


soil erosion in Europe (www.worldmapper.org)

Progress

Various protocols, tools and technologies linked to the achievement of the Strategy targets have been highlighted in the national reports. Examples include tools and technologies for in vitro propagation (Algeria), recovery planning and threat abatement (Austria and Australia), translocation of threatened species (Australia), greening using native seed (Australia), propagation and harvesting protocols (Chile), implementation of the ecosystem approach (Germany), and species action plans taking into consideration various national and international legislation and conventions (Hungary), designation of Important Plant Area (IPA) (Belarus, Romania and Slovenia), ex situ and in situ conservation (Colombia, Chile, China, India, Indonesia and Iran), forest tree breeding (Japan), GIS-based conservation models and permanent ecological plots (Malawi), sustainable forest management models (Malaysia), and sustainable use models in community forest and pro-poor leasehold forests (Nepal). Other tools and protocols include primordial botanic gardens and grand forest parks (Indonesia), wild relatives projects and integrated management of cedar forests (Lebanon), medicinal and useful plants (Nepal), conservation of threatened species (Philippines), propagation and cultivation of South African threatened species (South Africa), special use forests (Viet Nam), and economic valuation of forests (Malaysia).

Many international agencies also



have developed various tools and protocols related to various targets such as Bioversity International for Targets 1, 2, 8, 9, 13, 14 and 15; Botanic Gardens Conservation International for Targets 1, 2, 7, 8, 9, 10, 13 and 14; the Food and Agriculture Organization of the United Nations for Targets 6, 8, 9, 12, 13, 14 and 15; the Global Invasive Species Programme for Target 10; IUCN-The World Conservation Union for Targets 2, 4, 5, 7, 10, 11, 16, and Plantlife International for Targets 5, and 15.

Future

The in depth review of the GSPC noted that the main gap for this target is access to, and dissemination of, information, on the existing tools and protocols in appropriate formats. It is therefore critical that a means for disseminating such tools and protocols is developed. A useful option will be collation of these in the toolkit to be developed by the secretariat and as part both the CBD and GPPC websites.

Rapidlist a new Tool for Preliminary Conservation Assessments.

Target 2 calls for: A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels. Given that there are at least 370,000 vascular plant species in the world, achieving this target will be extremely challenging. IUCN, has provided a new methodology and accompanying tool to conduct preliminary assessments.

Preliminary assessments can prioritize species for full assessments, directly inform further conservation work, or help in the achievements of other GSPC targets, especially Target 5. A user should conduct a preliminary assessment when:

- there is insufficient data for full biodiversity assessments
- in situations/ regions where resources are insufficient for full assessments
- to prioritize resource allocation for full assessments
- when a list of likely threatened species is required urgently

Tools and protocols

IUCN has developed a methodology and tool to conduct preliminary assessments. IUCN's RapidList, a free web-based tool, is now available for use by any plant conservationist who would like to conduct preliminary assessments of plant species.

RapidList: a tool to conduct preliminary assessments

RapidList is an online software application that asks the user a series of questions based on the IUCN Red List Categories and Criteria (Version 3.1) and quickly classifies the species into one of three categories: likely threatened, likely not threatened, or data deficient. With minimal data, it can take an assessor just a few minutes to obtain a preliminary assessment. It can be used at national, regional or global scale.

Preliminary assessments using RapidList are based on the global gold standard of the IUCN Red List Categories and Criteria, allow the conservation status of all plants to be assessed through standardized, manageable criteria. Plant experts, especially in developing countries, are increasingly unable to cope with the resource intensive process of Red Listing and RapidList facilitates a complementary and in some cases alternative method to assess the status of plants.

RapidList users can store and manipulate their data in their online space. Users are encouraged to submit finalized assessments to IUCN for posting on the RapidList website and eventually for public view in a special section of the IUCN Red List website. All submitted assessments will be provided to the CBD as a contribution to Target 2 of the GSPC.

RapidList is not a replacement for full biodiversity assessments, it is designed to help prioritize species for further assessment work. undertaken.

www.iucnsis.org

Target 4:

At least 10 per cent of each of the world's ecological regions effectively conserved

Introduction

The protection of ecological regions is one of the principal means for the conservation of biological diversity. This target calls for the identification of each of the world's ecological regions, and the conservation of at least ten percent of the area of each. This is particularly important as it treats plant conservation within the context of the protection of communities, rather than individual habitats, sites or species.

Target 4 is clearly related to Target 5, of having the protection of 50% of the most important areas of plant diversity assured. The protection of plant diversity through the conservation of ecological regions also provides an element of mainstreaming for plant conservation, and a ready linkage to ecological planning and monitoring. Furthermore, achievement of Target 4 would be a substantial contribution to the 2010 Biodiversity Target, "to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth."

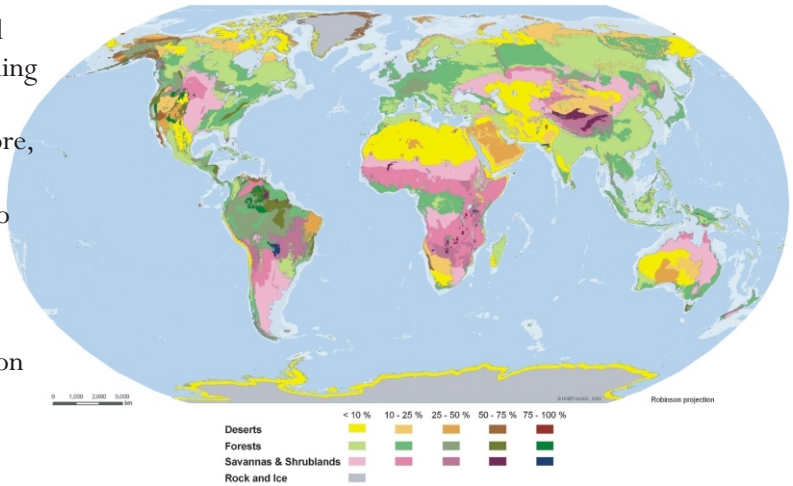
The planning required to identify and protect ecological regions has to be based on objective classification of the regions themselves, through well-established procedures using both abiotic and biotic factors that delineate ecologically distinct regions. Protecting ecological regions also requires working with multiple jurisdictions and levels, as ecoregion boundaries do not necessarily follow those of administrative or political regions.

Effective protection of 10% of ecological regions would be of direct assistance in protecting migratory and dispersal routes of threatened taxa by extending protection to habitats and ecosystems within regions. A regional approach ensures that habitats with important ecological functions such as grasslands, wetlands and others are protected, and also assists in the identification of overlooked ecosystems through gap analyses.

Progress

Progress toward establishing protected areas that are representative of each of the world's ecological regions appears mixed.

According to the World Database on Protected Areas, maintained by UNEP-WCMC, the current estimate for coverage of the global network of protected areas is that at present 11.6% of the earth's land surface, totaling 19 million square kilometers, within 106,926 areas. The degree to which protection is effective, and actually represents each ecological region, is uncertain.



Source: UNEP-WCMC, 2008.

Regional processes such as Natura 2000, the Habitats Directive of the European Union and the Emerald Network provide good frameworks for implementing this target at national level in Europe. Some countries have set national targets, e.g. Canada and Thailand, while Ireland and Netherlands indicate having already achieved this target at the national level.

The achievement of this target is dependent upon countries being able to identify and find resources with which to protect or even acquire land. As such, conflicts can arise between conservation and other land use needs, and between conservation and economic development. Operationally, there is often a lack of a nationally agreed framework for ecosystem or ecological region classification, or

lack of indicators for monitoring the effectiveness of protection. Conflicts can be made worse by a lack of compensation mechanisms.

Many areas set aside for plant conservation are small in size (1,000-10,000 ha), often representing remaining fragments that, although valuable, may be inadequate for maintaining large-scale processes. There are also evident gaps in coverage of existing protected area networks.

It should be noted that Target 4 is part of the overall CBD 2010 biodiversity targets, and this is being considered as part of the overall response to the Convention, in addition toward progress reported in the context of the GSPC.

Future

The risks posed by climate change increases the importance of effective conservation of ecological regions. Currently there is uncertainty as to how the 10% level of this target relates to the conservation of either species richness hotspots or areas of high threat or endemism, as these are not always correlated. Ensuring that all ecological regions are represented within protected areas will require further research and modelling in the face of climate change, in addition to overcoming resource limitations, and potential or actual conflicts. Modelling, especially of climate change scenarios, may generate valuable understanding of the value of this target in the future. It is expected that identification of ecological regions most at risk because of likely or present climate change trends will suggest that the value of 10% of current or historic extent of ecological regions may be too small a threshold to prevent further extinction.

Protected Areas Network in Canada

In Canada, protection of representative portions of ecological regions is an established priority, and includes incorporation of national and global targets. The protected areas system in Canada includes both terrestrial and marine protected areas. The federal government administers the formal system including about 3,500 areas, 800 of which are larger than 1,000 ha. The national parks system in Canada is dedicated to the restoration and recovery of natural habitats. Individual parks range in size from 900 ha to almost 4,500,000 ha. Together, federal, provincial and territorial governments have designated about 9% of the area of Canada as "protected". By ecoregion, coverage varies from over 90% of some ecoregions to none in others. Protected areas include wilderness and conservation areas, forest and wildlife reserves, and parks designated through legislation at the federal, provincial and territorial levels. In addition to protection through legislation, lands are being conserved through measures that provide tax incentives for donating lands for conservation purposes to authorized management agencies. The network of protected areas administered by Environment Canada now totals over 11 million hectares of terrestrial habitat, or an area twice the size of the province of Nova Scotia. The system is made up of three main components: National Wildlife Areas (51 sites), Migratory Bird Sanctuaries (92 sites) and Marine Wildlife Areas (1 proposed). Marine Wildlife Areas and Migratory Bird Sanctuaries protect approximately 1.5 million ha of aquatic habitats.

Target 5:
Protection of 50 per cent of the most important areas for plant diversity assured

Introduction

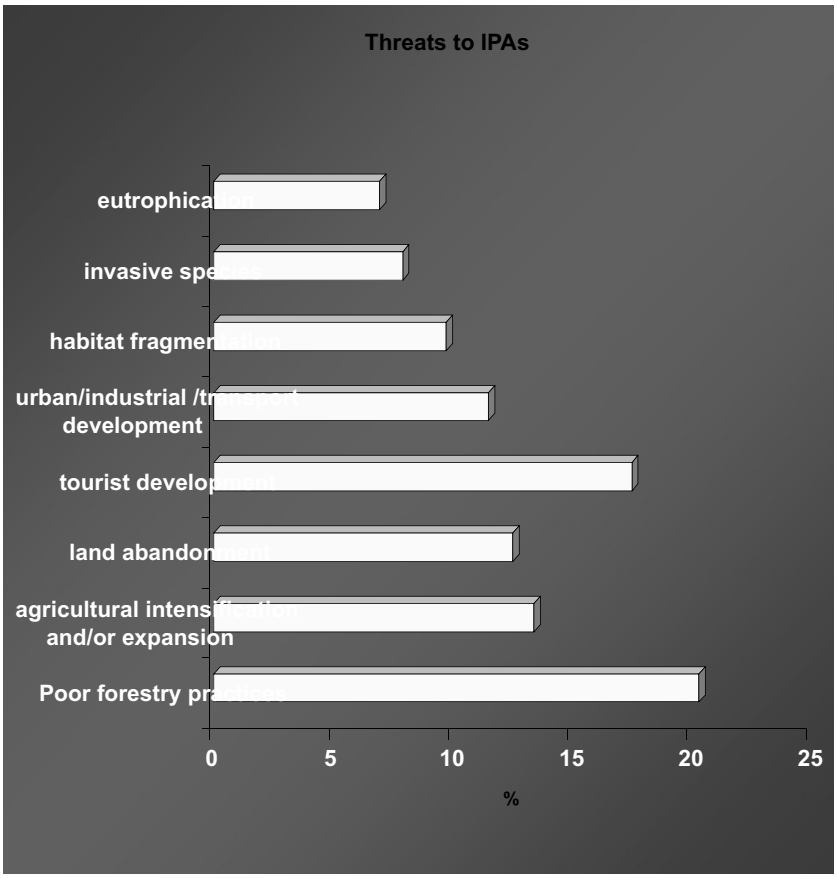
This target aims to improve site-based protection of the most important plants and plant habitats around the world. 'Protection' encompasses both legal protection mechanisms and other on the ground conservation activities as they are both required for the effective safeguard of important sites for plant diversity.

The importance of maintaining prime biodiversity sites has long been recognised; intact natural areas provide better ecosystem infrastructure products and services, and reducing habitat fragmentation allows plant populations to build resilience by promoting exchange of pollen/seed, thus maintaining diverse gene pools and diverse plant resources for the future. These flagship sites also have intrinsic value, with deep cultural resonance for citizens at national and local scales. Despite all the uncertainties for biodiversity inherent within climate change scenarios, it is certain that existing areas of high plant diversity are and will remain important as both refuges and resources, and these areas will be the building blocks for future mitigation measures against in situ biodiversity loss.

Progress

Significant progress has been made with Target 5. Over 10% earth's surface is now officially classed as protected area, this however is not a measure of either the effectiveness of the protection or the quality of conservation. The Important Plant Areas (IPA) programme methodology, an approach widely used to address this target, aims to conserve the best areas for plants around the world. Sites are identified using standard criteria and their conservation is promoted through various mechanisms, not just formal protection. Community based conservation, with an emphasis on delivering sustainable livelihoods from plant resources, is recognised as one of the most effective approaches to plant conservation at IPA (see box below on the conservation of the IPAs for medicinal plants in the Himalayas).

To date sixty-nine countries from all continents, have participated in Important Plant Area (IPA) initiatives that contribute to Target 5. More than 50% of these countries have taken steps to identify important plant sites and at least 24% (17 countries) have on-going programmes that are addressing conservation issues as well as documenting sites. Many national projects have been initiated as a result of regional workshops: in Central and East Europe, the Mediterranean, the Himalayas, the Caribbean, Arabia, south east Asia, southern Africa and the UK Overseas territories. Some IPAs are within officially protected areas (in Europe this is approximately 66%) though the percentage of IPAs protected does not necessarily mean the site is maintained in good condition. What are urgently needed in many countries, are the resources to develop conservation methodologies on the ground, which will provide successful plant conservation tools and protocols. It is essential that these actions to conserve plants on the ground (a 3-5 year timeframe) be undertaken



Source: Plantlife International, 2007.

alongside the actions aimed at integrating the conservation of plants into policy, legislative and institutional frameworks (a 10-20 year timeframe), to ensure sustained results for this target.

Future

The conservation of important areas for plants diversity remains a core element of plant conservation activities in all countries as a basis for the provision of ecosystem services and maintaining the diversity that supports sustainable livelihoods. Formal protection of these sites, though critically important, will not result in safeguarding the diversity on important areas for plants. Affecting change in policy, legislation and institutional frameworks (required by this target) is a long-term process, but to be successful in conserving plant diversity, this target must be driven by on the ground conservation. Community based conservation that works to improve livelihoods, healthcare and quality of life, is proving the most effective way of implementing this target in many areas of the world.

Climate change considerations imply that there are many uncertainties in future patterns of plant diversity. Whether mitigation measures to maintain biodiversity focus on building resilience within plant populations (by filling gaps near/within existing areas areas) or increasing landscape permeability (creation of wildlife corridors), existing important areas for plant diversity will remain a cornerstone of conservation in any climate change scenario. The Gran Canaria Declaration II on Climate Change and Plant Conservation (April 2006) recognised that the development of national networks of areas that are important for plants provide the basis for in situ conservation matrices. These matrices, that incorporate sites and corridors in the wider landscape, will provide a mechanism to protect plant diversity from the effects of climate change.

The conservation of the IPAs for medicinal plants in the Himalayas

In 2006 fifty-three IPAs for medicinal plants (sites of international significance for conservation recognised at national level) were identified across the Himalayas by organisations in Bhutan, China, Nepal, India, Pakistan in a regional project with Plantlife International. Larger IPAs were identified according to criteria with a significant number of smaller sites at local level, often nested within them. IPAs were found to be useful for landscape planning and conservation monitoring, based on the gross geography of the Himalayan IPA network, protected area networks in the region should be reviewed to ensure they have good coverage on the east-west and altitudinal axes. Involving local communities was found to be fundamental to conserving medicinal plants at the very local level and projects continue to developed on these sites involving all stakeholders (traditional doctors, cultural leaders and industry) to facilitate IPA conservation.

Awareness programme in Lasuwa, on IPAs for medicinal plants (Photo Credit: Plantlife International).

Target 6 :
At least 30 per cent of production lands managed consistent with the conservation of plant diversity

Introduction

In the context of this target, 'production lands' refer to lands where the primary purpose is agriculture (including horticulture), grazing and wood production.

Diversity in a production system can be used as a resource to mediate potential stresses of the surrounding environment. For example, a crop population with a diverse genetic makeup may have a lower risk of being entirely lost to any particular stress, such as temperature extremes, droughts, floods, pests, and other environmental variables. Furthermore, conserving and harnessing ecosystem biodiversity can provide additional benefits to farmers, such as the presence of a diversity of pollinators, including bees, butterflies, hummingbirds and even bats.

Warburgia ugandensis bushes in production landscapes in East Africa. (Photo Credit: National Museums of Kenya).

This target incorporates a number of objectives, including the on-farm conservation of crop diversity (landraces, traditional varieties), the conservation of threatened wild plants growing on production lands and the prevention of impacts on plant diversity in surrounding ecosystems. Measures taken at the national level to implement this target include use of good agriculture practices, good forestry practices and national certification schemes.

Progress

Increasingly, integrated production methods are being applied in agriculture, including integrated pest management, conservation agriculture, and on-farm management of plant genetic resources. Similarly, sustainable forest management practices are being more broadly applied. The 2005 Global Forest Resources Assessment showed that 11 per cent of total forest area is designated primarily for the conservation of biological diversity while 65 per cent percent of the total forest area has conservation of biodiversity as one of the designated functions. Forest Stewardship Council (FSC), which is widely regarded as the "gold standard" in forest certification, includes 'environmental impact' and 'maintenance of high-conservation value forests' amongst its Principles and Criteria. FSC has certified more than 90 million hectares of forest in 70 countries and other national forest certification schemes have been developed in over 35 countries. Although a comprehensive analysis of the overall impact of certification is lacking, within individual certified forest management units, positive effects on biodiversity and the increased use of reduced impact practices can be seen. However, the main benefits of certification continue to be seen in the management of northern forests and certification has been a less effective tool in tackling the crisis of forest destruction and degradation in tropical forests.

Increasing concern over the environmental impact of agriculture in Europe has led to the introduction of agri-environment schemes. These schemes compensate farmers financially for any loss of

income associated with measures that aim to benefit the environment or biodiversity. There are currently agri-environment schemes in 26 out of 44 European countries. In addition, a recent study shows that nearly 31 million hectares are currently certified according to organic standards (The World of Organic Agriculture: Statistics and Emerging Trends 2007).

Coastal forest and the challenge of urbanisation in Latin America (Photo Credit: Peter Wyse Jackson).

Bioversity and the community

Working with the international networks on coconut and banana, Bioversity has collaborated with community-based organizations to implement poverty reduction research in a way which is consistent with this target in that socio-economic factors and needs of the farmer, are taken in to account in the management their production system which maintain a high levels of biological diversity. The international coconut network, COGENT, collaborates with community-based organizations to implement poverty reduction research in which coconut seedling nurseries are established and maintained. Seedlings of farmers' varieties selected from the local communities were propagated and planted in the communities. In 2006, over 25,000 seedlings were planted in 34 communities in 12 countries with support from COGENT project funds and in collaboration with local/national coconut planting initiatives

The South African Biodiversity and Wine Initiative

The location of the best agricultural soils for the cultivation of table wine grapes coincides with South Africa's most threatened lowland ecosystems. These lowland ecosystems harbour large numbers of threatened and endemic plant species. The challenge is to guide the expansion of vineyards in a way that avoids further transformation of priority biodiversity areas. The Biodiversity and Wine Initiative seeks to influence environmental management within vineyards and in adjacent areas. There are two main mechanisms, one involving the stewardship by estate managers of priority biodiversity resources on these lands, and the other involving the promulgation and adoption of industry-wide guidelines and standards for land management and wine production, avoiding such negative impacts as water abstraction and pollution through runoff of agri-chemicals. The industry has now incorporated the biodiversity guidelines into their Integrated Production of Wine guideline and is exploring the potential marketing benefits of using the biodiversity of the Cape Floristic Region as a unique selling point for South African wine.

Over the last ten years Bioversity International has worked with institutions and farmers in 8 countries on over 20 different crops to explore the maintenance of traditional varieties in crop production systems. This has resulted in the identification of many practices and policies that can support the maintenance of diversity in production lands and will provide one of the first global overviews of the maintenance of crop diversity in different countries and ecosystems.

The Food and Agriculture Organisation of the United Nations (FAO) helps member countries to achieve sustainable increases in production of crops and grasslands, through, amongst others, the development of integrated production systems, and rational grassland management.

Indicators to assess progress towards the 2010

biodiversity target include the indicator on "Area of forest, agricultural and aquaculture ecosystems under sustainable management". This indicator could eventually be used as a proxy for assessing progress towards implementing Target 6 at the global level. In addition, at the 6th meeting of the United Nations Forum on Forests, four global goals on forests were agreed. Among these, goal 3 is directly relevant to this target (and to sustainable forest management): "Increase significantly the area of protected forests worldwide and the area of sustainably managed forests and increase the proportion of forest products from sustainably managed forests."

Future

One of the challenges of this target is in establishing a definition for management systems that are 'consistent with the conservation of plant diversity'. While many countries are implementing agri-environment schemes and the organic production sector is expanding rapidly, there are questions concerning the extent to which plant diversity specifications are incorporated within such schemes. It is believed that a better understanding of plant conservation needs by the agriculture and forestry sectors would help the achievement of this target.

Target 7:

60 per cent of the world's threatened species conserved in situ

Introduction

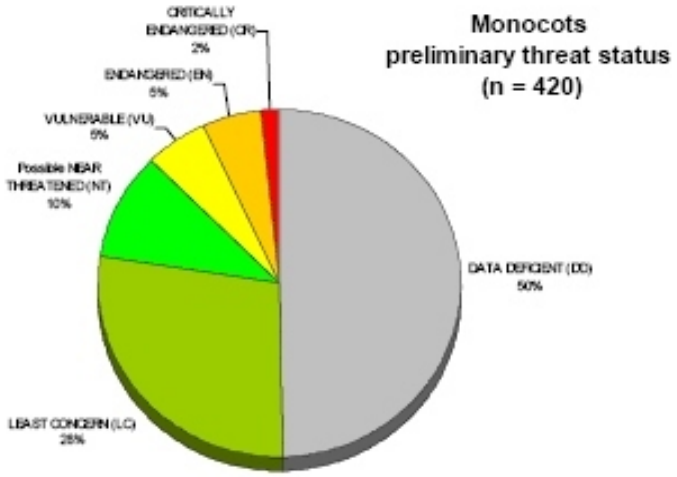
This target is concerned with conserving up to a third of all plant species in their natural habitats. These species are those considered to be most likely to become extinct, and hence achieving this target would be a major step forward in halting the loss of plant diversity. Threatened species include many medicinal plants, timber species and crop wild relatives, which are important for livelihoods.

The exact number of threatened species in the world remains to be determined through the achievement of Target 2. Among the plant groups, only the gymnosperms have a complete assessment, and one third of all gymnosperm species are considered threatened. It is not known what proportion of other plant groups is threatened, but some estimates suggest that more than two thirds of plant species are currently threatened with extinction, which would be equivalent to approximately one third.

Conserving threatened species often requires more than the designation of protected areas, although protected areas can play an important role. Some countries have put in place a legislative framework for conserving threatened species, in addition to designating protected areas. Threatened species need to be conserved wherever they grow, and this can include urban landscapes and production lands as well as natural and semi-natural habitats. This aspect of conserving threatened species can pose challenges, particularly those challenges associated with private land ownership; however these also provide opportunities for partnerships with business.

This target provides the plant component of the 2010 Target 2.2: 'Status of threatened species improved'. It is also explicitly linked to the achievement of the Millennium Development Goal to ensure environmental sustainability, through the use of the Red List Index as an indicator of achieving a reduction in the rate of loss of biodiversity.

Progress



An indicator on the change of Status of Threatened Species. For plants there is currently only a baseline assessment available, shown for Monocots.

Source: Royal Botanic Gardens Kew, 2007

The indicator for this target is the plant part of the 2010 Indicator on the change in status of threatened species. This is measured using a Red List Index for birds, mammals, amphibians, cycads and conifers, and a Sampled Red List Index for all other species groups. Eventually the indices will show trends in the proportion of species expected to remain extant in the near future without additional conservation interventions. The Red List Index for birds shows a continuing deterioration. Trends in other groups are less certain, but are believed to also show a continuing deterioration.

A number of countries report that protected areas

Sparaxis maculosa, a critically endangered species occurring in the Overberg region of the South Western Cap, South Africa.. Photo Credit: SANBI

CREW, the Custodians of Rare and Endangered Wildflowers, is a programme that involves volunteers from the public in the monitoring and conservation of South Africa's threatened plants. In doing so, CREW aims to capacitate a network of volunteers from a range of socio-economic backgrounds. The programme links volunteers with their local conservation agencies and particularly with local land stewardship initiatives to ensure the conservation of key sites for threatened plant species.

South Africa has a significant number of threatened plants (2082). CREW volunteers make significant contributions to ongoing monitoring and conservation of these plant species by:

- Surveying remaining patches of natural vegetation for threatened plant populations
- Actively adopt key sites for conservation of threatened plants
- Working with landowners one whose land threatened plants occur
- Demographic monitoring of certain populations on an annual basis
- Conducting threatened plant/habitat awareness raising activities

have been specifically designated to protect threatened species, although it is still believed that too few protected areas include conserving plant species within their management objectives. A number of plant groups have complete; status assessments published alongside action plans for their conservation, these include conifers and cycads, and these action plans will make a positive difference to the conservation of these groups.

The Future

It will remain vital for the most threatened species to have conservation interventions planned explicitly to achieve their conservation. If we are to achieve the overall objective of halting the loss of plant diversity (or halting the loss of biodiversity), it will be necessary to move from conserving 60 % in situ to the conservation of 100 %. Therefore the actions underpinning this target will remain essential beyond 2010, as the current target is only a milestone towards the final objective. Climate change poses new threats to species, and new approaches to modeling plant responses will need to be developed in order to detect potentially threatened species. Already it is known that the projected climate space for species will change, and hence the threat to species will also change. Enhanced target implementation will be necessary both to achieve the longterm objective, and to counter the new threats from climate change; it is believed that enhanced implementation will require new partnerships to be made, for instance between botanists and landowners, or between protected area management authorities and botanic gardens. It is desirable that countries should develop their own measures of progress in conserving nationally threatened species.

Biodiversity in an urban environment

Singapore's first green roof, the 'Green Pavillion'
Http://upload.wikimedia.org/wikipedia/en/f/fb/Sbg_greenroof.jpg

Singapore was once an island covered with dense natural vegetation, however Rapid industrialisation and urbanisation have almost completely replaced the natural ecosystems.

The Singapore Botanic Gardens has a small tropical rainforest, of around six hectares in size, which is older than the gardens itself. The Botanic Gardens' rainforest and its bigger cousin at Bukit Timah Nature Reserve are located well within the Singapore's city limits. Singapore is one of the only two major cities with a tropical rainforest within its city limits - The other is Rio de Janeiro's Tijuca Forest .

Threatened species in Singapore cannot be managed just in protected areas, but must be conserved in regional and neighbourhood parks in which both recreation and conservation are priority uses. Species that are rare are propagated in the nurseries and planted out in the appropriate natural sites as well as in the parks and roads. This is just one of the initiatives needed to sustain Singapore as a City in a Garden.

Section o f the eco-lake of the Singapore Botanic Gardens

Target 8:

60 per cent of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes

Introduction

Ex situ conservation conservation of plants is defined as the conservation of plant diversity outside its natural habitats to safeguard identified populations or individuals from danger or loss. It has been developed as a vital tool for plant conservation, and is today integrated closely and effectively with protection of plants in their wild habitats. The increasing awareness of the effects of climate change on plant distributions in situ has made the appropriate application of ex situ techniques potentially more crucial to assist in the adaptation of species and ecosystems to changed conditions in the wild.

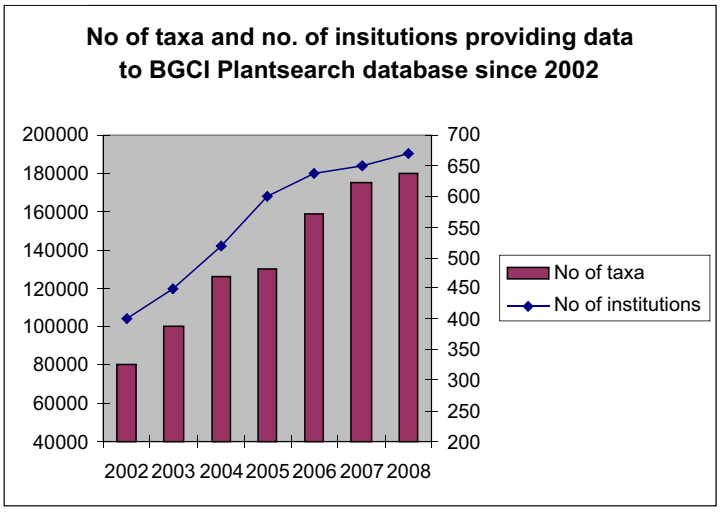
Ex situ conservation involves the collection, maintenance and conservation of samples of organisms usually in the form of live whole plants, seeds, pollen, spores, vegetative propagules, tissue or cell cultures or other genetic material of growing or preserved individuals. The focus of Target 8 has been on higher plants (and other well-described groups such as Pteridophytes) for which there are already well established ex situ facilities and programmes operating worldwide.

Ex situ collections of various highly threatened Mexican succulent species (Photo Credit: Stella Simiyu).

Those involved in ex situ conservation include botanic gardens, gene and DNA banks, agriculture and forestry bodies and a diversity of other governmental and non-governmental organisations. Ex situ conservation networks operate globally and in many regions and countries (Target 16). The focus and emphasis of different sectors involved has varied, for example, in botanic gardens (wild plant species) and in genebanks (crop varieties and crop wild relatives). The scale of ex situ conservation efforts also varies greatly with some institutions and organisations conserving tens of thousands of accessions, while others focus on just a few priority species, often from their own region.

Ex situ conservation of threatened caatinga species at the Jardim Botânico de Belo Horizonte, Minas Gerais, Brazil.(Photo Credit: PeterWyse Jackson).

The target does not specify to what extent ex situ collections of a particular species should be representative of the genetic diversity of that species in order to be regarded as conserved ex situ. In practice however there is little information available on whether most existing ex situ collections are genetically representative or not. The target also includes recovery programmes, which may be implemented at the level of single species, or include the recovery of whole ecosystems involving some or all of the species they contain.



Progress

Progress
Major progress in the achievement of target has been made, advances that were unlikely without the adoption of the GSPC. Target 8 has helped to stimulate a much more focused approach to the ex situ conservation of plant species, highlighting those that require particularly urgent action. Progress has been due to a number of factors including increased capacity, the creation or enlargement of existing programmes and heightened collaboration between ex situ practitioners. This has included the establishment or re-development of many botanic gardens where native plant conservation is a priority.

Major developments in ex situ conservation enhanced by the GSPC include the Millennium Seed Bank Project created by the Royal Botanic Gardens Kew and its partners worldwide, that now includes 37,000 accessions of 20,000 plant species, mainly from drylands, and the creation of the Global Crop Diversity Trust which has made significant progress towards its $260m endowment target to fund the effective conservation of the biological basis of all agriculture.

When the GSPC was adopted it was estimated that 10% to 20% of known globally threatened species were already included in ex situ conservation, and about 2% included in recovery programmes. In response to Target 8 a new global Plant Search mechanism and database was established by Botanic Gardens Conservation International (BGCI) involving botanic gardens worldwide, to monitor the achievement of the target. As of the end of 2007 it was estimated that 30% to 40% of globally threatened plant species were included in ex situ conservation and about 5% in recovery programmes.
Good progress has been made in linking ex situ conservation to the in situ management of plant diversity, particularly in helping to define priorities for ex situ programmes and to provide material for research in conservation biology and for recovery and reintroductions. Ex situ techniques and technologies have also advanced significantly particularly in genetic characterisation of ex situ collections as well as storage methodologies such as cryopreservation, ultra-dry seed storage and in-vitro culture, especially related to crop plants.

Good progress has been made in linking ex situ conservation to the in situ management of plant diversity, particularly in helping to define priorities for ex situ programmes and to provide material for research in conservation biology and recovery and reintroductions. Ex situ techniques and technologies have also advances significantly particularly in genetic characterisation of ex situ collections as well as in storage methodologies, such as in cryopreservation, ultra-dry seed storage and in-vitro culture, especially as related to crop plants.

Future

The achievement of this target remains a major challenge but nevertheless feasible by 2010. Ensuring the adequate genetic representation of ex situ collections will be dependent on better characterisation of existing collections and implementation of comprehensive sampling protocols. More integration of the activities

undertaken by botanic gardens and genebanks is needed to ensure that shared priorities can be developed, experiences, resources and technologies shared.

There are still serious gaps in capacity for ex situ conservation, especially in Africa, the Middle East and Latin America where existing institutions involved in ex situ conservation are by and large very poorly resourced. An analysis of the extent to which ex situ collections are held within the country of origin needs to be undertaken.
Progress in identifying conservation priorities for this target have been hindered by the lack of data on the conservation status of many species (Target 2) as well as the definition of 'threatened' species compromising efforts to ensure that capacity can be directed towards the conservation of species of greatest immediate concern. In the absence of global data, priorities have often been determined with reference to national lists of rare or threatened species. While many recovery programmes have focused on critically endangered species, there is a need for more recovery and restoration programmes that include species of actual or potential economic concern (medicinal plants, crop wild relatives etc).
The impacts of climate change on conservation of species in the wild will make effective ex situ conservation even more important that ever before.

ENSCONET

European Native Seed Conservation Network

ENSCONET coordinates seed conservation activities of wild plants within Europe. The network involves 24 institutions in 17 countries, working jointly on seed preservation for the future, to enhance the study, information and research on seed biology with the aim of exchanging experiences, protocols and facilities to optimise seed conservation practices. The network has linked a powerful group and diversity of institutions to target seed conservation needs for European wild plants for the first time.

www.ensconet.com

Target 9:

70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained

Introduction

Plant genetic resources of crops and other major socio-economically valuable plant species are the biological base for food security and, directly or indirectly, support the livelihoods of every person on earth. This target recognizes the central role that within-species genetic diversity plays in improving production of crops and other useful species. Socio-economically valuable plant species which are not crops include important forage, agroforestry and forestry species, as well as important ornamentals, medicinal plants and crop wild relatives. Such plant genetic resources, and the associated indigenous knowledge, are the most important, and often the only, assets available in many poor, rural communities and their significance increases as other resources dwindle or disappear.

It has been demonstrated that 70% of the genetic diversity of a crop can be contained in a relatively small sample (generally, less than one thousand accessions). Indeed, for some 200300 crops, it is expected that 70% of genetic diversity is already conserved ex situ in genebanks. Genetic diversity is also conserved through on farm management and by working with local communities, existing associated local and indigenous knowledge can also be maintained. However, forestry and agroforestry species, useful medicinal plants, crop wild relatives and other useful wild plant species present their own distinct challenges, especially with respect to the number of species to be considered.

Progress

A Global Crop Diversity Trust has been established to ensure the conservation and availability of crop diversity for food security worldwide. The Trust is assembling an endowment (trust) fund, the income from which will be used to support the conservation of distinct and important crop diversity, in perpetuity, through existing institutions. The Trust has also played a key role in the planning of the Svalbard Global Seed Vault, which has been constructed in Norway, close to the artic circle, to provide the ultimate safety net against accidental loss of diversity in traditional genebanks. While approximately 1.5 million distinct seed samples of agricultural crops are thought to exist, the facility has a capacity to conserve 4.5 million. The first seeds arrived in January 2008.

Ex situ conservation collection of Kiwi fruits germplasm in Wuhan Botanical Gardens, China (Photo credit: BGCI).

Regarding forest tree genetic resources, apart from a few tree species of major socio-economic value, there is little reliable information on the genetic diversity of tropical tree species (80% of the total number of tree species). The genetic diversity of wild, highly variable, undomesticated forest trees is conserved on site. Assessing the genetic diversity of these species is challenging, especially since there are very rarely many quantitative data on population size or decline upon which to characterize the genetic diversity. A study

[17]Indicators and reporting format for monitoring the implementation of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture, document CGRFA-10/04/Inf.5

conducted for FAO in 2002 concluded that the issue of Forest Tree Genetic Diversity was not well addressed in any process, except perhaps in the Pan-European initiative. Summarized information on species management has partly been compiled in the FAO information system on forest genetic resources (REFORGEN), which contains information from 150 countries and 1,600 tree species collected and checked between 1995 and 2003.

Traditional Medicines Market Durban, South

Maintenance of associated indigenous and local knowledge is also an aspect of Target 9 that presents a particularly significant challenge. Efforts are under way to identify indicators suitable for determining trends in maintenance of indigenous and local knowledge, innovations and practices. However, to date there is a lack of tested methodologies and limited assessments of indigenous and local knowledge associated with plant genetic diversity.

Future

During its Tenth Regular Session, the FAO Commission on Genetic Resources for Food and Agriculture adopted indicators and a reporting format to monitor implementation of the Global Plan of Action on the conservation and sustainable use of plant genetic resources for food and agriculture. Some of these indicators are pertinent to measuring progress in the conservation of crop genetic diversity in situ and ex situ, as well as crop wild relatives and other wild plants used in food production.

Since then, FAO has assisted Member States to develop national information sharing mechanisms on PGRFA. Databases of National Mechanisms are stored/mirrored under the FAO World Information and Early Warning System for Plant Genetic Resources for Food and Agriculture (WIEWS) for Plant Genetic Resources for Food and Agriculture (PGRFA). The data will be rolled up at regional and global levels during 2007-08 and published in the second Report of the State of the World's Plant Genetic Resources for Food and Agriculture (SoW), planned for 2008.

Photo Credit: Peter Wyse Jackson

The preparation of the second Report on the SoW-PGRFA can further contribute to developing baseline data and tools to assess progress towards the implementation of GSPC targets, in particularly Target 9. To this end, some of the proposed thematic background studies of the second Report SoW-PGRFA can assist in the process of facilitating the implementation of the GSPC. These are:

Plant genetic resources of forage crops, pasture and rangelands
The conservation of crop wild relatives
Indicators of genetic diversity, genetic erosion and genetic vulnerability
The contribution of plant genetic resources to health and dietary diversity
Managing plant genetic resources in the agro-ecosystem; global change, crop-associated biodiversity and ecosystem services

Keylong Sonam Nursery for medicinal plants, Himalayas (Photo Credit, Plantlife International)

Home gardens and the conservation of plant diversity

- Home gardens play an important role in the production of food, medicine and other useful household products. However, they also play an important role in the conservation of unique genetic diversity. Diversity in home gardens exists both at the species and within species level and is closely linked with the culture of the surrounding community. In a survey of home gardens in a number of countries, the following results were obtained:
- In Vietnam, home gardens contained over 100 species with the greatest diversity belonging to medicinal plants.
- In Nepal, home gardens typically included 14 species of vegetable, 5 species of fruit and 5 species of fodder trees, as well as medicinal plants and species of cultural and religious value.
- In Ethiopia, 412 useful plant species were recorded in home gardens
- In Java, Indonesia, 195 species were recorded in home gardens.

Ref: Watson, J.W. and P.B. Eyzaguirre. Eds. 2002. Proceedings of the Second International Home Gardens Workshop: Contributions of home gardens to in situ conservation of plant genetic resources in farming systems, 17-19 July 2001. Witzenhausen, Federal Republic of Germany. International Plant Genetics Resources Institute, Rome.

Target 10:

Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems

Introduction

Alien invasive species of animals, plants and micro-organisms threaten and degrade plants and their habitats in almost every region, ecosystem, latitude and longitude. Invasives were shown by the Millennium Ecosystem Assessment to be a major agent of ecosystem degradation. The impacts of these invasions are not only on biological diversity per se, but have developmental and economic effects on peoples' livelihoods and health. A classic example is the great range of impacts of the water hyacinth, *Eichhornia crassipes*, which dominates and degrades a range of aquatic plant communities.

Alien plant invasion preventing native plant growth (*Prosopis juliflora*).
Photo Credit: Geoffrey Howard, IUCN.

Prosopis juliflora, a spiny leguminous shrub from the drier areas of tropical America (one of the "mesquites") has covered 700,000 ha of previously open grasslands in the Afar Region of eastern Ethiopia.

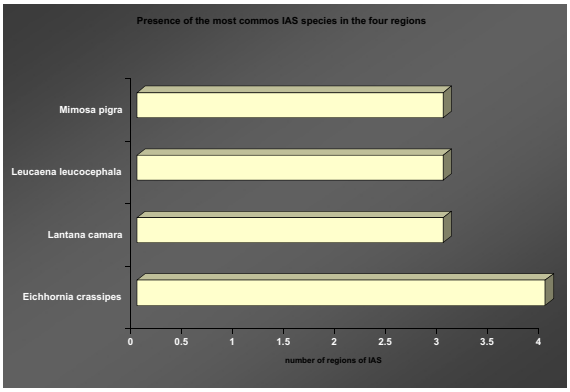
Most developed countries have controls on the introduction of potentially invasive species and procedures for risk assessment of intentional introductions especially those with government agencies devoted to biosecurity. This is less true of many developing countries where awareness of the threats of invasive species is less and the capacity to prevent and manage invasions is often inadequate. Target Ten is closely linked to the Invasive Species Targets of the 2010 Biodiversity Targets and contributes to MDG 7 as well as having increasing relevance in MEAs such as the Ramsar Convention and many aspects of the CBD. The International Plant Protection Convention provides a framework for protection from threats to plants by alien species of all types.

On a global scale it is difficult to reconcile the most important species in (for example) cold temperate, arid, Mediterranean, sub-tropical and tropical regions into a listing of the most important invasive species globally and in all ecosystem types.

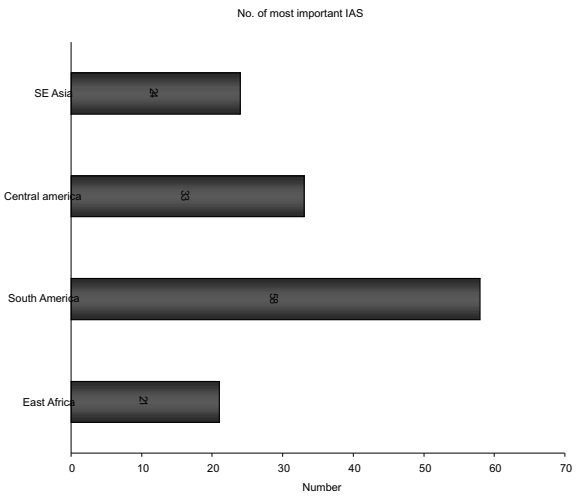
Progress

The target has already been met in that there are over 100 management plans in place for important invasive species that threaten and affect plants. The Invasive Species Specialist Group of IUCN produced a publication in 2002 entitled "100 of the world's worst invasive species" of which at least 55 affect plants or their habitats but the very wording of the title implies that it is difficult to decide upon the most important invasive species on a global basis. This is because every country that has addressed this issue has a list of species which differs from other countries, regions and dominant ecosystems. The Global Invasive Species Programme (GISP) produced an awareness leaflet on Target 10 in 1994 entitled "Protecting plants and plant habitats from invasive alien species" and then began a consultation process to examine how the target could be assessed by contacting 700 invasive species (IS) specialists across the world. This made it clear that to expect agreement on the 100 most serious Invasive Alien Species (IAS) that affect plants globally would be an enormous task with doubtful relevance to many countries. It also made clear that, at that time, there was need for local adaptation of globally available management

plans. GISP then initiated a pilot programme (implemented through IUCN) to ask specific countries and regions (in Africa, Asia and Latin America) to discuss their own most important species for Target 10. A third attempt by GISP to address this issue using a web-based tool awaits funding.



Source, IUCN 2007.



Source, IUCN 2007.

Some developed countries have reported taking steps towards achieving Target 10 at national level in relation to their most important IS affecting plants and GISP intends to bring these together towards a global assessment during 2008/9. Management plans for these species are site specific except in a few cases and there is need to build capacity in other countries to modify them to local conditions and expand such plans for global use.

Information about the existence, spread and impact of IS on plants has increased in recent years through the many specific, local and global databases and other information sources on the internet with global guidance from GISP, the IUCN Species Survival Commission-Invasive Species Specialist Group (ISSG) and the Global Invasive Species Information Network (GISIN). Threats by alien invasive species to plant species on the Red List are now being systematically detailed, although the more rapid assessments developed for Target 2 are unable to record these details.

Future

There is need an urgent need to recognise that climate change will enhance the spread and impact of some of these significant alien invasive species. Hence, future work on this target should ensure that there is adequate preparedness and that content of management plans should enable Parties to adapt for this.

Target 11:

No species of wild flora endangered by international trade

Introduction

Many countries have indicated ongoing activities on target 11 linking to the national implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and have adopted the global target. In response to paragraph 11 of decision VII/10 the Plants Committee of CITES has submitted to the Executive Secretary a report which summarizes information relevant to this target.
The purpose of CITES, as outlined in the CITES Strategic Vision through 2007, is to ensure that no species of wild fauna or flora becomes or remains subject to unsustainable exploitation because of international trade. This purpose, central to all CITES activities, is well aligned with Target 11 of the GSPC no species of wild flora endangered by international trade. In essence, Target 11 forms the core business of CITES activitiesa

Cycad sp. on Appendix 1 of CITES. Photo Credit SANBI.

For flora species already included in CITES Appendix I, the CITES Plants Committee suggest that CBD Parties and in particular their GSPC focal points, be aware of the provisions in place through CITES by being provided with a full list of the flora species included in CITES Appendix I through the respective convention Secretariats. (They are on the website).
CBD Parties are further encouraged to take Appendix I species into consideration in their in situ, ex situ and sustainable use actions (CBD Articles 8, 9 and 10), particularly in actions outlined in their National Biodiversity Strategies and Action Plans (Article 6). For example, CITES Parties have agreed to encourage cooperation between Parties with ex situ breeding operations and those with in situ conservation programmes (CITES Resolution Conf. 13.9). CBD Parties may wish to consider similar cooperative actions when developing or updating their National Biodiversity Strategies and addressing the GSPC.

Progress

Approximately 300 plant species are included in CITES Appendix I; over 28,000 in Appendix II which includes the entire orchid family, and 10 in Appendix III. The implementation of provisions relating to all Appendices should help to implement Target 11 of GSPC. International trade in wild specimens of Appendix I species is effectively banned and this may encourage artificial propagation of wild species reducing the pressure on wild populations. For Appendix II species, the requirement that a non-detriment finding be made before trade is allowed is particularly important. This links trade to the management of the species and should help to ensure sustainability and reduction of the threat of over-exploitaion

Aloe species, international trade regulated by CITES: Photo Credit-National Museums of Kenya.

By no means all Endangered plant species, which are threatened at least in part by levels of international trade are currently included in the Appendices of CITES. Listing of high value species such as trees traded for timber has been particularly slow. Nevertheless there is now a recognition that CITES can support the sustainable management of timber species and good collaboration has developed between CITES and the International Tropical Timber Organisation (ITTO).

The CITES Plants Committee plays an important role in the provision of biological and other specialized knowledge regarding species of plants that are (or might become) subject to CITES trade controls. Its role is, inter alia to provide technical support to decision-making about these species. Among others, the terms of reference for the Plants Committee include: undertaking periodic reviews of species, in order to ensure appropriate categorization in the CITES Appendices, advising when certain species are subject to unsustainable trade and recommending remedial action (through a process known as the 'Review of Significant Trade') and drafting resolutions on plant matters for considerations by the Conference of the Parties. Ongoing actions undertaken for flora species included in CITES Appendix II can help ensure Target 11 is met. Appendix II species can be subject to a Review of Significant Trade if monitoring of CITES trade data raises a concern with potentially harmful levels of international trade in the species. Under this process, international trade in important listed plant groups such as cycads, tree ferns, Agarwood and some medicinal plants has been analysed, resulting in measures being taken to ensure that such trade is sustainable.
Overall relatively low priority has been given to plants in the implementation of CITES. One measure to address this is to encourage botanic gardens to support the Convention in a variety of ways. The second edition of a CITES Manual for Botanic Gardens has recently been published in three languages and this highlights the links between CITES and the GSPC.
Future

CITES provides a well-established and successful mechanism for preventing plant species from being endangered by international trade but its role is limited to those species that are currently listed. More research is need into the impact of international trade on wild plant species and a broader range of management responses, needs to be developed. Independent certification of sustainability both of timber and non-timber forest products carried out to internationally recognised standards is one mechanism which should help ensure that no plant species are endangered by international trade. The value of both the sustainable harvesting and use of forest products and independent certification are promoted through the CBD work plan for Forest Biodiversity.

Other measures include the development of locally based propagation schemes for threatened plant species for which there is an international trade demand. The development of such schemes is recommended in the CBD technical report, Sustainable Management of non-timber forest resources (Secretariat of the Convention on Biological Diversity, 2001).

Bags full of Hoodia at Matsjierivier, South Africa; Photo credit: SANBI.

Trade In Hoodia

Hoodia spp. are slow-growing succulent plants that occur in Southern Africa. Ten of the 16 species are classified as threatened according to the IUCN Red List categories and criteria. Traditionally used by the San bushmen to stave off hunger, strong commercial interest in the genus

Hoodia species, now in high demand as a natural appetite

has resulted from the isolation and patenting of an active ingredient which is claimed to help weight loss. All Hoodia spp were listed in CITES Appendix II in 2005. The listing includes provisions for labelling products that have been harvested in a sustainable way.

Hoodia harvested badly. Photo Credit SANBI

Target 12:

30 per cent of plant-based products derived from sources that are sustainably managed

Introduction

Plants and their derivates provide a range of products including amongst other things fuel, food, shelter, clothing and medicines. Such plants or plant products may be harvested from wild or semi-natural conditions, or cultivated. This target requires a coordinated approach that applies across all sectors of international, national and local production and trade of plant products. In the case of plant material collected from wild or semi-natural ecosystems, harvesting, to be sustainable, must be below replacement rates and the process of harvesting should not cause significant damage to other components of the ecosystem. Sustainable management of plants and their products relates to environmental as well as social issues, including fair trade, equitable sharing of benefits and participation of indigenous and local communities.

Progress

Indicators of progress towards this target include the percentage of products derived from independently certified production areas including forest certification and organic production, as well as from sources with sustainable harvesting plans in place.

The organic sector is growing rapidly with global sales of organic food and drink increasing by around $5 billion over the last six years to nearly $40 billion in 2006. In Europe, the organic share of the total food market varies from approximately 6% of total food sales in Switzerland and Austria, 4.5% in Denmark, to 3% in Germany and 1.6% in the UK. . In the USA, the organic food market currently has a 3 % share of total food sales and grew by 21 % in 2006 according to the Organic Trade Association (OTA).

With regard to sustainable forest production, in December 2006, a total of nearly 300 million hectares were reported to be under certification, of which 84.2 million hectares were certified under the Forest Stewardship Council (FSC) scheme. FSC has met with an enthusiastic response in many countries and demand for FSC-certified products outstrips supply. Major retail outlets in the UK and USA for example are committed to stocking as much FSC as they can and several governments have developed timber procurement policies that require them to seek certified products.

Bark of Warburgia ugandensis, in high demand for local traditional medicine, at a local market in Nairobi, Kenya. (Photo Credit: National Museums of Kenya).

FAO has facilitated the collection, analyses and dissemination of national, regional and international statistics on all aspects of forest resources, forest products and their trade and other important socio-economic variables at regular intervals and is providing support to the United Nations Forum on Forests as well as to regional criteria and indicators processes for monitoring progress towards sustainable forest management.
FAO also works towards the enhancement of forests and forest products' contribution to poverty alleviation while ensuring environmental sustainability by:

- Identifying the potential of non-wood forest products (NWFPs), improved harvesting and production methods, and wide dissemination of related knowledge at all levels;
- Re-appraising the value and potential of wood

[18]This standard will bridge the gap between already existing but mostly abstract guidelines and management plans developed for specific local conditions. Stakeholders involved will receive an easy-to-handle list of criteria, indicators and verifiers that will enable them to check the sustainability of plant material collected from the wild.

[19]Biotrade refers to those activities of collection, production, transformation, and commercialisation of goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability. Since its launch in 1996, the BioTrade Initiative has been promoting sustainable biotrade in support of the objectives of the Convention on Biological Diversity

[20]http://www.biotrade.org/Intro/bti.html

fuels as a clean, safe and economical energy source and raising awareness of their importance at policy level, including improved information systems, and

- Developing a regional code of forest harvesting for South America and assisting countries in Asia, Africa and South America to introduce reduced impact logging practices based on regional codes of harvesting.

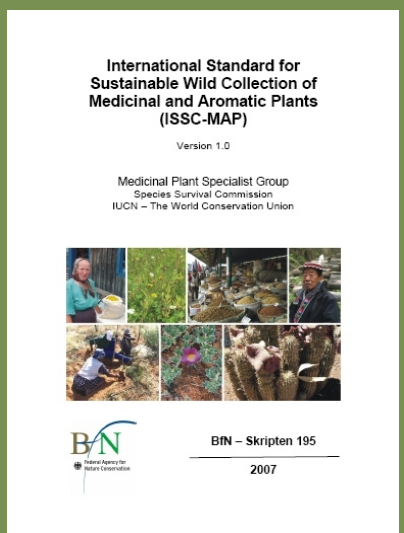
Various national initiatives are being developed. For example, the German Federal Agency for Nature Conservation has supported the development of the "International Standard / for Sustainable Wild Collection of Medicinal and Aromatic Plants, which also addresses Targets 6, 12, and 13. In Uganda, the BioTrade Initiative / of the United Nations Conference on Trade and Development, / which provides a useful model for refining and transforming medicinal and aromatic plants products, has focused on promoting trade and investment in products and services derived from native or indigenous biodiversity.

Global standard for sustainable wild medicinal plant harvesting

A new standard to promote sustainable management and trade of wild medicinal and aromatic plants was launched in 2007. The standard is needed to ensure plants used in medicine and cosmetics are not over-exploited. More than 400,000 metric tons of medicinal and aromatic plants are traded every year, and about 80 percent of the species involved are harvested from the wild.

Following extensive consultation with plant experts and the herbal products industry, the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants, ISSC-MAP, was drawn up by the Medicinal Plant Specialist Group of IUCN (World Conservation Union).

The German Federal Agency for Nature Conservation was involved in the consultation along with WWF-Germany, and the wildlife trade monitoring network TRAFFIC, plus industry associations, companies, certifiers and community-based nongovernmental organizations. The standard is based on six principles - maintaining medicinal and aromatic plant resources in the wild, preventing negative environmental impacts, legal compliance, respecting customary rights, applying responsible management practices, and applying responsible business practices.



Target 13:

The decline of plant resources and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care, halted

Introduction

This target is concerned with the availability of local plant resources to support people's diets, health and livelihoods. It covers the spectrum from agricultural land to natural habitats, with a special focus on traditional, biodiversity-rich agricultural systems and on resources gathered from wild plants. Traditional agriculture and many wild plant resources have been in decline over recent years, under pressure from the spread of industrial agriculture and much higher demands for resources from plants, both cultivated and wild.[19]

There are close links between this target and economic development. From the subsistence viewpoint, the availability of traditional vegetables or medicinal plants can be crucial for maintaining good health or combating disease, resulting in an increased ability to benefit from gainful employment. More directly, the sale of resources from wild plants can be a major source of financial income. earned income.[20]

This target is closely linked to several of the Millennium Development Goals, for example with the promotion of gender equality and empowerment of women (MDG 3). This is because it is women who are mostly responsible for the collection of wild plant resources, such as firewood, for domestic use and because women are the principal homemakers and carers all over the world. Another target of relevance is MDG 6 (combat HIV/AIDS, malaria and other diseases), given the great use made of medicinal plants in tackling many serious diseases, for instance for treating diabetes, opportunistic infections associated with HIV/AIDS, and malaria in East Africa.[21,22,23]

[21] Hamilton, A.C. and Hamilton, P.B. (2006). Plant conservation: an ecosystem approach. Earthscan, London.
[22] Salick, J. et al. Tibetan medicine plurality. *Economic Botany* 60, 227-253 (2006).

Progress

This target cannot be sensibly quantified. It was proposed in 2006 that several sub-targets should be developed for this target, taking an ecosystem-by-ecosystem approach (e.g. for agriculture, forest resources and pasture resources), but there has been no progress in this respect and no milestones have been defined.

Positively, there appears to be much more awareness among technical experts engaged in plant conservation now (compared with ten years

Piles of illegally harvested Osyris lanceolata roots for extracting essential oils (Photo credit: National Museums of Kenya).

Women carrying sandalwood (Osyris lanceolata) to markets for essential oil extraction in the international markets (photo credit: National Museums of Kenya)

[23] Mainen, J. & Mbwambo, Z.H. (2002) Experience of Tanzanian traditional healers in the management of non-insulin dependent diabetes mellitus. Pharmaceutical Biology, 40, 552-560.
[24] Koch, A., Tamez, P., Pezzuto, J., & Soejarto, D. (2005) Evaluation of plants used for antimalarial treatment by the Maasai of Kenya. Journal of Ethnopharmacology, 101, 95-99.
[25] McMillen, H. (2004) The adapting healer: pioneering through shifting epidemiological and sociocultural landscapes. Social Science and Medicine, 59, 889-902.
[26] Report on the implementation of the Global Strategy for Plant Conservation, prepared by Bioversity International, November 2006.
[27] A review of the activities of major partners and organizations in implementing the Global Strategy for Plant Conservation. 12th Meeting, SBSTTA, France, 2-6 July 2007.

Case Study

Medicinal plant conservation through traditional health care development in Ladakh, India. Tibetan medicine has been the traditional health system of Ladakh for over 1000 years. This scholastic healing system contains elements of Ayurveda and Chinese medicine, combined with the philosophy and cosmology of Tibetan Buddhism. For centuries, amchi (traditional doctors following the Tibetan medical tradition) have been the only access to medical treatment throughout Ladakh. They remain central health actors to this day, particularly in remote areas. Remote rural communities in Ladakh are often deprived of primary healthcare, having little money and living far from medical checkpoints. That's why a programme called Revitalisation of Tibetan medicine in Ladakh was started and continues to be developed by the Ladakh Society for Traditional Medicines (LSTM) and Nomad Recherche et Soutien International (Nomad RSI), with support recently provided by an Allachy Award from Plantlife International. The overall aims of the programme are to improved the standards of amchi practice, ensure that amchi medicine is available in rural areas, preserve and support the amchi knowledge system, and guarantee sustainable access to essential medicines

Meeting of the SAPI Medicinal Plant Conservation Committee, Ladakh, India above and village women at SAPI consulting Amchi Psering Paljan (Photo Credit Plantlife International).

Ago) of the critical need to engage local people seriously in efforts aimed at in situ plant conservation. Overall, progress is slow compared with the magnitude of the task and there is much need for good case studies, and analysis and dissemination of best practice.

There have been many studies documenting indigenous botanical knowledge and the use of plant resources. Examples include research by Bioversity International on coconut diversity, and on banana diversity in Uganda.[25] The Netherlands has been instrumental in building major programmes to record knowledge about plant resources in South East Asia (PROSEA) and tropical Africa (PROTA). Typically such efforts have not been linked to any practical measures in favour of sustainable development, so their usefulness for conservation is limited. There are exceptions, for example a study of indigenous leafy vegetables in Africa has resulted in some practical benefits in Kenya in terms of enhanced cultivation of traditional varieties and their marketing to Nairobi with nutritional benefits for urban dwellers.[28]

Progress with Target 13 is greatly hampered by the rapid pace of globalisation. Cultural and economic globalisation tends to promote the globalisation of biodiversity, just as cultural diversity and traditional lifestyles can have strong links to biological diversity. Traditional knowledge of plants continues to decline worldwide a major problem for plant conservation, because knowledge of the details of the local plant world is a necessary foundation everywhere for practical conservation efforts. Realising this, several conservation initiatives have placed great stress on the revitalisation of local botanical traditions, for example those of the Foundation for Revitalisation of Local Health Traditions in India.[29]

Future

More progress would likely be made with achieving this target (as other in situ targets) if greater emphasis is given to the ecosystem approach in practical plant conservation efforts.

[28] Report on the implementation of the Global Strategy for Plant Conservation, prepared by Bioversity International, November 2006.
[29] www. Frlht-india.org

Target 14:

The importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes

Plants are often under represented in the conservation debate and neglected in efforts to engage the public in environmental action. Furthermore, increasing urbanization and population movements are resulting in a growing disconnect between people and nature a trend that is especially notable amongst the young. Plant conservation targets will only be achieved if changes are made at all levels of society, from policy makers through to the general public. For this reason, communication, education and public awareness programmes are essential in underpinning the Strategy. This is a cross-cutting target, relevant to all the other targets of the Strategy and indeed to the implementation of the Convention itself. However because of the specific need to raise awareness of the importance of plants as the basis of all life on earth, an explicit target on this has been articulated in the GSPC. There is a lack of quantitative baseline data against which to measure progress, but it is generally recognized that there is a very low level of understanding amongst the general public of 'biodiversity' and more specifically, the important role of plants in supporting human well being. This target is understood to refer to both informal and formal education at all levels including primary, secondary and tertiary levels. In the formal sector, there is a need to engage with Ministries of Education as well as Ministries of Environment and Conservation.

Progress

The publication of the GSPC brochure and its translation into 10 languages, going beyond the official UN languages is a key achievement allowing easy access to the text of the Strategy for policy makers. However, although a growing number of countries are developing national responses to the GSPC, there is still a lack of awareness of the GSPC at the policy level in many countries.

Botanical school trip at Cibodas Botanic Gardens, (Photo Credit: Bian Tan).

With regard to the general public, a stakeholder consultation on this target in six countries (Brazil, China, Indonesia, Russia, UK and USA) identified similar issues across countries, but the responses to these will differ, according to all local needs and cultural differences. Issues to be addressed include the over emphasis on animals and neglect of plants in environmental education programmes, a need for increased teacher-training relative to plant diversity, a lack of opportunity to experience nature firsthand and messages being lost under an overwhelming level of advertising in all media.

Source, BGCI, 2007.

Oxford Botanic Garden, UK

With the support of HSBC through the Investing in Nature Programme, BGCI supported teacher training environmental education programmes in botanic gardens in Brazil and Indonesia of countries. At least 150,000 children were reached through this programme and the teachers were trained in how to use the gardens as outdoor classrooms

This Garden was established in 1621 ' to promote learning.' The GSPC has been incorporated into the teaching in all years of the Biological Sciences degree course ot the Oxford University. The Strategy itself has become the syllabus for a module in the Plant Conservation course. Every one of the 12,500 school children who visits this Garden is shown how they can contribute to at least one of the targets of the GSPC. Every visitor to the Garden & Aboretum is given a guide to the GSPC that takes the visitor through each of the sixteen targets.

The world's botanic gardens, which together receive over 300 million visitors per year, are a gateway to information on plant diversity and this community has largely taken forward the education and public awareness elements of this target.
Almost all botanic gardens are involved are involved in education in education activities and many focus specifically on educating children.

Future

Educationalists have not always been included in stakeholder consultations on the GSPC and there is a need for greater engagement with this community. There is an opportunity to benefit from the increasing awareness and understanding of the public on climate change issues and the associated educational opportunities should be capitalized upon.

Plants are of great importance in relation to both mitigation and adaptation to climate change, and it will be essential to mobilize support for plant conservation through education and public awareness programmes to avoid mass extinctions in the future. Engaging the public in new and innovative ways is key to raising awareness of plant conservation issues. Examples include the increasing popularity of citizen science projects focused around plant monitoring in a changing climate. Indeed botanic gardens have the challenge to showcase the importance of plant conservation for ecosystem services and safeguarding useful species given the uncertain future.

National Botanic Gardens of Ireland: Programmes on the theme of plant conservation, sustainability and climate change are a key component of many botanic gardens educational activities (Photo Credit Peter Wyse Jackson).

Target 15:

The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy

Introduction

Achievement of the targets included in the Strategy will require considerable capacity building, particularly to meet the need for conservation practitioners trained in a variety of disciplines, with access to adequate facilities. As one of the cross-cutting targets of the Strategy, this target, although not specifically quantitative, is central to the achievement of each of the Strategy's targets as well as its overall aim of halting the loss of plant diversity on a global scale. 'Appropriate facilities' are understood to include adequate technological, institutional and financial resources. Access to and appropriate dissemination of skills, tools and relevant information is central to the achievement of this target. Capacity building should be based on national needs assessments across the plant conservation sector. The Strategy estimates that the number of trained people working in plant conservation worldwide would have to double by 2010. Given the geographical disparity between biodiversity and expertise, however, this is likely to involve more than doubling in many developing countries, small island states and countries with economies in transition. Increased capacity includes not only in-service training but also the training of additional staff and other stakeholders, especially at the community level.

Progress

While there is no global baseline from which progress can be measured, and despite relatively few countries having conducted needs assessments, several global programmes have nevertheless made considerable progress in increasing the number of trained people in plant conservation, particularly in developing countries. Various collaborative projects have been developed between institutions. These include training programmes that meet the needs of the individual countries to enable them to meet their obligations under the CBD, including the GSPC. Several programmes combine scientific research on plants with training and community capacity building. In addition to providing training, some programmes host formal workshops and provid specialist equipment and advice on the design of appropriate in-country facilities. Plant conservation networks have played an important role in developing training programmes and building capacity for the conservation of plant diversity.

Training teachers on plant conservation: Photo Credit Bian Tan.

The Future

The development of adequate human capital with access to the appropriate resources will remain critical for the achievement of the Strategy, and beyond 2010. Challenges provided by climate change will require new skills and capacity building across most countries of the world. An audit is required of what has been achieved in terms of capacity building across the various targets to determine where the gaps and capacity needs are. Parties are also required to conduct national needs assessments and determine national priorities in terms of training and funding allocation. The

ongoing support, mentorship and coaching of trained staff, particularly those who have benefited from training courses associated with donor-funded projects with a limited lifespan, is critical. Technology should be used to the maximum and consolidated multi-lingual training materials developed and made accessible. More local training is needed to address contextual issues. With no lead agency or institution associated with this target, co-ordination and monitoring of progress as well as measuring of the impact of training provided will remain an ongoing challenge.

Pictures from the Caribbean GSPC Regional Training in Monstserrat above with Dr. Didier Dogley from Seychelles (below) as one of the facilitators. (Photo credit: RBG

Case Studies

The African Regional Course in Plant Conservation Strategies: building capacity for the implementation of the GSPC in Africa was the first tailor-made training course designed to support the implementation of the GSPC. It was developed by the Royal Botanic Garden, Kew, together with BGCI and the CBD Secretariat. Hosted by Makerere University, Kampala, Uganda and funded by British American Tobacco via Kew's capacity building programme, the course brought together delegates from 16 African countries. The two and a half week course mixed theory and practice and concluded with a 5 day fieldtrip looking at conservation issues in the field. Following the course, all participants produced a report on the status of GSPC implementation in their own countries. A similar course was held in the Caribbean Region in Monsterrat.

Target 16:
Networks for plant conservation activities established or strengthened at national, regional and international levels

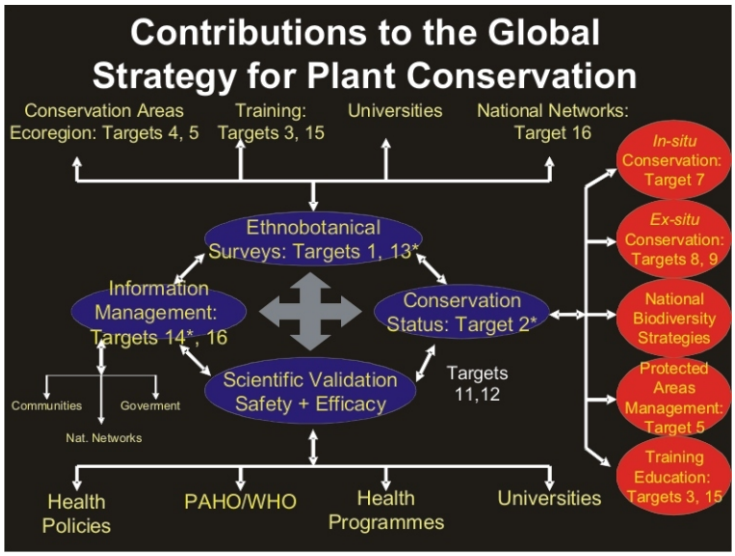
Introduction

Networks supporting plant conservation activities provide the means to share protocols and celebrate successes, exchange data, encourage professional development of conservation specialists and build capacity of the plant conservation community. Organizations participating in such networking include government agencies, museums, academic specialists, botanic gardens and non-governmental organizations. Importantly, networks are not constrained to follow any particular model and often extend across political or sectoral boundaries in order to most effectively mobilize resources for particular purposes.

For smaller organizations, participating in networks provides a direct means to contribute to larger projects, benefit from mutual exercises in building capacity and build expertise. For larger organizations and government agencies, networks provide efficient means to coordinate projects across large distances and aggregate observations and results.

The majority of networks are self-organizing, arising in response to needs and opportunities. Many different models exist for networks, ranging from informal, sometimes transient, efforts to share information or cooperate on specific projects, to large national and international associations with paid staff and secretariats. Recently the concept of grids, or networks of networks, has also been recognized. For example, the Global Partnership for Plant Conservation consists of a variety of partners, many of which are themselves networks.

Making progress toward many of the other fifteen targets of the GSPC depends upon strengthening existing networks or forming new ones. For example, the development, testing and sharing of protocols for plant conservation (Target 3) and



Contribution of the TRAMIL network to the implementation of the GSPC: Photo credit: Sonia Lagos-Witte

training and increasing capacity for plant conservation through increasing numbers of workers (Target 15) requires effective sharing of information, resources and in some cases personnel among agencies.

Progress

In many respects the GSPC itself has been a grass-roots networking program. Target 16 calls for the establishment or strengthening of networks; GSPC is both a product of networking and has facilitated and strengthened networking as organizations respond to the Strategy.

The GSPC has been particularly effective in generating cross-sectoral networks. The botanic garden sector, organizations involved in the GISP, FAO, IPGR genetic resource sectors, the sustainable use sector, and forestry are in communications and sharing experiences relevant to the targets. This exchange has been happening at all levels. National and global networks, and within-country, cross sectoral networks have been

generated or strengthened because of the GSPC. This effort has also catalysed networking among herbaria, zoological parks and other organisations that might not previously have considered that they have a plant conservation role.

Education programs in particular have been greatly strengthened through networking, contributing to Target 14. Woking together has enabled educators in all sectors to develop better means to reach the public and new audiences with plant conservation messages. These efforts have been taking place as the capacity of electronic networking technology has also greatly increased, especially facilitating professional development and development of new mans to exchange, aggregate and enhance plant conservation data.

The Future

Parties to the CBD should continue to nominate National Focal Points and encourage the participation of a wide variety of sectors in achieving the targets of the GSPC. Approximately a third of Parties have at this stage nominated NFPs for the GSPC.
National Focal Points and encourage the participation of a wide variety of sectors in achieving the targets of the GSPC. Approximately a third of Parties have at this stage nominated NFPs for the GSPC.
Particularly important to the GSPC is the Global Partnership for Plant Conservation, by definition itself a network. As a key component of the flexible coordinating body for the GSPC, the partnership is encouraging and promoting achievement of all of the targets.

Advances will continue in electronic networking, and new tools are emerging such as social and professional networking web sites, but access to these specific tools remains limited or non-existent in many areas.

The GSPC provides an entry point for thousands of institutions to participating in the Convention on Biological Diversity itself. The strategy will continue to provide an active means to turn perceptions of the CBD as a legislative or regulatory framework to a positive, participatory program where the contributions of all have importance.

The Global Partnership for Plant Conservation (GPPC) is a voluntary initiative that brings together international, regional and national organisations in order to contribute to the implementation of the GSPC. The GPPC was launched in February 2004 at the 7th CBD COP meeting in Kuala Lumpur, Malaysia and now includes 34 member institutions and organisations worldwide with significant programmes in plant conservation. The Partnership aims to link existing initiatives for plant conservation, allowing gaps to be identified and promoting mobilization of the necessary resources. A major objective is to provide practical assistance, support and technical guidance for national implementation of the GSPC. The GPPC is supported by a Secretariat provided by BGCI.

Activities organised or supported by the Partnership have included:

- Support for the development of national plant conservation strategies;
- Regional training courses in plant conservation;
- Development of GSPC-related 2010 targets at national and other levels (e.g. for botanic gardens);
- Undertaking plant conservation assessments at national, regional and global levels;
- Identifying and defining criteria for important areas for plant diversity;
- Developing projects at all levels for conservation and sustainable use of threatened plants and their habitats;
- Work towards completing a working list of all known plant species;
- Establishment of networks;

- Public awareness and education initiatives;
- Participation in the flexible coordination mechanism of the GSPC, including assistance in organising GSPC Liaison Group meetings;
- Translations of the GSPC brochure into major world languages;

In October 2005 the 1st Conference of the GPPC was held in Dublin, Ireland to discuss GSPC progress (Proceedings of the conference on www.botanicgardens.ie). The GPPC has also helped with the in-depth review of the GSPC in 2008; in the preparation of this Plant Conservation Report and will be available to contribute to discussions on options for the GSPC post 2010.

The Global Partnership for Plant Conservation

The Global Strategy for Plant Conservation (GSPC) was adopted by the Convention on Biological Diversity in April 2002. The objective of the GSPC is to halt the current and continuing loss of plant diversity. The GSPC includes 16 outcome-orientated targets to be achieved by 2010.

The Global Partnership for Plant Conservation (GPPC) is a voluntary initiative that brings together international, regional and national organizations in order to contribute to the implementation of the GSPC. The GPPC was launched on Friday 13th February 2004 during the 7th CBD COP meeting in Kuala Lumpur, Malaysia.

Aims of the Partnership

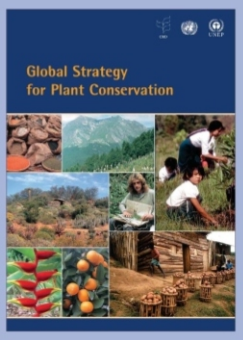
The partnership provides a framework to bring together existing initiatives for plant conservation, allowing gaps to be identified and promoting mobilization of the necessary resources

Founding members of the Partnership

- BioNET INTERNATIONAL
- Botanic Gardens Conservation International (BGCI)
- Earthwatch
- Fauna and Flora International (FFI)
- Food and Agriculture Organization of the United Nations (FAO)
- Global Biodiversity Information Facility (GBIF)
- Global Invasive Species Programme (GISP)
- International Plant Genetic Resources Institute (IPGRI)
- IUCN - The World Conservation Union - Species Survival Commission
- King's Park and Botanic Gardens, Australia
- Missouri Botanical Garden, St Louis, U.S.A.
- South African National Biodiversity Institute, South Africa (SANBI)
- People and Plants International (PPI)
- Plantlife International
- Planta Europa
- Royal Botanic Gardens, Kew, U.K.
- Royal Botanic Garden, Edinburgh, U.K.
- Smithsonian Institution Natural History Museum, Washington D.C., U.S.A.
- UNEP World Conservation Monitoring Centre (UNEP-WCMC)
- World Agroforestry Centre (ICRAF)
- WWF International (WWF)

National dimensions

A major objective of the Partnership is to provide practical assistance, support and technical guidance for national implementation of the GSPC. Relevant organisations are invited to participate in and support the work of the Partnership at all levels. Please contact the GPPC Secretariat for further information.



Activities of the Partnership

Activities supported or organized by the Partnership have included

- Support for development of national plant conservation strategies;
- Regional training courses for plant conservation;
- Development of GSPC-related 2010 targets at national and other levels (e.g. for botanic gardens);
- Undertaking plant conservation assessments at national, regional and global levels;
- Defining criteria for identifying important areas for plant diversity;
- Developing proposals at national and regional level for conservation and sustainable use of threatened plant species and their habitats;
- Work towards completing a working list of all known plant species;
- Establishment of networks;
- Public awareness and education initiatives;
- Translations of the GSPC brochure, (Chinese, French, Russian, Spanish).

Since its establishment, the members of the Partnership have also assisted in the implementation of the Global Strategy for Plant Conservation through their own programmes.

A Secretariat for the Partnership is being hosted by Botanic Gardens Conservation International (BGCI), and is supported by HSBC through the Investing in Nature programme.

Website: www.plants2010.org

Contact:
Peter Wyse Jackson, Interim Chair, GPPC, peter.wysejackson@bgci.org;
Stella Simiyu, BGCI/GSPC Programme Officer, stella.simiyu@biodiv.org;
Suzanne Sharrock, BGCI/GPPC Secretariat, suzanne.sharrock@bgci.org

Annex 1

SBSTTA 12 Recommendation XII/2. In-depth review of the implementation of the Global Strategy for Plant Conservation

1. The Subsidiary Body on Scientific, Technical and Technological Advice in its consideration of the in depth review of the implementation of the Global Strategy for Plant Conservation, based on background documentation, expert inputs and scientific dialogue, brings the following key messages to the attention of the Conference of the Parties at its ninth meeting:

(a) In general, the Global Strategy has provided a useful framework to harmonize and bring together various initiatives and programmes in plant conservation at both the national and regional levels;

(b) The Global Strategy has been notably successful in stimulating the engagement of the botanical and plant conservation communities in the work of the Convention, through, inter alia, the establishment of national, regional and global networks, including in particular the Global Partnership for Plant Conservation, launched at the seventh meeting of the Conference of Parties to the Convention;

(c) The Millennium Ecosystem Assessment provide a further rationale for implementing the Strategy, including at the national level, with a view to securing plant resources and their provisioning services and allowing communities to continue to derive benefits from plant diversity, especially for food, medicines, fuel, fibre, wood and other uses;

(d) The national implementation of the Strategy provides opportunities for addressing the Millennium Development Goals especially poverty reduction (goal 1), the health crisis (goal 6) and environmental sustainability (goal 7);

(e) There has been progress in achieving targets diversity of crops and other major socioeconomically valuable plant species conserved, and associated indigenous and local knowledge maintained), 11 (No species of wild flora endangered by international trade), 14 (The importance of plant diversity and the need for its conservation incorporated into communication, educational and publicawareness programmes);

(f) However, limited progress was made with respect to the targets 1 (A widely accessible working list of known plant species, as a step towards a complete world flora), 2 (A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels), 4 (At least 10 per cent of each of the world's ecological regions effectively conserved), 6 (At least 30 per cent of production lands managed consistent with the conservation of plant diversity), 10 (Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems), and 12 (30 per cent of plant-based products derived from sources that are sustainably managed) and 15 (The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy);

(g) There are some gaps in achieving target 3 (Development of models with protocols for plant conservation and sustainable use, based on research and practical experience) especially in relation to the development of tools and protocols for the targets of the Strategy whose progress is limited;

(h) Efforts to achieve target 7 (60 per cent of the world's threatened species conserved in situ) have

been constrained by limited progress in achieving target 2, as target 7 is dependent on the base line data generated under target 2;

(i) Constraints to the national implementation of the Global Strategy include limited institutional integration, lack of mainstreaming, and level, lack of taxonomic capacity, lack of data (taxonomy, biology and conservation), tools and technologies, limited sectoral collaboration and coordination, and limited financial and human resources;

(j) The emerging issues of the global environmental change, namely, the impact of climate change and nutrient loading can be addressed through the achievement of the existing targets.

2. The Subsidiary Body on Scientific, Technical and Technological Advice recommends that the Conference of the Parties at its ninth meeting:

a) Urges Parties that have not yet done so, to:

(i) Nominate focal points for the Strategy;
(ii) Develop national and/or regional strategies for plant conservation with targets as appropriate, within the context of national biodiversity strategies and action plans and other relevant national and regional policies and action plans, as part of broader plans to achieve the 2010 biodiversity target and the relevant Millennium Development Goals;

(b) Recommends Parties, other Governments and relevant organizations to consider:

(i) Activities for achieving enhanced implementation of the Strategy, in particular its targets 1, 2, 3, 4, 6, 7, 10, 12 and 15;
(ii) Providing as appropriate additional information on the progress made towards achieving the targets of the Strategy, including quantitative data and information from other sectors and processes such as in forestry and agriculture, in order to strengthen future reviews of the implementation of the Strategy;

(c) Considers the further development of the Strategy beyond 2010 including a review of the current targets. Such consideration should be carried out in the broader context of the Strategic Plan, within the further development of the Convention beyond 2010, taking into account national priorities, capacities and differences in plant diversity between countries;

(d) Requests the Executive Secretary, in collaboration with the Global Partnership for Plant Conservation and other relevant organizations:

(i) To develop a toolkit, in pursuance of paragraph 7 of decision VII/10 of the Conference of the Parties, that describes inter alia tools and experiences that can help enhance national, subregional and regional implementation of the Strategy. The toolkit should be made available in all the United Nations languages in both electronic and printed form, with the option of making the electronic version interactive in the long term;

(ii) To facilitate the development of capacity-building, technology transfer, and financial support programmes to assist developing countries, in particular least developed countries, small island developing States, and countries with economies in transition to

effectively implement or to achieve enhanced implementation of the Strategy;

(iii) To identify regional tools for the exchange of information and capacity-building;

(e) Expresses appreciation to Botanic Gardens Conservation International for the secondment of a Programme Officer to the Secretariat of the Convention on biological to support the implementation of the Strategy.

3. The Subsidiary Body on Scientific, Technical and Technological Advice requests the Executive Secretary to develop by the ninth meeting of the Conference of the Parties, in collaboration with the Global Partnership for Plant Conservation, UNEP-World Conservation Monitoring Centre and relevant organizations, and taking into account contributions from Parties, other Governments and relevant stakeholders, a "Plant Conservation Report" that could provide inputs to the third edition of the Global Biodiversity Outlook and serve as a communication and awareness-raising tool on the implementation of the Strategy.