

# PROJECT

## Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites



## LAYMAN'S REPORT





Forests are among the most valuable natural resources of Bulgaria. Due to the country's geographic location between the Temperate and the Mediterranean climatic zones and the significant variations of altitude, Bulgarian forests host exceptional diversity of trees and other plant species.

Bulgarian forests are part of the European and World's natural heritage. In order to preserve some of the unique forest ecosystems hosting significant biodiversity for future generations, more than half of Bulgarian forests are now included in the European ecological network NATURA 2000.

Nowadays, forests are perceived mainly as a source of timber or place for recreation. However, the role of forests as a factor forming favorable environment for thousands of living organisms including mankind is of much greater importance. But above all, Bulgarian forests provide home for wildlife which is exactly the meaning of the term "habitat". Forests are home and their state to a great extent determines the biological diversity of our country as well as the state of our environment.

Forests in NATURA 2000 sites as well as those in other areas suffer from natural disasters or human negligence. Global climate change has led to intensification of extreme weather events such as severe storms, floods, droughts, etc. in recent decades. Forest fires, pest calamities and human activities are among the other factors of increasing negative influence on forest ecosystems. The lack of natural regeneration in some sensitive areas or the threat of further deterioration of the status of forest ecosystems calls for the implementation of initiatives and projects targeted at forest preservation and restoration. One of those initiatives is the project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites”.



Issued under project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites” implemented with the financial support of EC LIFE+ Programme.

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## PROJECT BRIEF



## PROJECT BENEFICIARIES



Project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites” is a joint initiative of Forest Seed Control Station – Sofia, Vitosha Initiative Group Association and the Executive Forest Agency implemented with the financial support of EC LIFE+ Programme.

The project aims at improving the conservation status of priority forest habitats in pilot areas and conserving the genetic fund of priority species and habitats from NATURA 2000 network in Bulgaria.

The Project has four overarching objectives:

- Conservation and restoration of deteriorated forest habitats with European importance (part of Bulgarian NATURA 2000 network);
- Conservation of the genetic fund for rare and protected species with European importance;
- Raise awareness of the local and general public on NATURA 2000 and the need to adapt forest management to climate change;
- Provide and exchange information on sustainable restoration methods and conservation management issues in the ecosystems concerned.

In order to achieve these objectives series of activities were planned and successfully implemented during the period September 2011 – June 2015.

The overall project budget is 589 602 EUR of which LIFE+ Programme contribution is 439 602 EUR (75%) and the rest is ensured as co-financing by project partners/beneficiaries.

Forest experts working in the system of the Executive Forestry Agency (EFA) and the state forestry enterprises hold the principle responsibility for management, protection and regeneration of Bulgarian forests. EFA took part in project preparation and implementation as an Associated Beneficiary and also ensured the main part of the necessary project co-financing.

Forest Seed Control Station – Sofia (FSCS-Sofia) is an EFA structure responsible for the preservation of forest genetic fund and ensuring high quality reproductive material for forest regeneration. FCS-Sofia was the main driving force for project development and was contracted as Coordinating Beneficiary for its implementation.

During the last decades non-governmental organizations played an increasingly active role in the protection, sustainable management and restoration of Bulgarian forests. Among those organizations is Vitosha Initiative Group Association (project Associated Beneficiary) that since 2007 implements joint projects for forest protection and restoration in cooperation with governmental institutions, non-governmental and scientific organizations, media and the business sector, independent experts and volunteers.

The key conservation activities of project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites” were implemented on the territory and with the support of the Southwest State Forest Enterprise and Sofia State Forestry Unit.



# MAIN PROJECT CHALLENGES



All initiatives for restoration of damaged forests implemented in Bulgaria during recent years faced numerous difficulties. One of the major problems was the lack of quality and certified reproductive material (such as seedlings or seeds) from the main forest species (trees and shrubs) constituting a certain type of forest. Natural forests or forest habitats usually comprise many different species where each of them plays important role in the forest ecosystem. For this reason if a valuable natural forest within NATURA 2000 site is damaged or destroyed it should be restored in way that is close to the natural regeneration processes in order to preserve its role and function.

Common forestry practices in Bulgaria however usually foresee the use of only one main tree species for forest restoration or regeneration after timber harvesting or other damages. As a result, the forest turns into artificial plantation constituting only one tree species of economic importance - the so called monoculture. The establishment of monocultures leads to decline of biodiversity, changes in ecosystems and environmental conditions. Furthermore, monocultures are more susceptible to attacks of pests and diseases or to damages of forest fires, strong winds, heavy snows, etc.

The origin of seeds/seedlings used in the process of forest restoration (geographical location, altitude, climate conditions) is also of great importance for the success of reforestation activities. The growing need to restore damaged forests within NATURA 2000 sites calls for the identification of sources of reproductive material of numerous forest species that until project start were not part of the seed production process in Bulgaria.

For this reason one of the main project activities is the identification of sources of reproductive material from the whole complex of tree and shrub species constituting natural forest ecosystems included in NATURA 2000 network. Most of these species are of no economic importance for timber production but play important role in forest ecosystems and are crucial for biodiversity conservation.

Until the project start, the lack of national gene bank for midterm

and long term storage of forest species seeds was another major problem for the conservation of forest biodiversity and forest restoration in Bulgaria.

Many tree species in our forests do not yield sufficient qualities of seeds every year and even when they do so, the seeds are not always viable or of good quality. That's why it is important to establish forest gene banks allowing the storage of seeds from numerous native forest species. The forest gene bank will provide for the longtime conservation of genetic resources and reducing the risk of biodiversity loss due to nature disturbances, climate change, etc. If necessary, stored seeds may be used for the production of seedlings and restoration of damaged forests not only within the NATURA 2000 network but in all Bulgarian forests.

The lack of information, know-how and capacity among foresters for the restoration of natural forest habitats in NATURA 2000 sites was another major challenge faced by project team.





# IMPLEMENTED ACTIVITIES AND ACHIEVED RESULTS



Project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites” was implemented in the period September 2011 – June 2015. Under the project the following main activities were carried out:

## 1. Analysis of threats and risk assessment for priority forest habitats

Completed activities include the collection and analysis of information on forest habitats damaged by nature disasters, GIS analysis and generation of maps as a basis for future management of priority habitats in Bulgarian forests. Based on this, the main future risks and threats for the favorable conservation status of priority forest habitats were identified and assessed including climate change, change of humidity and precipitation patterns, unsustainable forestry practices, etc. The final report from the implemented analysis is available at the project website.

## 2. Selection of damaged priority habitats within targeted NATURA 2000 zones and elaboration of Restoration program

Based on extensive consultations with foresters, experts and field visits, project team identified pilot areas for restoration of damaged forests on the territory of SFU Sofia with a total area of 40 ha. Following the requirements of Bulgarian legislation, a Restoration program was developed including detailed information and maps for all selected sites. Subsequently the document was submitted to and approved by all relevant institutions: Ministry of Environment and Water, Regional Inspectorate of Environment and Water – Sofia, and the Regional Forest Directorate – Sofia. The full text of the elaborated Restoration program is available at the project website.

## 3. Establishment of forest gene bank with seed storage

Based on the developed technical documentation series of renovation and reconstruction activities were carried out on existing shed on the territory of Lokorsko state tree nursery, situated on the outskirts of Sofia. After the completion of the renovation works, specialized refrigeration equipment was purchased and installed at the constructed refrigeration chambers. All necessary furniture, laboratory and office equipment for gene bank operation was also purchased and delivered at the nursery premises. Forest gene

bank was officially opened at a special ceremony organized on 09 April 2014 as part of the official program for celebration of the national forest week. After the official opening the first lots of forest seeds including such of species with European conservation importance were processed, certified and stored at the established forest gene bank.

## 4. Establishment of project greenhouse and seed production orchard at Lokorsko nursery

Following the development of technical documentation a project greenhouse was constructed at the nursery. The greenhouse covers an area of 180 sq. m. and is furnished with equipment for spraying, watering, lighting and climate control. Established greenhouse was subsequently used for the production of seedlings of priority forest species necessary for the implementation of other project activities.

Furthermore a vegetative seed production orchard with an area of 1.5 ha was established at Lokorsko nursery. The orchard will mainly be used for the future production of lime (*Tilia cordata*) seeds. In addition seedlings of several other forest species without economical value but of biodiversity importance (*Sorbus torminalis*, *Sorbus domestica*, *Pirus communis*) were also planted at the seed production orchard.

## 5. Identification of sources and collection of seeds

A total of 228 forest stands were identified and mapped under the project as basic sources for the collection of forest reproductive material. Selected forest stands are part of 43 NATURA 2000 sites falling within the territorial scope of activity of Forest Seed Control Station – Sofia. Representative plots of forests in good health condition were identified as sources of reproductive material as well as elite trees carrying valuable genetic marks that guarantee high quality offspring.

As part of project activities, more than 2400 kg of seeds from various forest species were collected from the identified sources, tested and certified by FSCS-Sofia. Most of the collected seeds were used for the production of project seedlings at Lokorsko nursery and part of them is stored at the established forest gene bank.



# IMPLEMENTED ACTIVITIES AND ACHIEVED RESULTS



## 6. Production of seedlings

Under the project 215 000 seedlings of 13 forest species were produced at Lokorsko nursery and further used for the implemented restoration activities at project target sites. An innovative for Bulgarian forestry practices approach including the production of oak seedlings in containers was also tested under the project. Unlike the production of bare root seedlings, under this method each seedling is grown in a separate plastic container and is planted together with the soil from the container covering its roots. In this way damages of seedling roots are avoided, the necessary humidity and nutrition for the newly planted trees are ensured during the first months after afforestation. All produced seedlings of oak (*Quercus pubescens*) were planted at project target sites and showed good survival rates.

## 7. Reforestation and cultivation of established forests

One of the key project actions involved restoration of destroyed or damaged forest habitats through reforestation. During the period 2013-2015 some 40 ha of new forests were established in the two targeted NATURA 2000 sites (Dragoman and Plana) situated on the territory of State Forestry Unit – Sofia. A total 36.7 ha of priority habitat 91H0\* Pannonian woods with *Quercus pubescens* and 3.3 ha of priority habitat 91E0\* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* were restored.

Seedlings produced under the project were used for the restoration actions, where specific efforts were devoted to support natural regeneration processes in the forest ecosystems, using a combination of different tree species, planting of the seedlings in groups taking account of the site specifics etc.

Each year established forests were carefully tended (hoed, mowed, fenced, and inventoried) and unsuccessful seedlings were replaced. Due to the severe conditions (rocky terrain and shallow soils) in some of the sites a combined method of planting of seedlings and sowing of acorns was used showing very good results. The restoration works attracted a number of volunteers, mobilized by the project team and partners – organizations, companies and institutions.



## 8. Awareness raising and training:

**Organization of educational workshops** – 18 educational workshops were carried out throughout Bulgaria involving forest experts and officials, pupils from the professional forestry and other schools. During the seminars, the project and the Life+ Programme of the EC were presented, as were the up-to-date problems with the managements of forest habitats represented in the NATURA 2000 network, challenges and threats ensuing from the climate change etc. The workshop programme included lectures and interactive part (targeting pupils mainly), which allowed participants learn and understand presented information in an easy and entertaining way.

**Issue of Guidelines for management of priority forest habitats in the national ecologic network NATURA 2000** – the booklet presents the main features of 7 priority forest habitats represented in the NATURA 2000 network in Bulgaria, as well as guidance for their sustainable management and restoration in cases of damages/destroying resulting from nature disturbances or human activities. The Guidelines booklet was printed in 500 copies and was distributed among foresters and experts working in the forestry sector. Its full text is available at the project's web page.

**Production of information materials** – informational leaflet for the project, branded T-shirts, stickers, as well as information boards set in the sites of the restoration works were developed.

**Development and maintenance of a project web site** – during the very early stages of the project a web site was developed <http://forestgenefund.eu/> which not only presented the project but also publicized regular information about its latest development and achievements.

**Film production** – filming and post-production activities were carried out for a film presenting the richness of Bulgarian forests and the need for their protection and restoration, as well as the project work in this respect. The film was sound-tracked in Bulgarian with subtitles in English, and loaded on CDs for distribution. In the end of the project the film was shown on the Bulgarian National Television, and could also be accessed via internet:

[https://www.youtube.com/watch?v=-Vrx\\_UfA1N4](https://www.youtube.com/watch?v=-Vrx_UfA1N4).





# WHAT'S NEXT?



At the end of each project comes the moment to look back and assess the work completed, difficulties encountered, mistakes made and lessons learned... But this is also the moment in which based on the achieved results from our work we can look forward, make new plans and draw new projects for the future.

The implementation of project „Conservation of the Genetic Fund and Restoration of Priority Forest Habitats in NATURA 2000 Sites” is just a small step in the efforts for conservation of Bulgarian nature that will be a stepping stone for our further work in this field. The real results from the joint efforts of forest experts, workers and volunteers under the project will be visible in decades but we should not forget that even the giant centennial tree withstanding the storms for centuries has begun its life as a young and fragile sapling...

