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CONSERVEPLANTS – A NEWLY ESTABLISHED NETWORK FOR THE CONSERVATION OF EUROPEAN THREATENED PLANTS

A REGIONAL CONTRIBUTION TO GSPC IMPLEMENTATION



ConservePlants MC and working group meeting in Průhonice, Czech Republic in February 2020. (Martin Senič)

Target 2:

An assessment of the conservation status of all known plant species, as far as possible, to guide conservation action

Target 3:

Information, research and associated outputs, and methods necessary to implement the Strategy developed and shared

Target 4:

At least 15 per cent of each ecological region or vegetation type secured through effective management and/or restoration

Target 5:

At least 75 per cent of the most important areas for plant diversity of each ecological region protected with effective management in place for conserving plants and their genetic diversity.

Target 8:

At least 75 per cent of threatened plant species in ex situ collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programmes

Target 9:

70 per cent of the genetic diversity of crops including their wild relatives and other socio-economically valuable plant species conserved, while respecting, preserving and maintaining associated indigenous and local knowledge

Target 14:

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

Target 15:

The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy

Target 16:

Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy



Pannonian drylands as important habitat of threatened plants, displayed in the Botanic Garden of Vienna, Austria. (Rudolf Hromniak)

Despite the high goals set by conservationists to protect the native European flora, conservation initiatives for threatened species in Europe have not yielded the desired results. One of the major challenges is the large difference between regions and countries within regions in terms of financial resources, equipment and technical knowledge available for plant conservation.

To overcome this obstacle, a set of motivated researchers and conservationists developed a framework to gather information, share and discuss ideas and obstacles, and train experts to promote plant conservation across the European continent. This is how the COST Action network “ConservePlants” (COST Action) was born.

Already embracing 38 countries in Europe and beyond, the network is still growing, providing tools and funds to connect and support conservation practitioners, scientists, and other stakeholders. More specifically, ConservePlants is organising meetings, workshops, conference sessions, training schools, short research visits, and dissemination events. By concentrating on the gathering, synthesis and dissemination of knowledge and information as well as on connecting and training staff amongst countries, ConservePlants is essentially implementing GSPC targets 3, 14, 15 and 16. The network is structured into five thematic working groups, which develop programmes to tackle specific challenges in plant conservation related to the various targets of the GSPC:

WG1: Improving knowledge in plant species biology for appropriate *in situ* conservation. Plant conservation actions crucially depend on in-depth knowledge of the biology, ecology and population dynamics of the target species; however, this information is often not available for local conservation interventions. In this WG, we aim to collect relevant information for the *in situ* conservation of European threatened plants and to make this information publicly available to improve the knowledge transfer to conservation practitioners. In collaboration with WG2 and WG4, we will moreover evaluate the efforts and success of conservation actions across Europe and identify successful strategies and geographic areas in need for further support. With this, we strongly contribute to Target 7 of the GSPC, which aims to an effective *in situ* conservation of threatened species.

The compiled data will also be used to evaluate the value of biological traits and key ‘mutualist’ or ‘antagonist’ interactions as well as the role of global change drivers or biological invasions. By this, we will provide guidelines for a wider use of these data in practical conservation, thus contributing to Targets 2, 3, 4 of the GSPC.

WG2: Sharing knowledge and experience in *ex situ* plant conservation. *Ex situ* conservation is at some point indispensable for preventing extinction of many plant species, but progress is hampered by a) insufficient awareness of the potential of *ex situ* conservation practices by stakeholders, b) unclear quality and coverage of *ex situ* collections c) lack of synthesized, up-to-date protocols and d) lack of understanding of the cornerstones of reintroduction success. In this working group, we focus on fostering the network, knowledge accumulation, dissemination and implementation of *ex situ* conservation practices such as seed banking and cryopreservation, plant conservation translocations and an integrated approach of *ex situ* and *in situ* conservation techniques. More specifically, we will analyse the added value of the *ex situ* approach in *in situ* conservation, gather information on the coverage and utilization of *ex situ* seed bank collections, and review the potential and implementation of conservation translocation strategies such as reintroductions, reinforcements, and assisted migrations. By this, we are contributing to the fulfilment of the targets 3, 8 and 9 of the GSPC.



*Conservation translocations are key instruments of threatened species recovery. An example of a reintroduction of the rare *Prunella laciniata* in the Swiss Jura mountains. (Sarah Bürlì)*

WG3: Filling the gaps in plant

conservation. A major gap in plant conservation is the still existing lack of data on the conservation status of European plant species, especially in biodiversity hotspots as the Balkan Peninsula. An additional problem, notably for conservation actions across national borders, is the inconsistency between Red List criteria and evaluation protocols in different countries. A brief review of the IUCN assessment reveals a geographical inequality, largely neglecting species-rich Southeast Europe.

Also, large differences exist between regions and countries in terms of financial resources, human expertise, or funding programs for conservation measures *in situ* and *ex situ*. Based on an in-depth data collection and evaluation of the status-quo, this working group will help to harmonize conservation status, evaluation procedures, and protocols across countries and identify inconsistencies and gaps in protection of species. With this information, we will develop tools for capacity building and coherent strategies in plant conservation across Europe. These activities are a contribution to Target 2, but also Target 3 and 5 of the GSPC.

WG4: Human dimension in plant

conservation. Raising the awareness of the precarious situation of endangered plants as well as their usefulness for human well being is a central strategy in outreach targeted projects (see e.g. BigPicnic by BGCI) and is also well rooted in the GSPC in Target 14. WG4 strives to collect and disseminate information about best practices in raising awareness of plant conservation amongst the public. To do so, we are compiling scientific evidence on the economic value of endangered plant species and their role in supporting local livelihoods in Europe, but also on the actual effects on their conservation status. By including a list of possible funding bodies and donors, we hope to activate private and institutional practitioners to promote sustainable strategies in species conservation. We also aim to promote citizen science by evaluating initiatives in their success in reaching the general public and in supporting specific conservation aims. The communication of the beauty, ecology and importance of rare and endangered plants to a general public is very much connected with the mission and vision



*Pollinators as key mutualists for threatened plants. An example of scientific work on the pollination of the endangered *Dracocephalum austriacum*. (Silvia Castro)*

of botanic gardens. The results of our work may hence be of great importance for the botanic garden community.

WG5: Genomic approaches in plant

conservation. Genomic approaches are an increasingly utilized tool in informing and refining species conservation strategies and conservation practice (Hoban *et al.*, 2018). They are also central to the goal of conserving all relevant genetic diversity *in situ* and *ex situ*, as formulated in Targets 5 and 8 of the GSPC. To serve these goals, WG5 reviews approaches such as gene conservation unit selection, assisted migration and translocation by evaluating the contribution of genomics to their application and effectiveness. For instance, the sampling of a genetically representative amount of seeds is decisive for the establishment of *ex situ* collections and strongly depends on the genetic structure across populations. But also for *in situ* species conservation, state of the art technologies in mining plant genomes can harness conservation efforts by translating genomic particularities into practical plant conservation programmes. A particular focus will be on the relationship between the number of samples and genetic diversity as well as on the effectiveness of different sampling designs in capturing rare or site specific alleles.

ConservePlants is an open network, where any country, institution or person can take part (see COST rules). If you are interested in joining our network, please contact the authors or go to our website www.conserveplants.eu.

References

- BGCI: <https://www.bgci.org/our-work/projects-and-case-studies/bigpicnic/>
- COST Action: <https://www.cost.eu/cost-actions/what-are-cost-actions/>
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