HUSEEDBANK - Establishment of the Pannon Seed Bank for the long-term ex situ conservation of Hungarian vascular wild plants

LIFE08 NAT/H/000288

Project description Environmental issues Beneficiaries Administrative data Read more

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Project description:

Background

Approximately 2 200 wild vascular plant species occur in Hungary within the Pannonian biogeographical region – a region rich in biodiversity and endemic species. Since 2003, the country's complex nature conservation objectives have been determined by a national nature conservation master plan – part of the country's environmental programme. In-situ (on-site) conservation has received high attention, although it is becoming extremely important to establish the national basis for ex-situ (off-site) conservation as well.

At the same time, the (2006) EU Biodiversity Action Plan – and ensuing EU Biodiversity Strategy to 2020 – aim to identify and fill in critical gaps in the ex-situ conservation programmes for wild species. A proposed 'Pannon Seed Bank' for the long-term ex-situ conservation of Hungarian vascular wild plants would meet this requirement. Without the establishment of a seed bank some species and the richness of the Pannonian flora may be threatened by extinction.

Objectives

The main objective of the LIFE+ Biodiversity project, HUSEEDBANK, was to establish a Pannonian Sseed bank Bank for the long-term preservation of seeds of the wild vascular flora of the Pannonian biogeographical region to aid in-situ species' conservation activities. As well as providing increased security in the event of accidental loss or degradation of endangered rare species, the seed bank should provide additional opportunities for monitoring genetic changes in wild populations and material for habitat restoration activities. Additionally it would facilitate access to research and education material, and assist multidisciplinary studies on maintaining diversity and stability in plant associations.

Specifically, the HUSEEDBANK project aimed to:

- Establish storing and laboratory capacity for the Pannon Seed Bank at the Centre for Plant Diversity by expanding the current functions of the existing crop gene bank by using professional expertise, existing knowledge and infrastructure in a cost-effective way;
- Expand the existing functions of the existing agricultural gene bank at the research centre for agro botany (Tápiószele) of the central agricultural office by using professional expertise, existing knowledge and infrastructure (storage and laboratory capacity) in a cost-effective way;
- Collect and store by project end, approx. 50% of the Hungarian native flora (at least 800 species). A strategy and methodology would be developed for seed collection and storing of wild vascular plants, assessing the existing seed collection and ex-situ storage methodologies;
- Develop a computer-based information system for data management of the Pannonian Seed Bank;
- Establish storage capacity capacities for duplicates at two geographically different locations: in a mine in the Aggtelek National Park, and at the Institute of Ecology and botany Botany in Vácrátót;
- Select seed bank samples to be used for pilot reintroduction in a typical sand steppe community with priority habitats in the Kiskunság National Park, a Natura 2000 site; and
- Carry out an intensive communication programme targeting a professional audience, students, general public, stakeholders, political decision-makers and international experts.

Results

The HUSEEDBANK project achieved all its objectives. As planned, the LIFE team established the Pannon Seed Bank for the long-term preservation of seeds of the wild vascular flora of the Pannonian biogeographical region, through expanding the functions of the existing agricultural gene bank.

By the end of the project, the team had collected and stored seeds of 912 species, which was more than the originally expected 800 species (i.e. more than 50% of the Hungarian native flora). By 2014, some 800 species were processed (cleaned, documented, tested in germination etc); with an additional 112 species types processed in spring 2015. The majority of the species are those of nature conservation importance (204 protected species and 45 strictly protected species) and also Natura 2000, endemic and sub-endemic species; as well as species types of ecological and economic importance.

Thus, the project has effectively contributed to the objectives of the main European and global initiatives focusing on conservation of biodiversity. The team tested and proved that reintroduction of stored seeds is possible for habitat restoration. Many visitors were also attracted by the project's exhibitions and interactive and mobile educational tools (e.g. games).

An important innovative aspect of the project is that most of the species conserved by the Pannon Seed Bank were germinated in laboratory conditions for the first time, and germination protocols were developed for them. Appropriate methods for collection and adequate storage of endemic plant seeds were also

developed. Moreover, there had been only a few attempts so far, to use the seed bank material for species reintroduction. Finding the best ways of successful seeding, propagation and site management on former fields in the sand grassland habitats of Kiskunság National Park was another innovative element of the project.

Finally, this project is significant in that it was the first initiative in the Pannonian region to fill the knowledge and infrastructure gaps in this field, as prior to its launch, neither the seed bank establishment methodology, nor infrastructure for the ex-situ seed conservation of vascular wild plants of the biogeographical region existed. Best practices, outputs and lessons learnt from the project are now available and can be applied by other countries, especially neighbouring ones within the biogeographical region.

Further information on the project can be found in the project's layman report and After-LIFE Conservation Plan(see "Read more" section).

Top

Environmental issues addressed:

Themes

Species - Plants

Keywords

endangered species, conservation of genetic resources, biodiversity

Target EU Legislation

- Nature protection and Biodiversity
- Directive 92/43 - Conservation of natural habitats and of wild fauna and flora- Habitats Directiv ...
- Regulation 338/97 - Protection of species of wild fauna and flora by regulating trade therein - E ...
- COM(2011) 244 final “Our life insurance, our natural capital: an EU biodiversity strategy to 2020 ...

Target Habitat types

- 2340 - Pannonic inland dunes
- 6260 - Pannonic sand steppes

Natura 2000 sites

SCI HUKN20011 Fülöpházi homokbuckák

Top

Beneficiaries:

Coordinator	Research Centre for Agrobiodiversity
Type of organisation	Research institution
Description	The coordinating beneficiary is the Centre for Plant Diversity (formerly Research centre for agrobotany). The centre has been responsible for the collection and conservation of field and vegetable crop genetic resources for over 50 years and plays a central role in the conservation of agro-biodiversity in Hungary.
Partners	Institute of Ecology and Botany of the Hungarian Academy of Sciences, Hungary Aggtelek National Park Directorate, Hungary

Top

Administrative data:

Project reference	LIFE08 NAT/H/000288
Duration	01-JAN-2010 to 31-DEC -2014
Total budget	969,090.00 €
EU contribution	401,737.00 €
Project location	Kozep-Magyarorszag(Hungary Magyarország) Kozep-Dunantul(Hungary Magyarország) Nyugat-Dunantul(Hungary Magyarország) Del-Dunantul(Hungary Magyarország) Eszak-Magyarorszag(Hungary Magyarország) Eszak-Alfold(Hungary Magyarország) Del-Alfold(Hungary Magyarország) Extra-Regio(Hungary Magyarország) Associated Hungary (H)(Hungary Magyarország)

Top

Read more:

Project web site	Project's website
Publication: After-LIFE Communication Plan	Title: After-LIFE Communication Plan No of pages: 7

Publication: Layman report	Title: Layman report No of pages: 15
Publication: Layman report	Title: Layman report No of pages: 15
Publication: Technical report	Title: Project's Final technical report Year: 2015 Editor: Research Center for Agrobiodiversity No of pages: 72
Video link	Project's video (7')

Top

Project description Environmental issues Beneficiaries Administrative data
Read more