Life4Oak Forests

Following Natural Disturbance Regimes as a Guide for Sustainable Forest Management

Oak forests as habitats

Photos: László Gálhidy

Oak forests as habitats

Forest management

Photo: László Gálhidy

- monocultures
- even-aged structure
- absence of large, veteran trees, habitat trees, microhabitats
- low amount of deadwood
- absence of natural dynamics

Forest management

Photo: László Gálhidy

Consequences of conventional management on habitat functions

- Simple structure and species composition
- Lack of microhabitats
  - large sized trees, and cavities
  - root plates,
  - standing and downed deadwood

Forest management

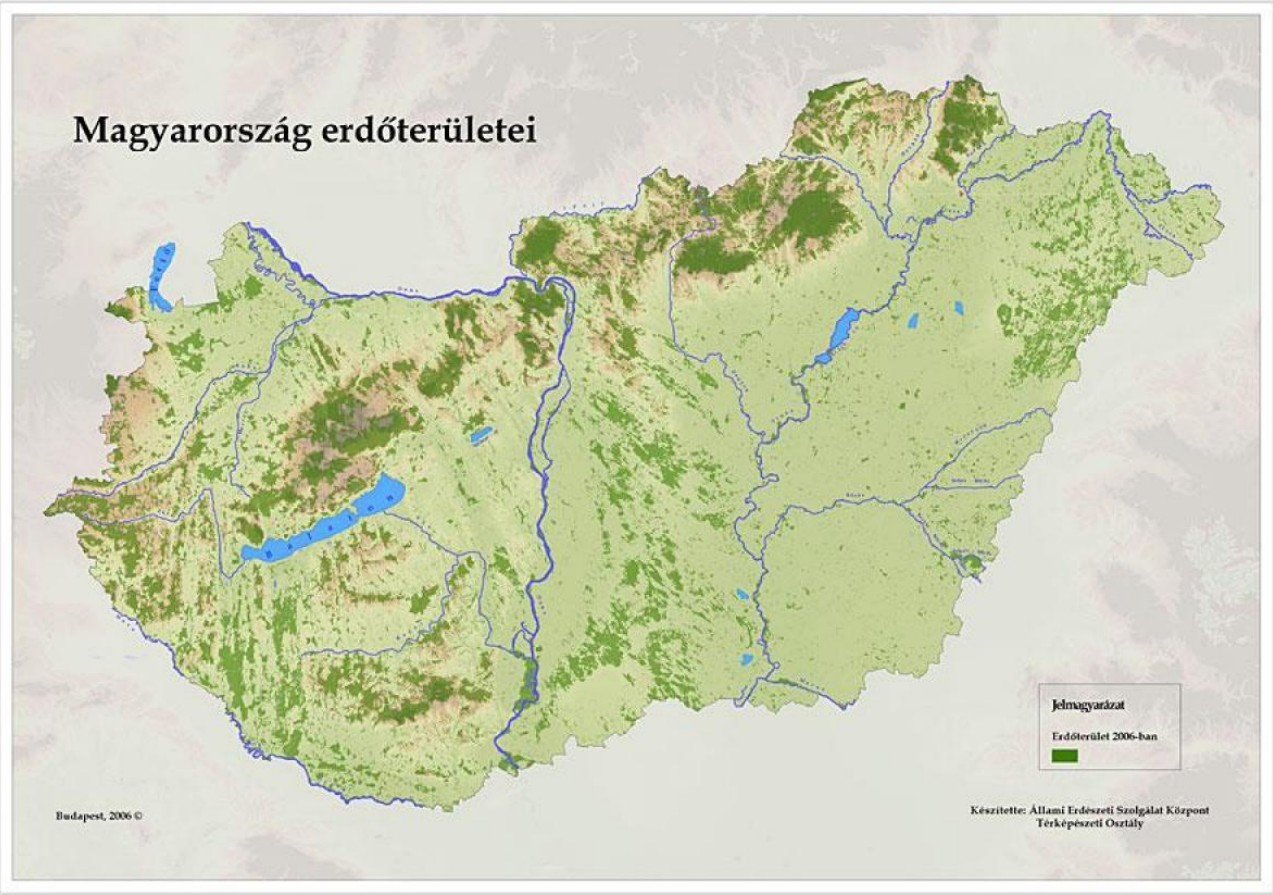
I would like to see something like this:

Photo: László Gálhidy

Forest management

Photos: László Gálhidy

Forests of Hungary

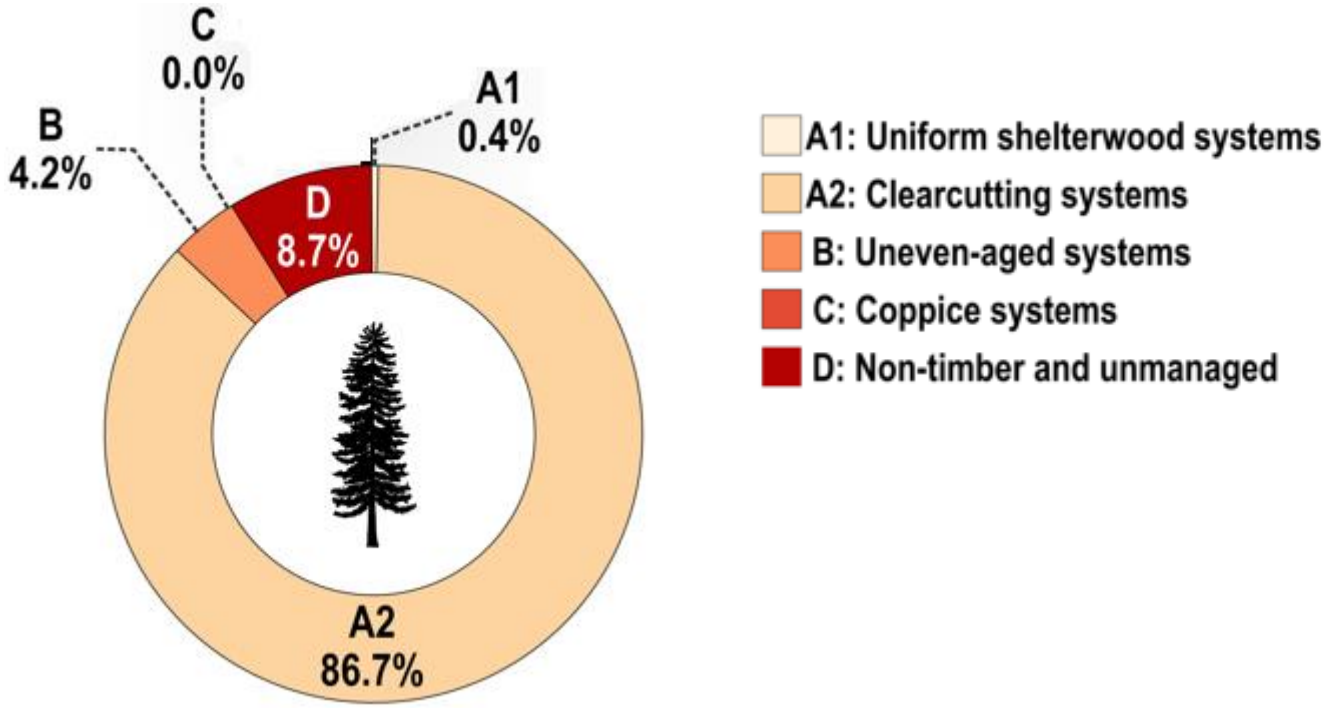


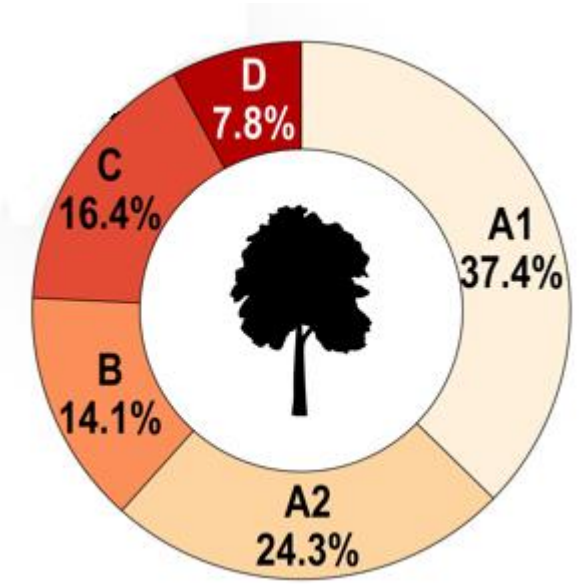
Forrás: https://hu.maps-hungary.com/magyarorsz%C3%A1g-erd%C5%91k-t%C3%A9rk%C3%A9p

- Fifth of Hungary's area (2 million hectars)
- 50% semi-natural forests (~natural species – non-natural stucture)
- 50% are cultivated forests, plantations
- 95% is managed

Silvicultural systems of Europe

boreal and hemiboreal: Sweden, Finland, Latvia
temperate: France, Poland, Germany, Austria, Hungary, Slovakia, Czechia, Romania, Slovenia, Italy





Réka Aszalós, Dominik Thom, ..., William S. Keeton 2022 Ecological Applications: Natural disturbance regimes as a guide for sustainable forest management in Europe

Silvicultural systems of Europe

Photos: László Gálhidy

Motivation: Homogenous structure and composition of Natura 2000 oak forests

Management of oak dominated forests in temperate Europe

Quercus spp.	ha	Uniform shelterwood systems	Clearcutting systems	Uneven-aged systems	Coppice systems
Temperate Europe	~10 Mha	49%	15%	4%	32%
Hungary	590.000	50%	48%	1-2%	-
Italy	~2 Mha	3%	0	25%	72%

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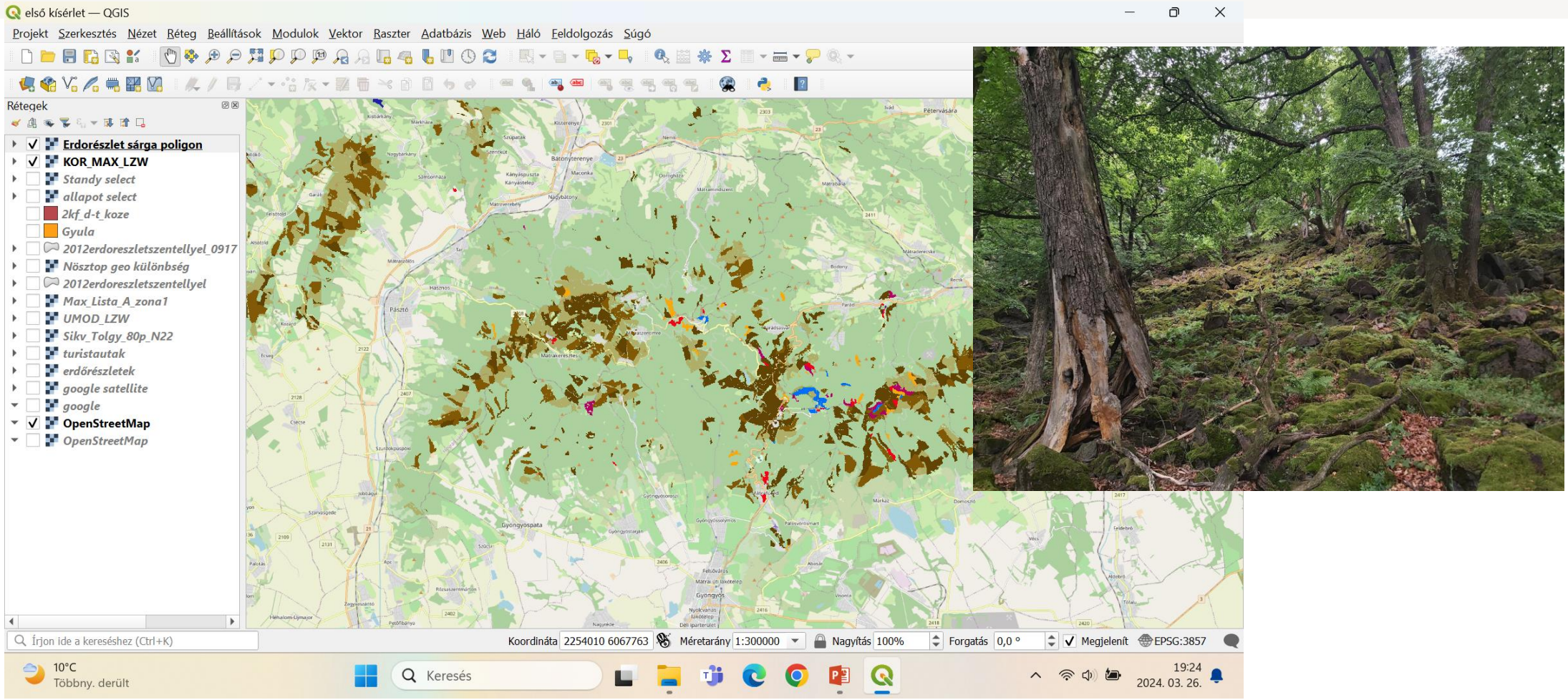
References

Kasivarova - SK

Photos: Réka Aszalós

Drastvica - SK

Hungarian, sanctuary forests’



Photos: Réka Aszalós

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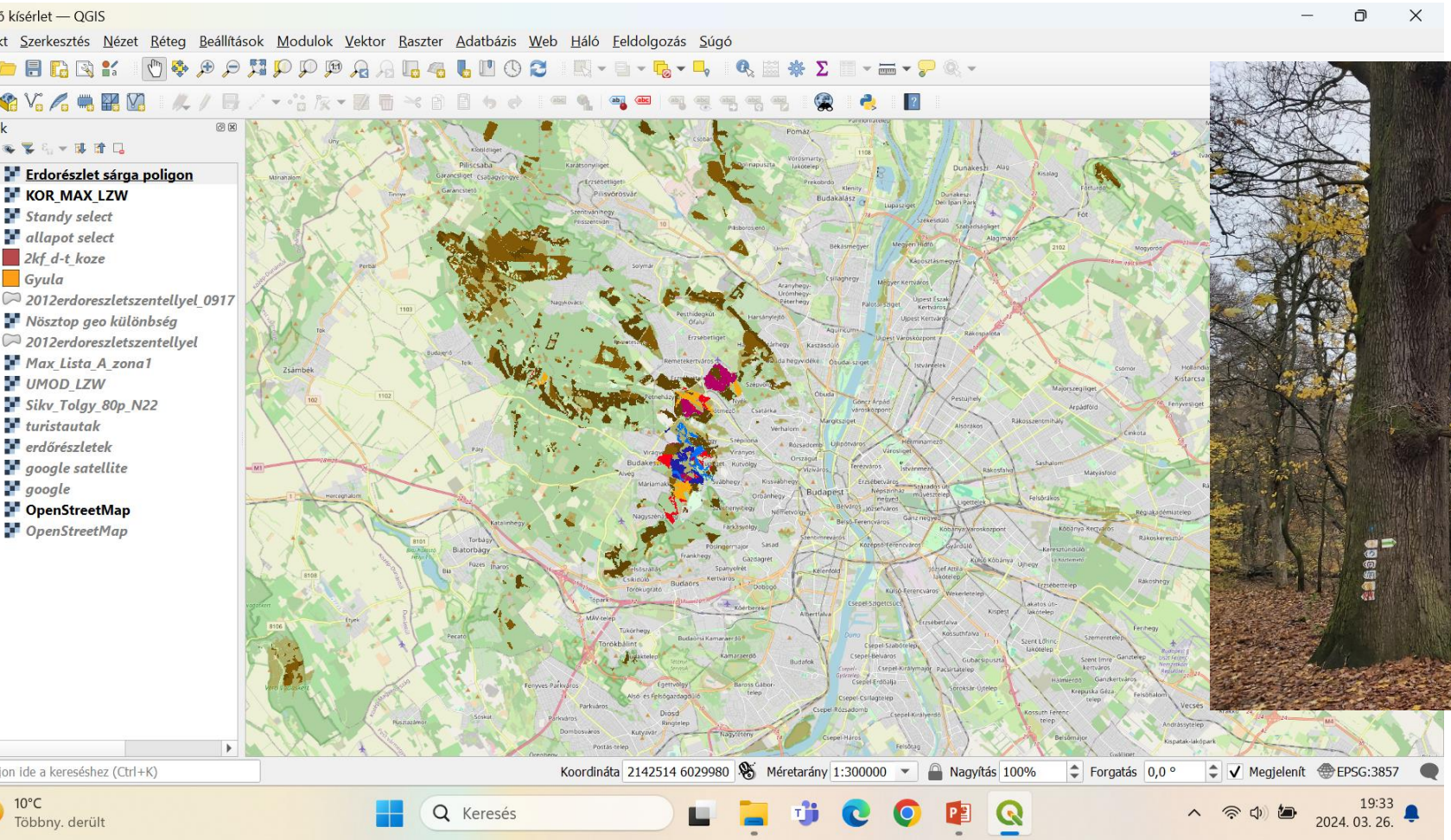
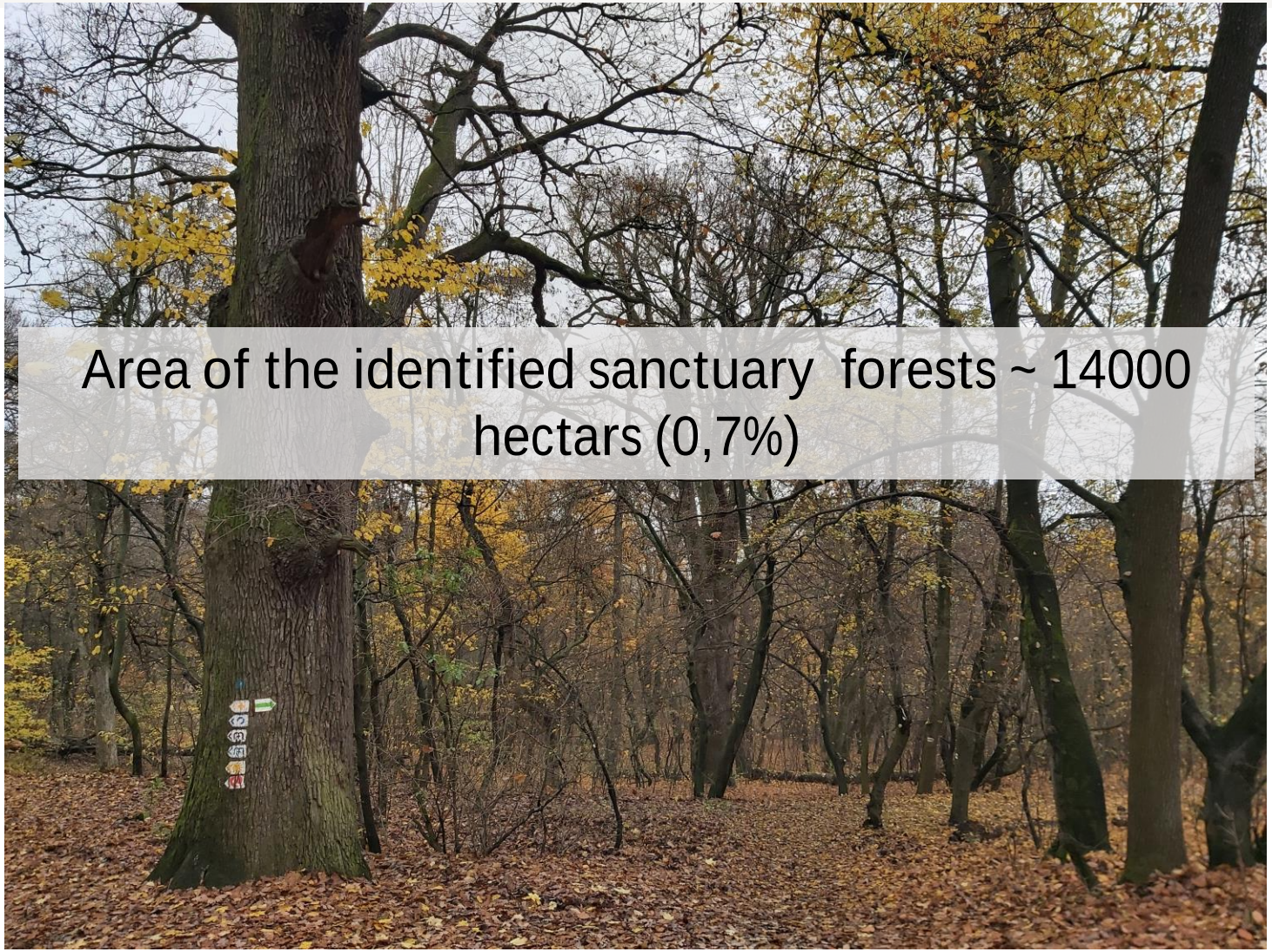


Photos: László Gálhidy

Hungarian ‚sanctuary forests'



Photos: László Gálhidy

Our Life4Oak Forests Project

Conservation management tools for increasing structural and compositional biodiversity in Natura2000 oak forests

Starting date: 07/2017, end date: 12/2026

- A protected area (IT), 3 national parks (HU)
- 5 Natura 2000 oak dominated forest habitats
- 24 sites
- 2000 ha+

Active forest restoration techniques

Enhancement of structural and compositional biodiversity of EU priority oak forests

Active forest restoration techniques

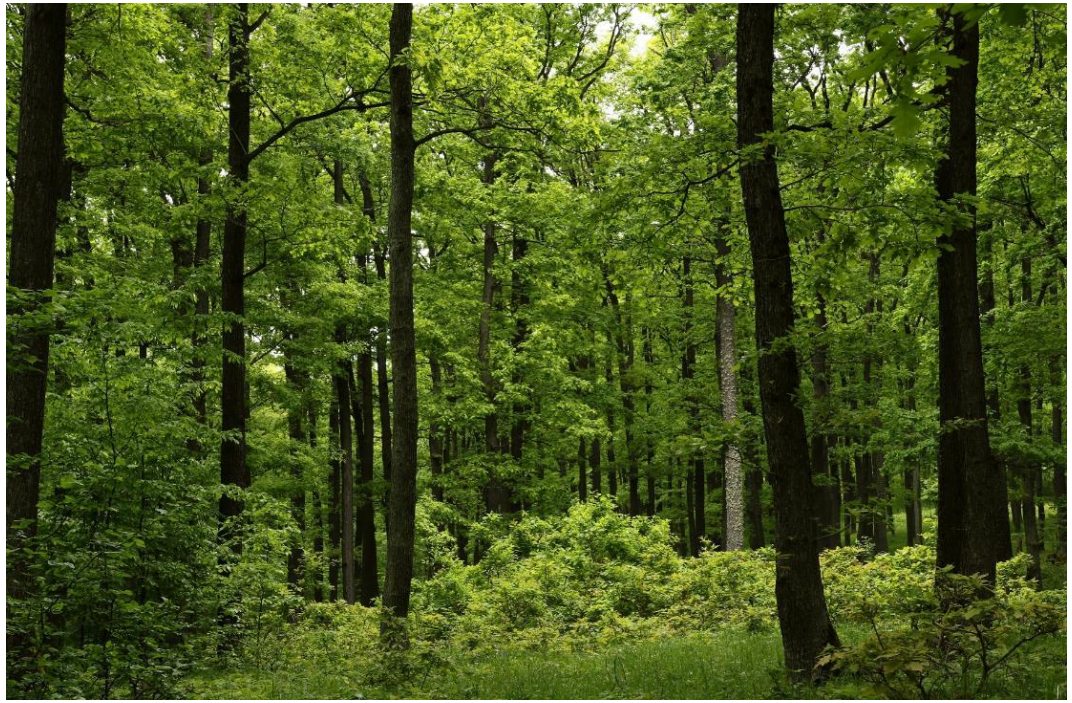
Why we need such interventions?

To achieve wider microhabitat availability for common and rare species

The healthier, resilient a forest provides a more complete scope of Ecosystem Services

Active forest restoration techniques

Creation of circular and ellipsoid 65-400 m2 gaps – all deadwood material retained – 2020/2021



Active forest restoration techniques

Open gaps with the creation of downed trees and snags

Creation of standing dead tree with girdling

Active forest restoration techniques

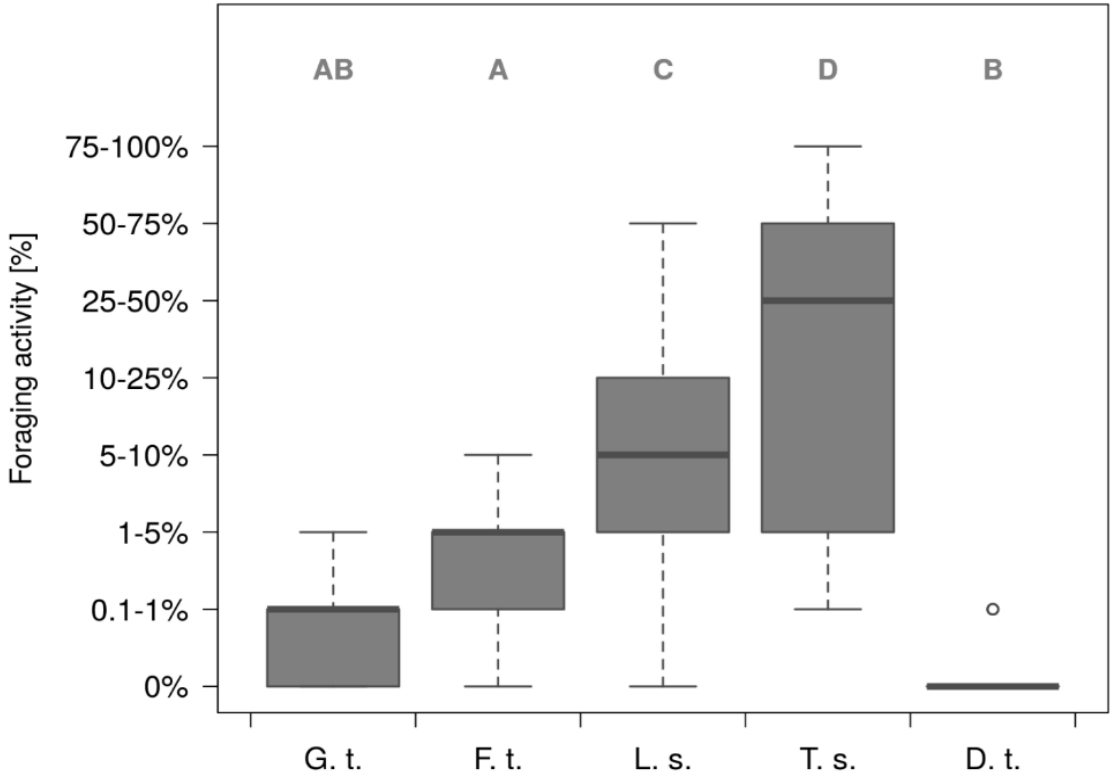
Creation of high stumps for special microhabitats

Bark stripping for special microhabitats – creation of wounded trees

Rapid utilization of hanging barks by treecreapers and bats

Experimental sites – preliminary results

Fast colonization – feeding signs of woodpeckers



G. t. = Girdled tree,
F. t. = Felled tree,
L. s. = Low stump,
T. s. = Tall stump,
D. t. = Damaged tree

Aszalós, R., Szigeti, V., Harmos, K., Csernák, S., Frank, T., & Ónodi, G. (2020). Foraging activity of woodpeckers on various forms of artificially created deadwood. *Acta Ornithologica*, *55*(1), 63-76.

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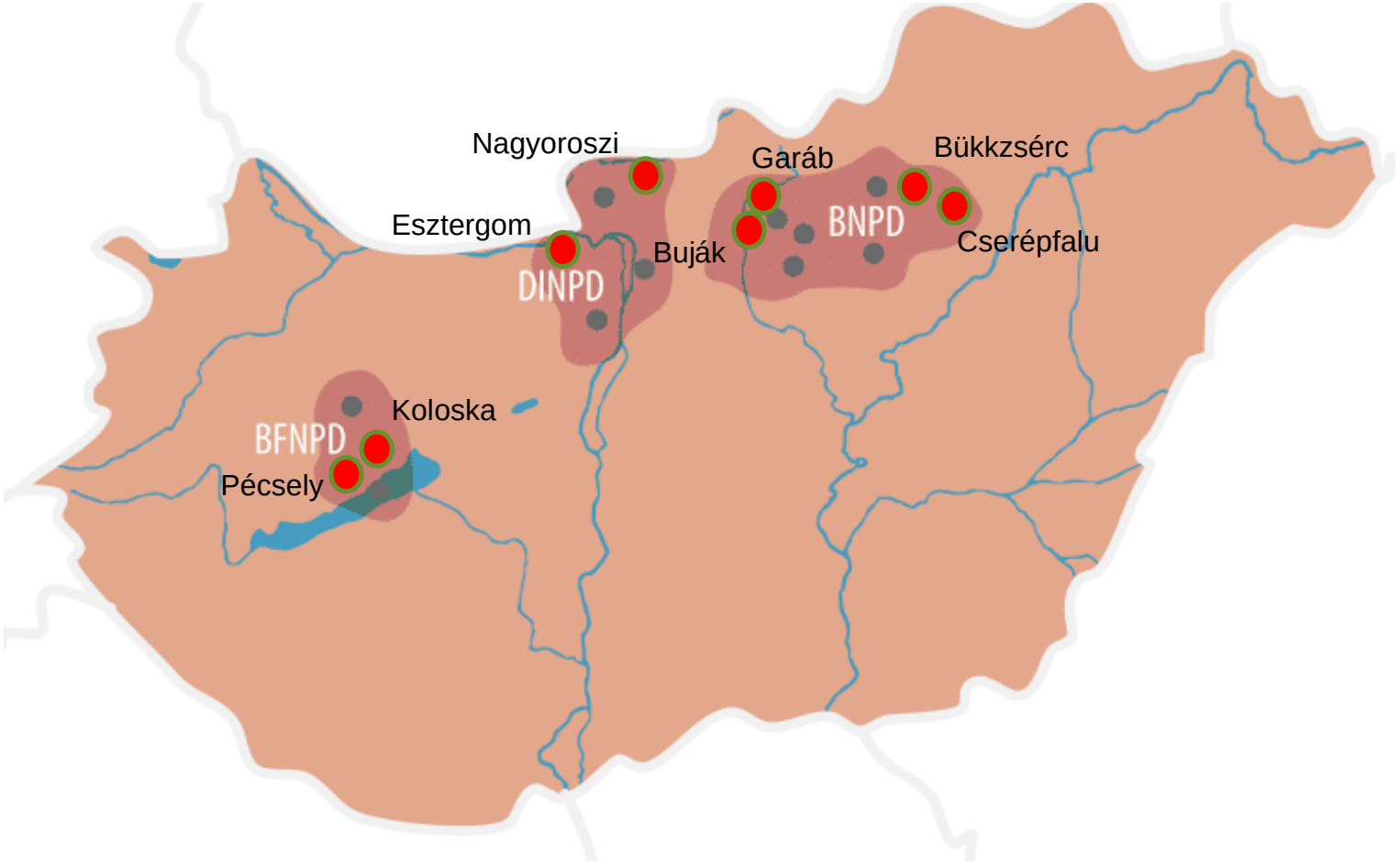
Downed trees are used as routes and marking sites for wildcats, foxes, martens, etc.

Before-After

Experimental sites

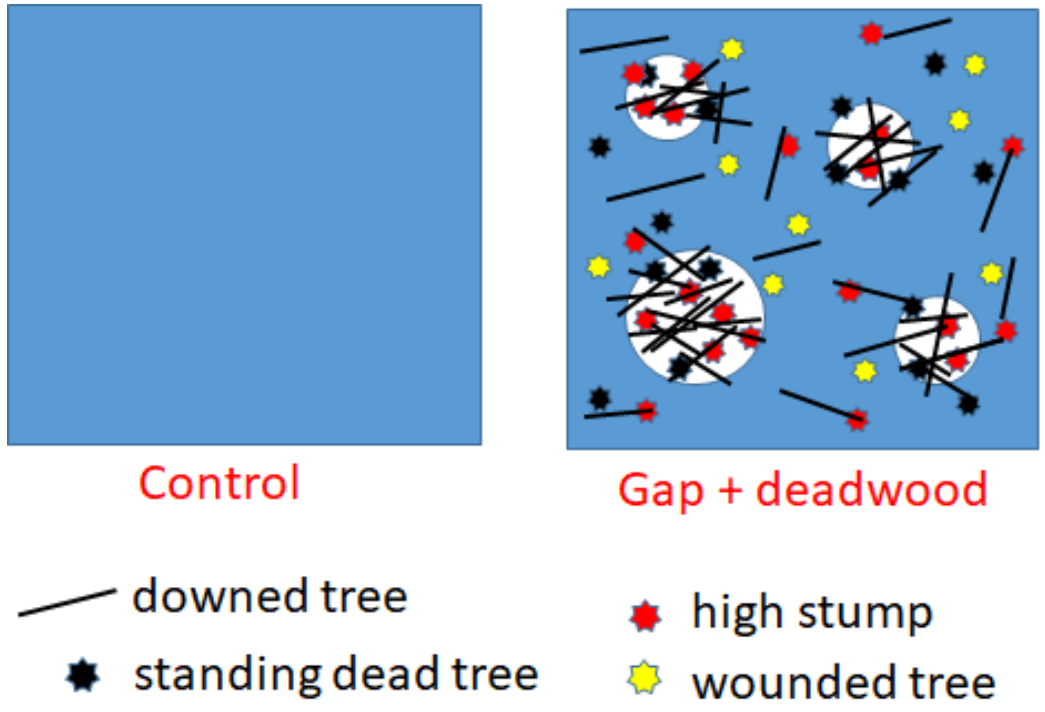


19 sites of Life 4 Oak Forests in 3 Hungarian national parks

8 experimental sites

Experimental sites

- 8 replicates in 3 Hungarian national parks
- Control plot – no treatment
- Treatment plot = Gap + deadwood enrichment
- Survey of **forest stand**, **butterflies, flower chafers,** vascular plants, fungi, carabids, saproxylophaous insects**, mosses and lichens, woodpecker response**



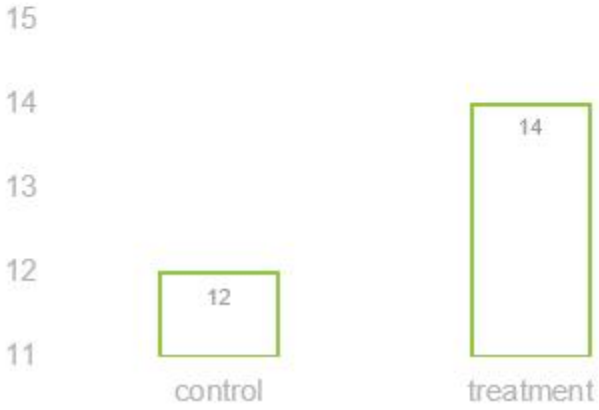
Experimental sites – preliminary results

4.2. Insects - butterflies

avr. number of individuals

Hipparchia fagi

avr. species number

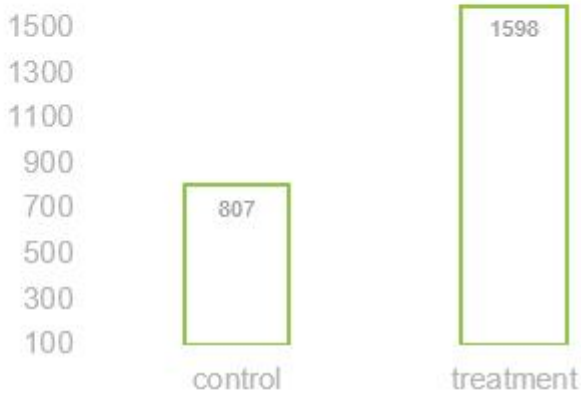


Maniola jurtina

Experimental sites – preliminary results

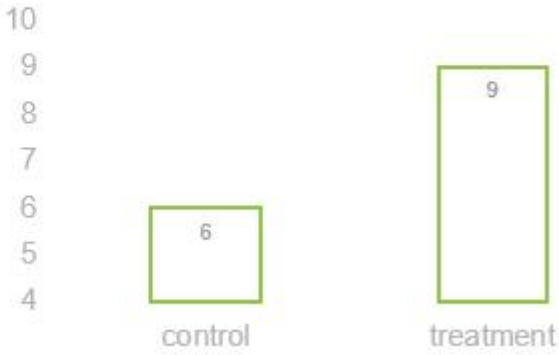
4.2. Insects – flower chafers

avr. number of individuals



Cetonia aurata

avr. species number



Protosia cuprea

Experimental sites – preliminary results

The number of species and abundance of bryophytes have increased in treated plots

The number of species and abundance of lichens have only slightly increased in treated plots

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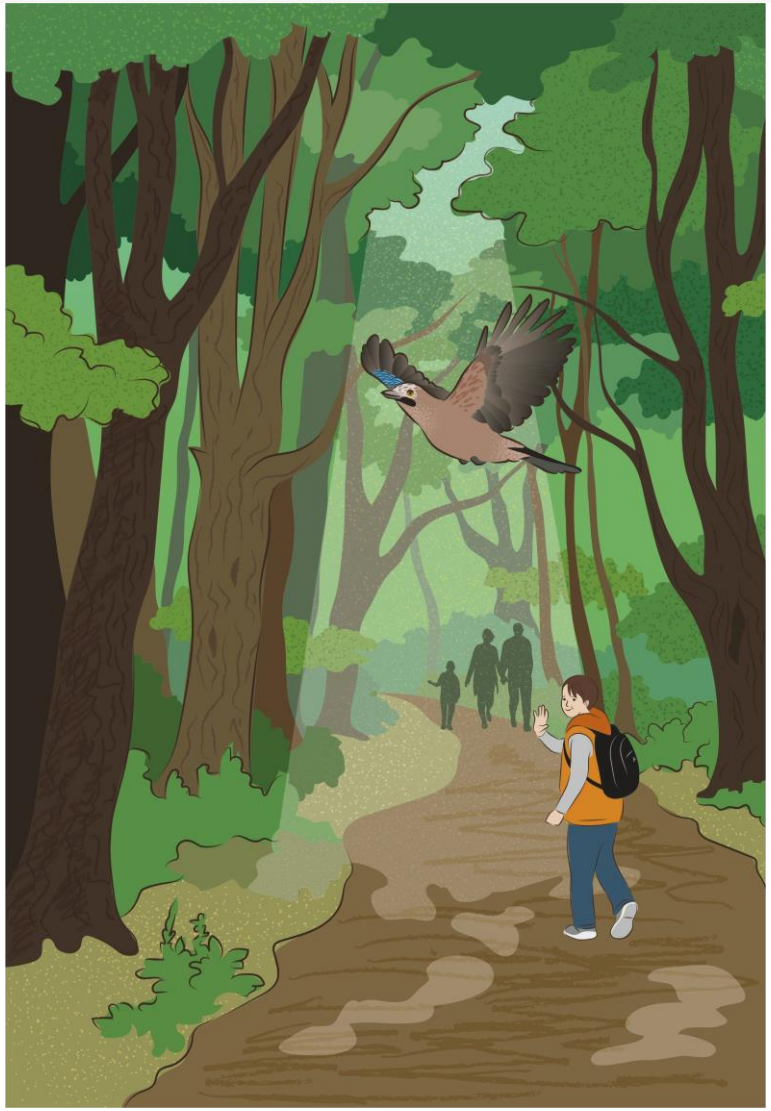
Team work is essential

Potential use of treatments in forest management

Diversity enhances resilience! → climate adaptation!

Thank you for your attention



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WWF Hungary

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Life4Oak Forests

Authority for the Management of Parks and Biodiversity Romagna

Balaton-felvidéki Nemzeti Park

Bükki Nemzeti Park

Duna-Ipoly Nemzeti Park 1997

Ökológiai Kutatóközpont

ETTE

WWF

Life

Natura 2000

Agrárminisztérium

Készült a LIFE4OAK FORESTS projekt keretében az Európai Unió LIFE - Nature programjának támogatásával és az Agrárminisztérium társfinanszírozásával.