

The Manual and Guidelines for Forest Genetic Monitoring set the stage for the implementation of FGM as an early assessment of climate change or forestry intervention-based impacts on the genetic variation of forest tree populations in time. They facilitate adaptive sustainable forest management through monitoring of genetic diversity to conserve the adaptive potential of future forests in the changing environments.

Electronic issue: COBISS_ID:42816515, DOI: 10.20315/SFS.167

Citation: MANUAL for forest genetic monitoring / authors Marko Bajc (ed.) ... [et al.] ; illustrations Klara Jager ... [et al.]. - 1st ed. - Ljubljana : Slovenian Forestry Institute, Silva Slovenica Publishing Centre, 2020. - (Studia Forestalia Slovenica, ISSN 0353-6025 ; 167)



PROJECT PARTNERS



SLOVENIA
(coordinating beneficiary)
www.gozdis.si



Slovenia Forest Service
www.zgs.si



Centre for Information
Service, Co-operation
and Development of
NGOs
www.cnvos.si



GERMANY
Bavarian Office for
Forest Genetics
www.awg.bayern.de



GREECE
Decentralized Administration
of Macedonia & Thrace
General Directorate of
Forests & Rural Affairs
www.damt.gov.gr



Aristotle University of Thessaloniki, Faculty
of Forestry and Natural Environment
www.for.auth.gr

COFINANCING



Project is financially supported by the European Union's LIFE financial mechanism.



REPUBLIC OF SLOVENIA
MINISTRY OF AGRICULTURE,
FORESTRY AND FOOD



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA OKOLJE IN PROSTOR

Manual for Forest Genetic Monitoring

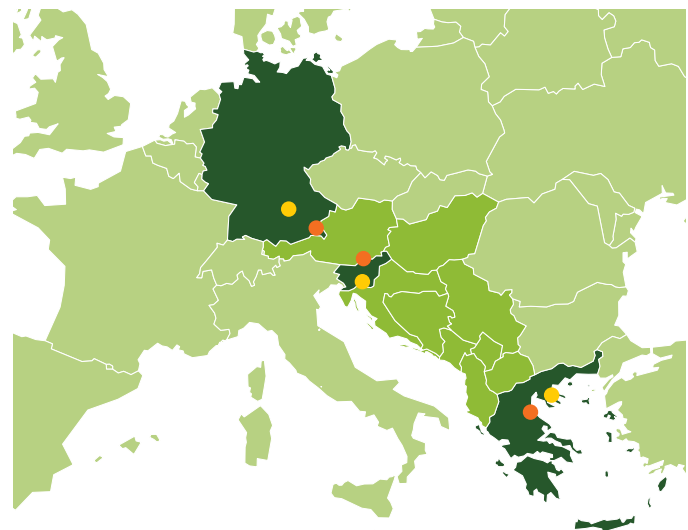


LIFE13 ENV/SI/000148

Forests represent unique ecosystems that are defined by high levels of biodiversity. They provide a range of ecosystem services from capturing and storing carbon to providing goods and services that we rely on. However, our forests face growing pressure from climate change, expanding urban areas, fragmentation and loss of biodiversity.

Long-term adaptability of forest ecosystems is highly dependent on biodiversity. Biodiversity starts at the basic level: the gene. **Biodiversity and its basic key component, genetic diversity**, can help to mitigate some of the impacts that climate change has on forests and forest products. Despite the fact that diversity is crucial for the adaptability of forests to climate change, the level and rate of the change of forest genetic diversity due to the altering environmental conditions remains unknown.

Monitoring Plots



● Monitoring Plots, *Fagus sylvatica*
● Monitoring Plots, *Abies* sp.

In response to the urgent need of a pan-European genetic monitoring system, LIFE-GENMON worked with a wide range of partners on international, regional, national and local levels to develop and test a Forest genetic monitoring system that can be implemented in practice. In order to facilitate the wide-scale implementation of FGM, a **Manual and Guidelines for Forest Genetic Monitoring** were prepared.

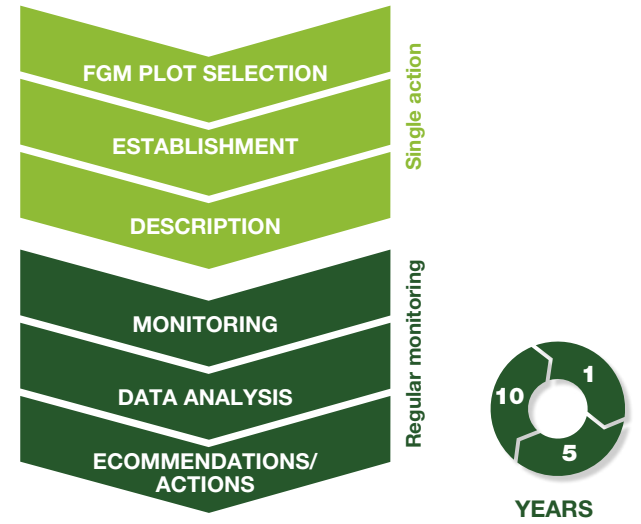
The Manual was built upon existing scientific knowledge and knowledge generated and tested within the LIFE-GENMON project. It includes specific scientific procedures for the implementation of FGM across Europe, as well as practice-oriented policy recommendations.

The Manual contains:

- concise descriptions of the scientific principles behind the proposed FGM system
- descriptions and explanations of the indicators, verifiers and background information that are assessed in the frame of the FGM
- description of three different levels of intensity of genetic monitoring (basic, standard and advanced)
- step-by-step instructions on how to carry out all activities necessary to implement and conduct the FGM—from selection and establishment of the suitable FGM plot to field observations, sampling, laboratory and data analysis and their interpretation.
- implications for sustainable forest management
- assessment of costs of monitoring for each described level of intensity

How does Forest Genetic Monitoring work?

Forest Genetic Monitoring process (by Darius Kavaliauskas)



The **incorporated Decision Support System** can be applied to decide on the level of FGM to be implemented (based on the national needs and means) and to support the international efforts for the implementation of FGM.

To facilitate the fieldwork related to the implementation of FGM at the European level, **dedicated Guidelines** have been prepared, emphasizing seven species and species complexes: Silver and King Boris fir complex (*Abies alba* Mill./*Abies borisii-regis* Mattf.), European beech (*Fagus sylvatica* L.), Common ash (*Fraxinus excelsior* L.), European black pine (*Pinus nigra* J. F. Arnold), European black poplar (*Populus nigra* L.), Wild cherry (*Prunus avium* (L.) L.) and Sessile and Pedunculate oak complex (*Quercus petraea* (Matt.) Liebl./*Quercus robur* L.). **The Guidelines are an integral part of the Manual, but also available as stand-alone documents** primarily intended for the foresters conducting the fieldwork related to Forest Genetic Monitoring.