
EuroGard V
Botanic Gardens in the Age of Climate Change

# EuroGard 5

**The congress unanimously adopted the following Resolutions**

General Resolution (1/4)
Recognising that the Global Strategy for Plant Conservation, the European Plant Conservation Strategy, and the European Commission's Biodiversity Action Plan provide an excellent framework for Botanic Gardens' activities in strategic and practical contributions to plant conservation, the Congress urges Botanic Gardens to:

- continue to contribute to the implementation of the Strategies, taking into account new challenges, to the best of their abilities; and
- contribute to the process of updating the Global Strategy for Plant Conservation and taking forwards the revised targets post-2010.

General Resolution (2/4)
Recognising that there is a wide range of research institutions generating, recording, communicating, and utilising knowledge relevant to the management of plant resources in the era of climate change, the Congress resolves to:

- develop further collaboration and networking between such institutions and Botanic Gardens in support of the targets of the Global Strategy for Plant Conservation.

General Resolution (3/4)
Recognising the importance that Botanic Gardens need to place in managing their collections in accordance with the articles covering Access and Benefit Sharing under the Convention on Biological Diversity, the Congress recommends that Botanic Gardens:

- make use of systems compliant with the principles of Access and Benefit Sharing, such as the International Plant Exchange Network (IPEN), in the exchange of materials between institutions.

General Resolution (4/4)
Recognising the current and increasing threat of and impacts on biodiversity as a result of climate change, the Congress recommends that Botanic Gardens:

- assess the risk of plants in their collections becoming invasive;
- share information on their experience of invasive organisms;
- develop and implement guidelines, Codes of Conduct, and appropriate practices to prevent the spread of alien species; and

- undertake research on the spread, control, management and risks posed by invasive alien species.

Resolutions on Congress Theme 1 'Biological theory in *ex situ* conservation'
The Congress recognises that an understanding of biological theory and rigorous scientific practice are of fundamental importance to effective *ex situ* conservation action. Furthermore, the Congress notes that scientific knowledge required to guide the practice of plant conservation must focus on all levels of diversity, including genotypes, species, and plant communities.

The Congress urges botanic gardens and other biological institutions to:

- build their capacity to ensure that all *ex situ* conservation programmes are based on the best available scientific knowledge;
- put in place procedures to evaluate all *ex situ* conservation programmes against the latest scientific guidance and advice;
- share knowledge with other institutions involved in *ex situ* conservation, thereby helping institutions with limited scientific resources to base their conservation programmes on the best available scientific guidance and expertise.

Resolutions on Congress Theme 2 'Linking *ex situ* conservation with *in situ* conservation'
The Congress acknowledges and welcomes the close and developing links between the practices of *ex situ* and *in situ* conservation, recognising, amongst other roles, the importance of *ex situ* conservation programmes in providing refuge for germplasm needed for *in situ* species recovery, habitat restoration and management, and eventual assisted migration of species in the face of climate change. Furthermore, the Congress recognises that the practice of *ex situ* conservation is a broadly based discipline involving a wide range of institutions and approaches, including seed banks and living collections and other forms of germplasm storage and management.

The Congress urges Botanic Gardens to link their *ex situ* conservation programmes wherever possible to local *in situ* conservation efforts. It encourages Botanic Gardens to engage effectively with national and regional authorities managing *in situ* conservation, particularly protected area managers, as well as policy and decision makers. The Congress recommends that botanic gardens seek to have their roles in supporting integrated (*ex situ* and *in situ*) conservation recognised and acknowledged in National Biodiversity Strategies and Action Plans.

Recognising the importance of both *ex situ* and *in situ* approaches as complementary actions towards the sustainable, long-term conservation of plant diversity, the Congress resolves to:

- establish close working relationships with all relevant stakeholders to ensure effective, integrated conservation for plants, especially where such measures can contribute to the management and restoration of protected areas.

Resolutions on Congress Theme 3 'Botanic Garden horticulture as a resource in *ex situ* conservation'

Acknowledging that Botanic Gardens are unique centres maintaining a wealth of horticultural information and expertise on how to collect, preserve, manage, and establish plants, the Congress recommends that:

- such information should be well documented and made widely available with detailed manuals, guidelines, protocols, and standards in order to actively promote conservation projects in partnership with all other relevant institutions and agencies including the agricultural sector; and that
- Botanic Gardens ensure the maintenance of the highest possible standards, delivering plants that are fit for purpose and have conservation value.

Resolutions on Congress Theme 4 'Botanic Gardens' conservation work in the age of climate change'

Recognising the vital importance of sharing and communicating knowledge and experience in dealing with the current and future effects of Climate Change, including practical experience and adaptation measures, the Congress:

- resolves that networking and practical knowledge sharing between BGs, as well as the general public, is essential; and
- recommends the use of electronic solutions for distributing materials for furthering this understanding and developing practical measures, while also emphasising the importance of ensuring permanency of such publications, including on-line Indices Seminum

Recognising the importance of the work done by the Botanic Garden community, the Congress encourages all Botanic Gardens to:

- urgently review their collections to maximise their quality and utility for conservation purposes; and
- declare their willingness to continue the work that remains to be done on conserving the World's flora, and to take every opportunity to seek financial support for their work.

Recognising the urgency and importance of the need to address the causes of the continuing loss in plant diversity, especially in an era of Climate Change, the Congress:

- encourages Botanic Gardens to actively participate in discussions with decision-makers, and to take every opportunity to ensure that the primary importance of plant conservation is well-understood by this sector; and
- urges Botanic Gardens to look to curbing their Carbon Footprint through revision of their own activities in this respect.

Resolutions on Congress Theme 5 'The Global and European strategies for plant conservation: how beyond 2010?'

Recognising the value of the Global Strategy for Plant Conservation as a roadmap for guiding plant conservation activities, the Congress welcomes the work of the Global Partnership for Plant Conservation and the Secretariat of the Convention on Biological Diversity in reviewing and developing the Strategy beyond 2010, and resolves to:

- submit the resolutions of the Congress, where appropriate, and the consolidated conclusions from the workshops (contained in Annex 1), to the continuing on-line consultation being run by the Secretariat of the Convention on Biological Diversity.

Resolutions on the European Botanic Gardens Consortium

The EuroGard Congress welcomes the ongoing valuable support and guidance that is provided by the European Botanic Gardens Consortium, and recognises the important role it provides in supporting and guiding networking, linkages, and practical action amongst European botanic gardens, particularly in the field of plant conservation.

The Congress acknowledges the recent adoption by the Consortium of new Terms of Reference that recognise its role as a representative body for European botanic gardens. It also thanks Botanic Gardens Conservation International (BGCI) for its continued support in providing a secretariat for the Consortium.

Thanks to the host, organisers, and sponsors

The Congress congratulated and thanked the Botanic Garden of the University of Helsinki and Finnish Museum of Natural History for their outstanding and generous support of the European botanic gardens in hosting and organising the EuroGard V Congress.

Furthermore, the Congress congratulated the University of Helsinki on the inauguration of the new Botanic Garden in Kumpula, which they noted was being managed to the highest scientific standards.

The Congress acknowledges the important role played by the staff of Helsinki University Botanic Garden and the members of the European Botanic Gardens Consortium for their work in supporting the programme of the Congress and for contributing to so many aspects of its organisation.

The Congress also expresses its grateful thanks to all the sponsors of the Congress, in particular the Ministry of the Environment, who have provided such generous financial and other forms of support.

EuroGard V Resolutions, Annex 1: Conclusions of Workshops
(edited and abridged by Leif Schulman, Chair of Scientific Committee)

Seven workshops were organised during the congress. Each of them related to one (or a part of one) target of the Global Strategy for Plant Conservation. The goals of each workshop were to

a. collate further information on the extent to which the current target has been achieved,

b. make suggestions on how the target might be framed for the period following the year 2010, and
c. list means by which achieving the target could be facilitated and make other notes and recommendations concerning the target.

This Annex to the resolutions of EuroGard V - Fifth European Botanic Gardens Congress summarizes the outcome of the seven workshops.

Workshop 1: Conservation and sustainable use - how can Botanic Gardens and their collaborators contribute to the achievement of GSPC target 3? (organiser and chair Michael Kiehn)
This workshop related to Target 3 of the Global Strategy for Plant Conservation: *Development of models with protocols for plant conservation and sustainable use, based on research and practical experience.*

a) The workshop noted that gaps in relation to successfully achieving Target 3 include:

- specific target-related communication strategies
- sustainability of finances and personnel for maintenance of *ex situ* collections
- need to secure existing inter-institutional collaboration, particularly in relation to threatened species, geographical regions, and relevant methodologies
- further development of guidelines for management of *ex situ* plant populations and collections focussed on genetic diversity, horticultural practices, and their use in recovery restoration and other *in situ* conservation practices
- monitoring of limiting factors *in situ* related to threatened species as a basis for *ex situ* activities
- lack of procedures in addressing the drivers of the loss of biodiversity derived from the results of research on plant conservation (such as poverty, trade policies, over-population, climate change, infrastructure development, the economic crisis, and human conflicts)

b) The workshop suggested that in the next phase of the Global Strategy this target could read as follows: **Development and effective sharing of information, advice, and guidance for plant conservation and sustainable use, based on research and practical experience.**

c) The workshop concluded that:

- Target 3 is a cross-cutting target that relates to all the targets of the GSPC. As such it is very broadly based and needs to address issues in all aspects of plant conservation.
- The approach to achieving Target 3 should be to consider research needs holistically, addressing all aspects of conservation research and sustainable use of plant resources.
- Target 3 provides the framework for gap analyses to identify research and guidance priorities for the implementation of each target of the GSPC. Such gap analyses should be undertaken.

- Climate change presents new challenges for the GSPC. Research will be needed to focus on many aspects of the responses of individual populations, species, communities, and ecosystems to the new conditions as a result of climate change. Greater resources and focus on conservation biology research will be needed during the coming decade.
- It is recommendable that biological research institutions make new efforts to align their research priorities towards the achievement of the objectives of the GSPC contributing especially through the framework provided by Target 3.
- Target 3 is difficult to monitor and to evaluate it as it stands now.
    - There is concern that 'development' may imply a lower base of information in relation to plant conservation than may exist. Adding the word 'further' might clarify this.
    - The replacement of the term 'models with protocols' by 'information, advice and guidance' would be welcome.
    - In order to streamline the effectiveness and progress it is crucial to develop toolkits and milestones for monitoring. Good practice examples useful for a toolkit were identified during the workshop; it was noted that the proceedings of this conference will provide extremely important and useful contributions, guidance, and models towards this end.

Workshop 2: Encouraging and enabling seed conservation in botanic gardens. (organiser and chair Paul Smith)
This workshop related to the first part of Target 8 of the Global Strategy for Plant Conservation: *60 per cent of threatened plant species in accessible ex situ collections, preferably in the country of origin…*

a) The workshop noted that impediments to achieving Target 8 include:

- Lack of IUCN ratings (Target 2)
- Politics, mandate, bureaucracy (permits, ABS issues)
- Quality of existing collections (compromised conservation value)
- Loss of collections; accessibility of collections
- Technical aspects and lack of expertise (e.g., lack of propagation and management protocols)
- Lack of resources and funding

b) The workshop suggested that in the next phase of the Global Strategy this target could read as follows: **Adequate genetic diversity of at least 60% of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, and at least 10% of them included in recovery and restoration programmes.** It was also suggested that the Terms and technical rationale should include the note that 'threatened species' include all Red Data List criteria apart from Least Concern.

c) The workshop concluded that

- *ex situ* conservation needs to follow best practice

    - the conservation of genetic diversity is imperative (sampling: multiple collections per species)
    - comprehensive data gathering in connection with sampling is imperative (population, habitat, climate, soil, geology etc. data)
    - national, regional, and international networks valuable for sharing training and experience, for collaboration in research, and for exchange and duplication of collections
- a toolkit to facilitate achievement of Target 8 should include
    - a register of seed banks, living plant collections, in vitro collections, spore banks etc.
    - databases of existing and available collections, publications etc.
    - materials and databases of best practice methodologies and protocols including propagation, horticultural management, treatment of recalcitrant species etc.
    - a register of key contacts and institutions carrying out world class research in conservation genetics, seed biology, biotechnology etc.
    - training prospectuses, availability of courses
    - models for ABS implementation
    - key contacts for leading practitioners, GSPC focal points, CHMs
    - education and public awareness resources, examples

Workshop 3: How can botanic gardens and seed banks strengthen their contribution to ecological restoration? (Organisers and chairs Kate Hardwick and Suzanne Sharrock)
This workshop related to the second part of Target 8 of the Global Strategy for Plant Conservation: *…and 10 per cent of them included in recovery and restoration programmes.*

a) The workshop noted that

- many botanic gardens are already involved in basic and applied research relevant to ecological restoration;
- there is a need to better record and share relevant information – such as practical horticultural techniques;
- there is a need to increase linkages with other stakeholders and organisations, such as the Society for Ecological Restoration;
- relatively small changes or re-focusing of research could provide great benefits for restoration programmes;
- there are many 'services' botanic gardens can provide to support ecological restoration programmes. These include providing:
    - glasshouses for growing plants
    - advice, training and research on reproduction biology, propagation, cultivation etc.
    - natural areas within their boundaries for trial plots
    - demonstration and awareness raising activities
    - restoration service 'hubs' for the local community

b) The workshop suggested that in the next phase of the Global Strategy this target could read as follows: **60% of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, and at least 10% of them included in recovery and restoration programmes** because the questions arose whether 60% is achievable for mega-diverse countries and whether enough emphasis has been put into restoration and recovery programmes.

The workshop also made suggestions for Targets 4 and 7 that they could read as follows: **At least 10 per cent of each of the world's ecological regions, including marine areas, effectively conserved** (Target 4); and **At least 60% of threatened species conserved *in situ*** (Target 7).

c) The workshop concluded that

- the proposed action plan for botanic gardens in restoration should be further developed and used as a basis to guide the involvement of botanic gardens in restoration work;
- existing databases, such as BGCI's PlantSearch and GardenSearch, should be developed to support restoration work and botanic gardens should contribute to these databases;
- GardenSearch provides the basis for a register of botanic garden research interests, skills and expertise and PlantSearch could be developed to include species-based propagation data;
- botanic gardens should be encouraged to refocus their collecting and research activities to support restoration work;
- botanic gardens should operate as active seed repositories for restoration of local habitats;
- botanic gardens should develop demonstration sites and support capacity building for local practitioners;
- new and innovative ways of exchanging information should be further investigated, such as the use of database portals, e.g. DeventIT Thematis (www.thematis.nl/botanicportal/).

Workshop 4: Managing the invasive alien plants problem (organiser and chair Matthew Jebb)
This workshop related to Target 10 of the Global Strategy for Plant Conservation: *Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems.*

a) The workshop noted that:

- The role of Botanic Gardens as a network for sharing and identifying future regional or national threats regarding Invasive Alien Species through horizon scanning is central, and this should be more widely recognised.
- The Botanic Gardens posses invaluable expertise in assessing potential invasive species, and this should be more widely recognised.

b) The workshop suggested that in the next phase of the Global Strategy this target could include the following: **Develop mechanisms to identify currently invasive species, to predict and anticipate future invasions and to take appropriate actions to control or limit them at a national and regional level as appropriate.**

c) The workshop concluded that as part of achieving the target of the Global Strategy, the following actions are imperative:

- compile national/regional lists of areas that have been identified, in climate change projections, as being most susceptible to invasion by alien species, and of the species that pose a threat to these and other areas
- involve the horticultural sector, societies, and groups
- encourage all parties to develop, and/or adopt, Codes of Conduct with regard to Invasive Alien Species

Workshop 5: Botanic gardens and their contribution to Target 14 of the Global Strategy for Plant Conservation: How can we be more effective? (organiser and chair Julia Willison)
This workshop related to Target 14 of the Global Strategy for Plant Conservation: *The importance of plant diversity and the need for its conservation incorporated into communication, educational and public -awareness programmes.*

a) The workshop noted that

- botanic gardens, through their work in communication, education, and public awareness (CEPA), are very active in delivering Target 14, although there has been less emphasis on CEPA in the implementation of other targets of the Global Strategy for Plant Conservation, in particular Targets 6, 10, and 11.

b) The workshop suggested that in the next phase of the Global Strategy this target could still read **The importance of plant diversity and the need for its conservation incorporated into communication, educational and public -awareness programmes** but pointed out that for the successful implementation of Target 14 it needs to be incorporated into all targets.

c) The workshop concluded that

- Examples are needed of how botanic gardens are using CEPA to support the implementation of the different targets of the GSPC. It is recommended that a toolkit of case studies is prepared to inform botanic gardens.
- Many botanic garden staff feel they are overstretched in their work. As such, to effectively deliver CEPA through all areas of the GSPC more human resources are required. This could be through the use of volunteers.
- The Internet is a very effective way of delivering messages and interacting with a very large number of people. Botanic gardens need to use this resource more to increase their impact in CEPA.
- Botanic gardens have been successful in developing model protocols for plant conservation and sustainable use (Target 3). It is recommended that relevant

protocols be re-packaged for less scientific target audiences involved in conservation, such as local communities.

- The loss of horticultural and ethnobotanical knowledge was noted as a concern. Much of this knowledge is not written down and is disappearing from institutions when staff leave or retire. There is a need to find a system to collect this information and make it available to as wide an audience as possible, possibly through the homepage.
- Botanic gardens have played a role in introducing alien invasive species into countries around the world. As such, they have a responsibility to educate and inform the public about the conservation issues associated with growing such species.
- Most staff members of botanic gardens interact with the public on some level, for example through lectures, demonstrations, discussions, etc. There is a need to provide communication training for scientific staff to ensure they effectively communicate the garden's messages. There is also a need to make botanic garden staff more accessible to the public.

Workshop 6: Reconciling *in situ* and *ex situ* conservation through networking among protected areas management, botanic gardens, non-governmental organisations, and other actors (organisers Susanna Lehvävirta, Leif Schulman, and chair Kari Lahti; chair Susanna Lehvävirta)
This workshop related to the first part of Target 16 of the Global Strategy for Plant Conservation: *Networks for plant conservation activities established…*

a) The workshop noted that

- good networks exist among *in situ* actors on one hand, and among *ex situ* actors on the other hand, but linkages between these should be strengthened
- climate change accelerates and causes bioclimatic conditions to move faster than most plants are able to migrate; this leads to local and even global extinctions unless the migration of plants is assisted
- assisted migration (and relocation), however, is a controversial and sensitive issue

b) The workshop suggested that in the next phase of the Global Strategy this target could read as follows: **Networks for plant conservation activities established, or strengthened, and interconnected at national, regional, and international levels, taking into account the challenges posed by climate change.**

The workshop also suggested that Targets 8 could read as follows: **At least 60% of threatened plant species in accessible *ex situ* collections, preferably in the country of origin and under the projected suitable climatic conditions, and at least 20% of the threatened species included in recovery and restoration programmes that account for changes in the climate.**

c) The workshop concluded that

- existing plant conservation networks should be developed towards more active and tangible work in the area of combining *in situ* and *ex situ* conservation; an active, well-known, and visible network including protected areas and *ex situ* conservation institutions would be desirable
    - themes that can combine protected areas and botanic gardens or other *ex situ* institutions include climate change, land conversion and restoration, and education
    - this kind of a plant conservation network could learn from the networks among zoos
- to support the delivery of Target 16 it is recommendable that the European Botanic Gardens Consortium works together with other organisations such as National protected area agencies, Europarc, Eurosite, and the Planta Europa network specifically for considering assisted migration

Workshop 7: Gardens in peril (organiser and chair Bert van den Wollenberg)
This workshop related to the second part of Target 16 of the Global Strategy for Plant Conservation: *Networks … strengthened at national, regional and international levels* with special reference to the development and strengthening of botanic gardens under threat, such as budget cuts or close-down.

The workshop concluded that

- botanic gardens are best positioned if they safe-guard their existence proactively ('pre-problem phase') instead of as a response to imminent threat ('problem phase')
- botanic gardens enjoy public support; this can be used to motivate their continued existence instead of close-down
- the total network of botanic gardens covers many gardens, but the constituting gardens should focus on complementarity rather than duplication
    - smaller gardens should consider specializing in a certain role rather than striving to cover all aspects of the activities of large gardens
- national obligations coming from the Convention on Biological Diversity and from the Global Strategy for Plant Conservation can and should be used as arguments supporting the existence of any botanic garden
    - the ex-situ maintenance of threatened plants is of significant importance
- the value of any plant collection is only partly based on the plants: the information and expertise about the plants are of equal importance
- one role of national and international networks of botanic gardens is that they can support individual gardens under threat at least morally
    - individual gardens are better off if they get involved in and contribute to such network as part of their routine activities

**Additional resources:**

Conference Proceedings: *Biodiversity and Conservation Volume 20, Issue 2, February 2011.* Special issue: EuroGard V: Botanic Gardens in the age of climate change – guest edited by Leif Schulman.

EuroGard V: Botanic Gardens in the age of climate change (Supplementary Proceedings)