

Steps for close-to-nature forestry in Hungary

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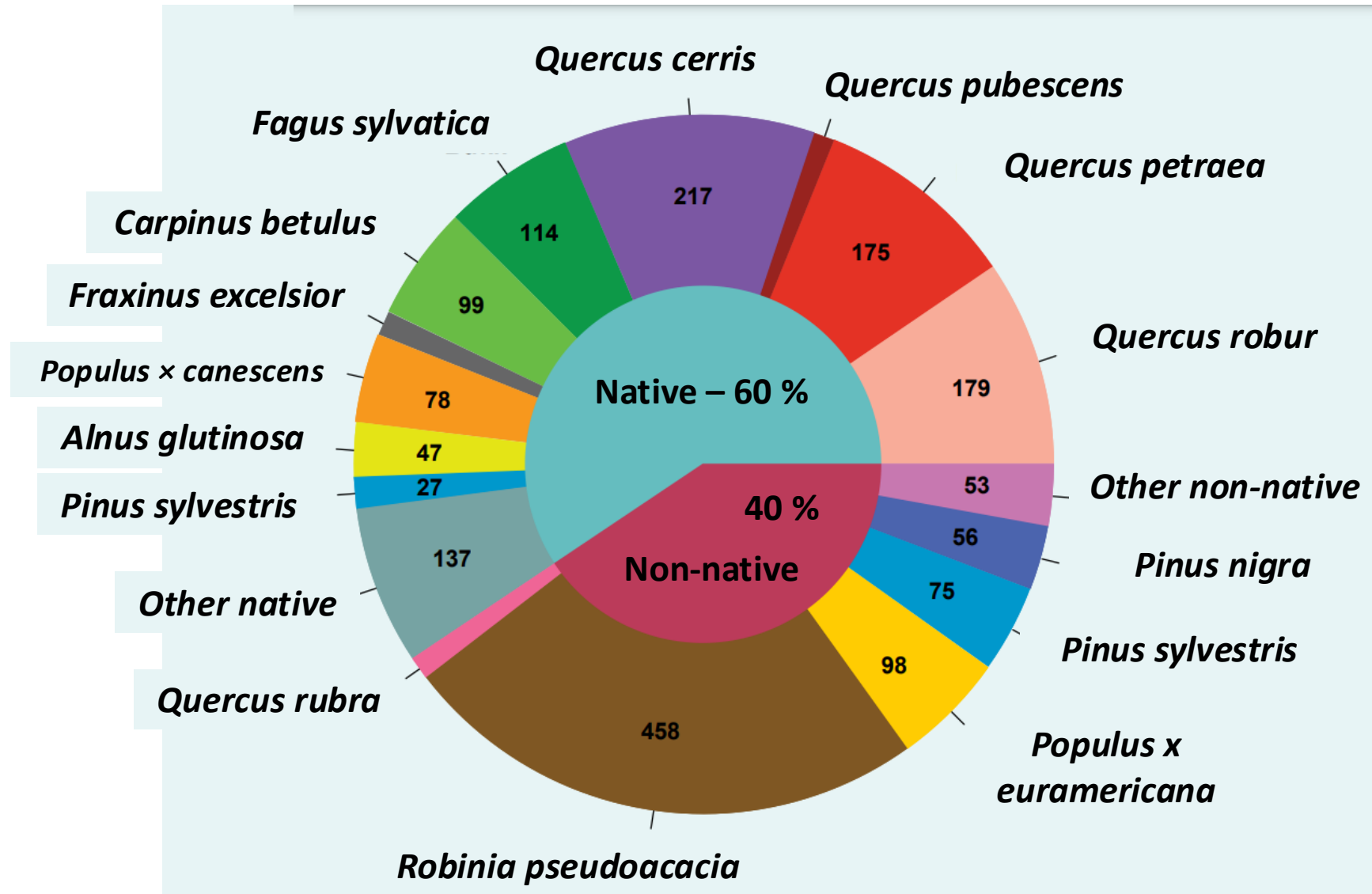
5 – Pro Silva Hungary

10th Annual Meeting
of the European Integrate Network
23rd October 2024
Vienna, Austria

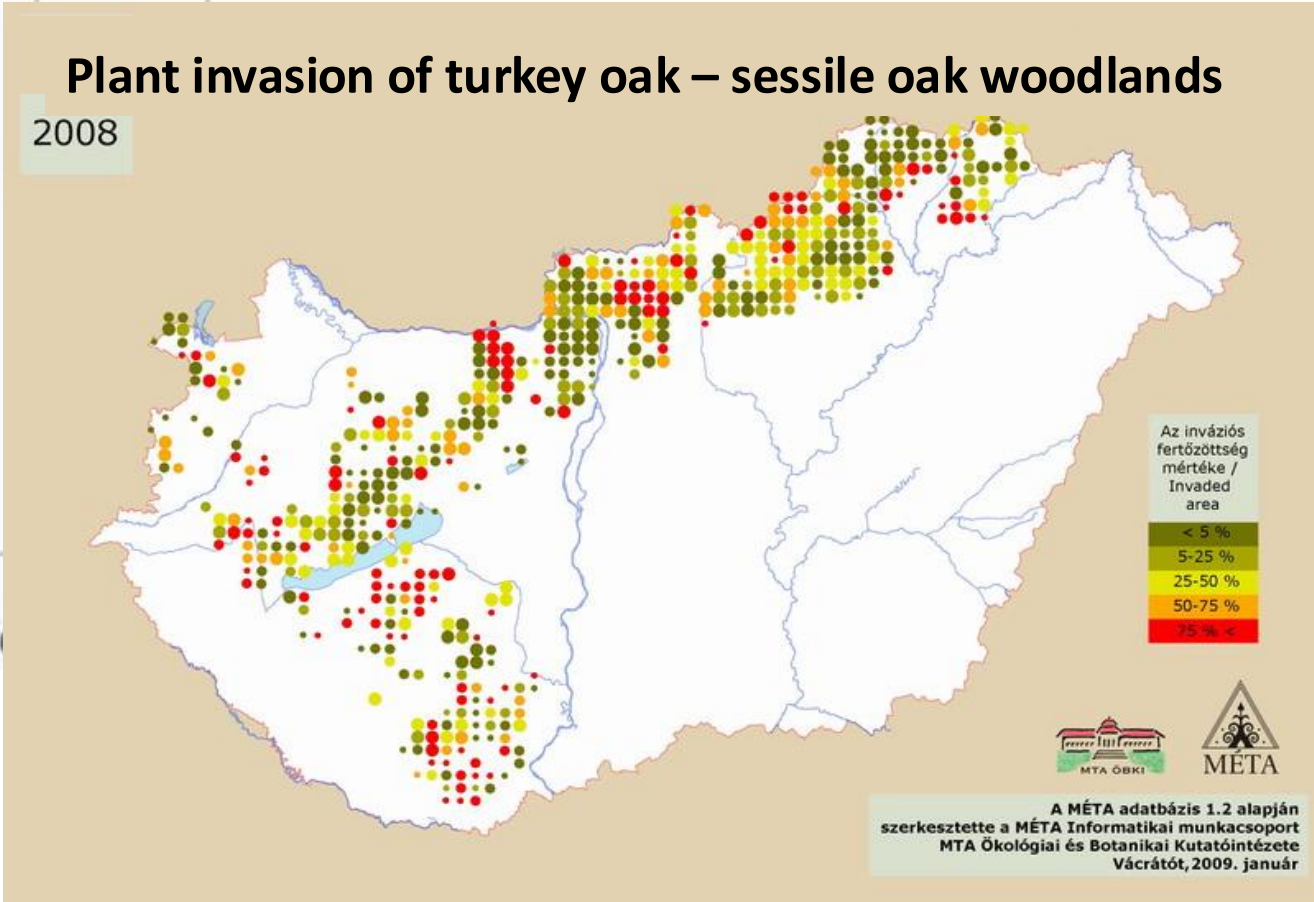
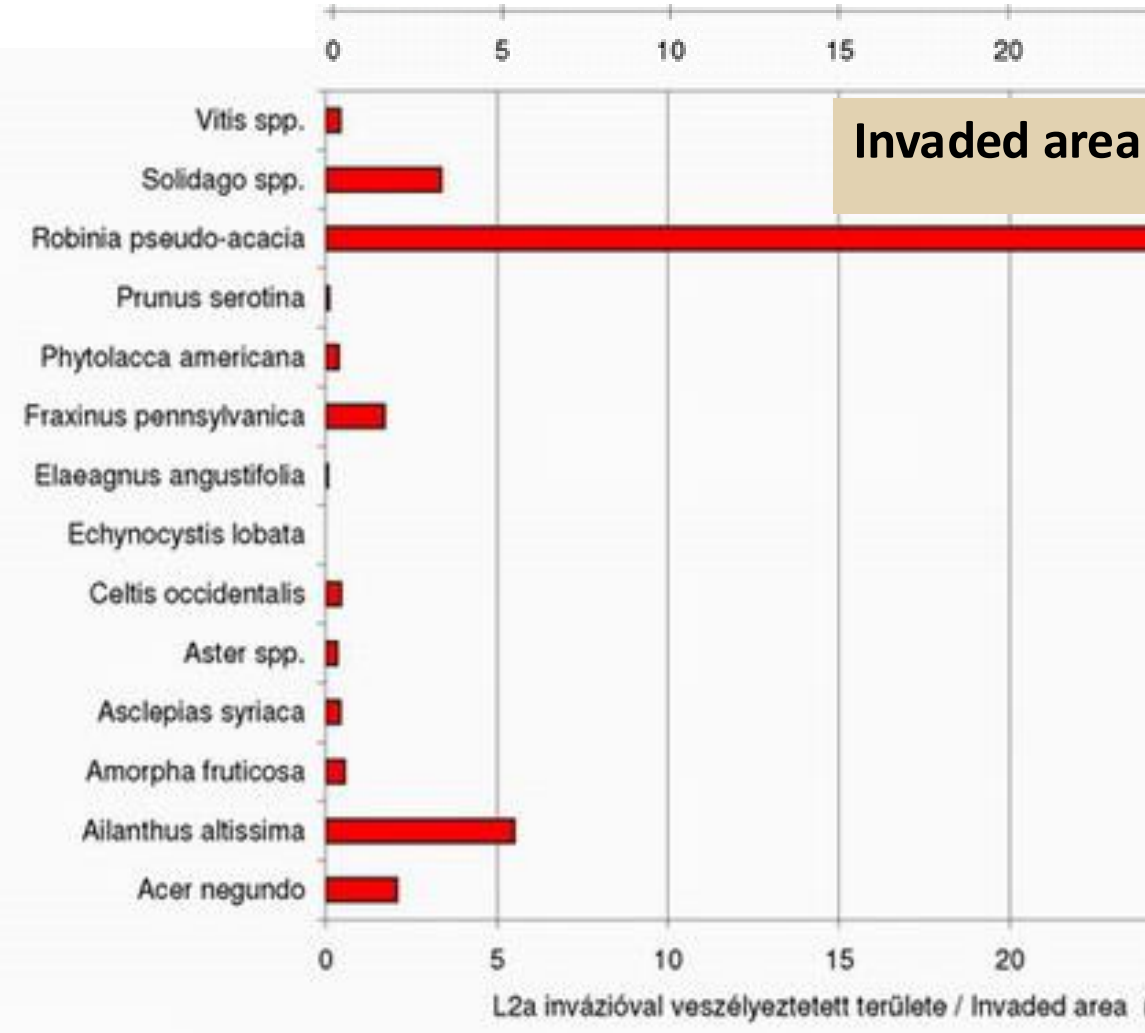


PILISI PARKERDŐ
PARKERDŐ AZ EMBERÉRT

Species composition – high proportion of deciduous and non-native species

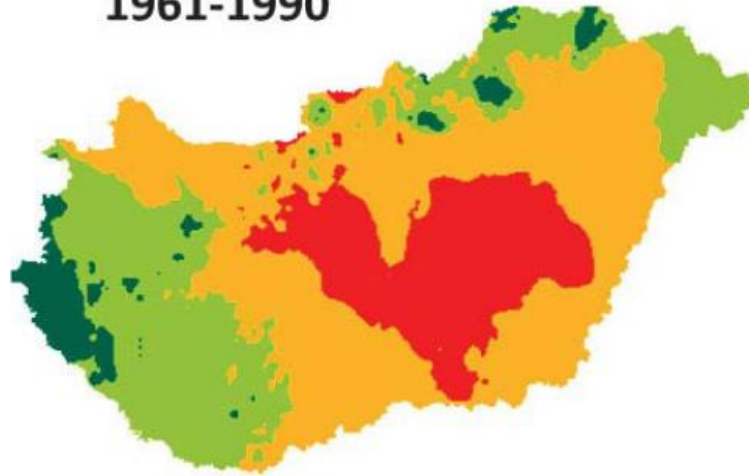


Significant threat from invasive species



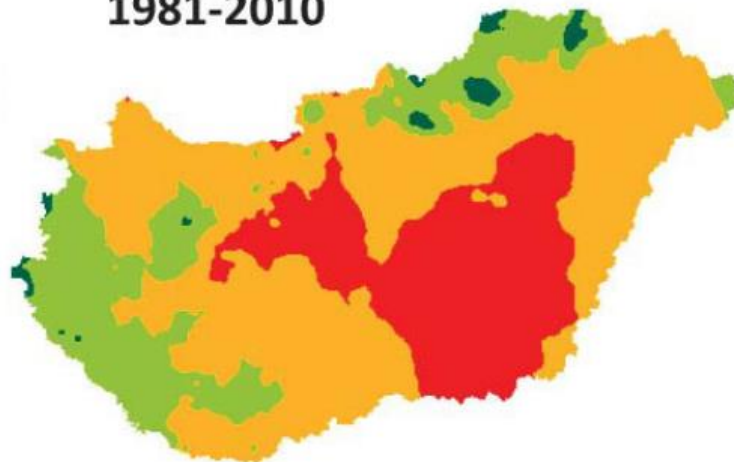
Changing site condition – changing climate

1961-1990

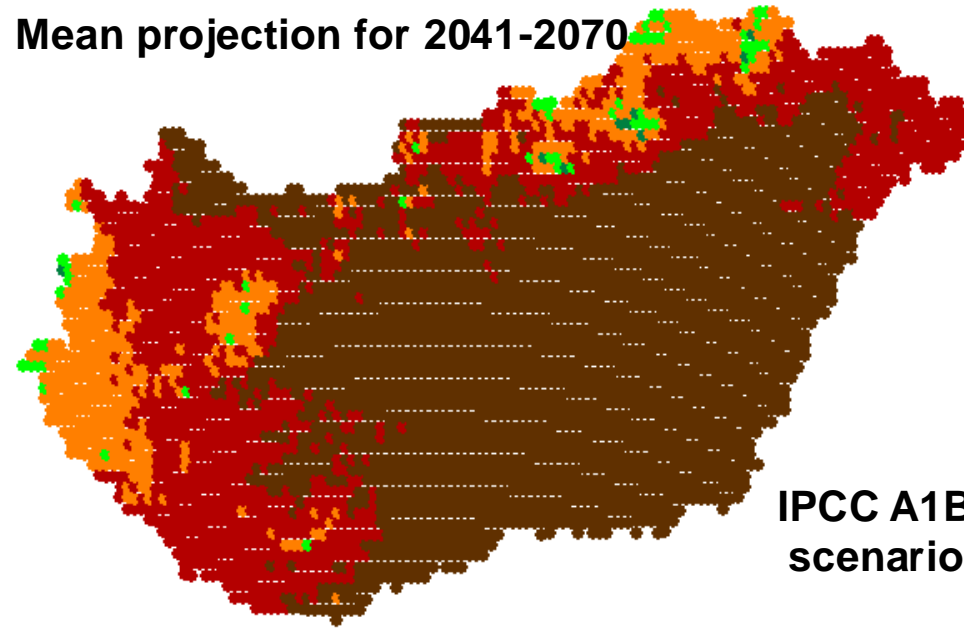


Shift of the forest-climate zones

1981-2010



Mean projection for 2041-2070



IPCC A1B
scenario

*Macroclimatically suitable zones
for climate indicator tree species*

warmer & dryer
conditions



- Beech
- Hornbeam-oak
- Sessile oak – Turkey-oak
- Forest steppe
- Steppe

Führer et al. 2011, 2017

Marteloscopes in Hungary

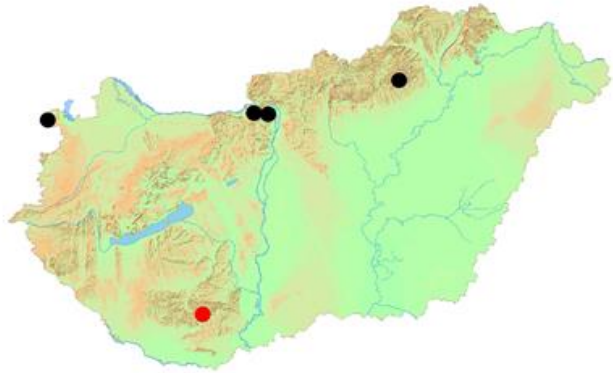


Foto: Katalin Szakálos-Mátyás

<http://www.integrateplus.org>

68	HU	Cserepfalu	755	312.2	Colline Turkey oak forest
162	HU	Pilismarot-114B	467	274.8	Colline / submontane hornbeam-oak forest admixed with beech
233	HU	Visegrád_77A	508	337.3	Submontane beech forest
238	HU	Sopron_105M_NE	278 (0.25 ha)	84.9 (0.25)	Colline/submontane sessile oak-hornbeam forest
?	HU	Pécs_63B	survey completed	registration in process	Colline / submontane hornbeam-oak forest admixed with beech

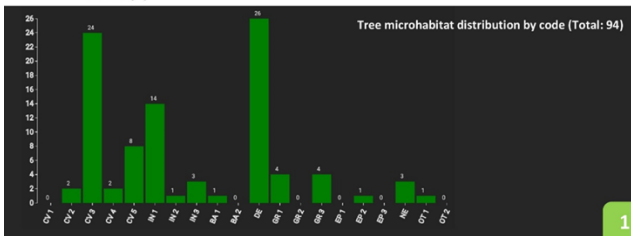
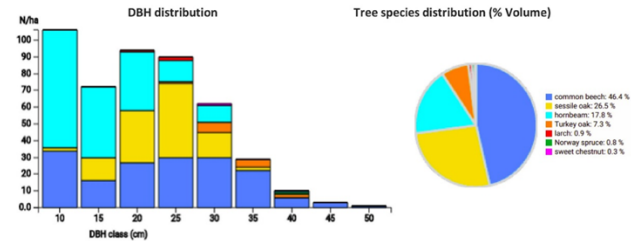
Pilismarót

Visegrád - Pilis Park Forestry Company

Sopron - University of Sopron

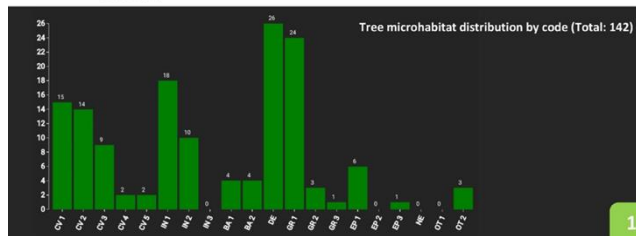
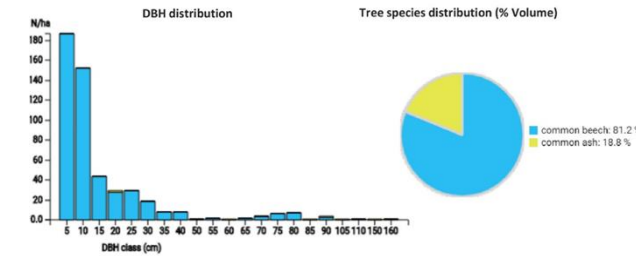
Name: **Pilismarot-114B** Forest type: **Hornbeam-oak admixed with beech**

State / Region	Owner	Establishment	Size
Hungary / Komárom-Esztergom	State Forest	2022	1 ha
Altitude [m.a.s.l.]	Mean annual precipitation [mm]	Mean annual temperature [°C]	Natural forest community
275	650	9.5	Melittio-Fagetum / Carici pillosae-Carpinetum
Number of trees [N/ha]	Basal area [m ² /ha]	Volume [m ³ /ha]	Habitat value [points/ha]
467	22.2	274.8	824



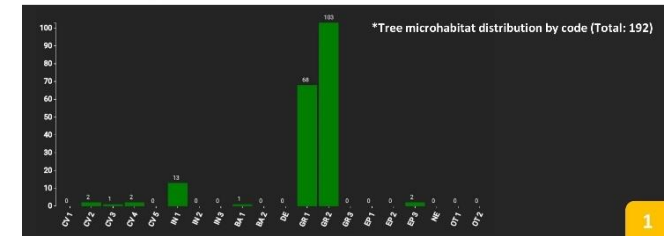
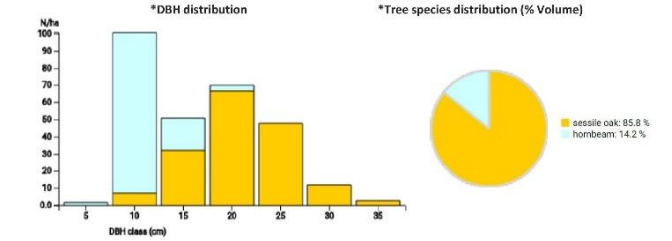
Name: **Visegrád_77A** Forest type: **Beech forest**

State / Region	Owner	Establishment	Size
Hungary / Pest County	State Forest	2023	1.0 ha
Altitude [m.a.s.l.]	Mean annual precipitation [mm]	Mean annual temperature [°C]	Natural forest community
500	9.5	650	Melittio-Fagetum
Number of trees [N/ha]	Basal area [m ² /ha]	Volume [m ³ /ha]	Habitat value [points/ha]
508	28.5	337.3	2175



Name: **Sopron_105M_NE** Forest type: **Sessile oak - hornbeam forest**

State / Region	Owner	Establishment	Size
Hungary / Győr-Ménfőcsanak-Sopron County	State (managed by State Forest Company TAEK)	2024	0.25 ha (*)
Altitude [m.a.s.l.]	Mean annual precipitation [mm]	Mean annual temperature [°C]	Natural forest community
463	730	8.9	Quercus petraeae-Carpinetum
Number of trees [N/ha]	Basal area [m ² /ha]	Volume [m ³ /ha]	Habitat value [points/ha]
1112 (*278)	36.4 (*9.1)	339.6 (*84.9)	8848 (*2212)



- accredited training more than 10 times and more than 200 professionals
- Main purposes:
 - how to switch to CCF management,
 - draw attention to the importance of microhabitats.

- Establish, first survey – **thesis work**
- Participation of **voluntary students**

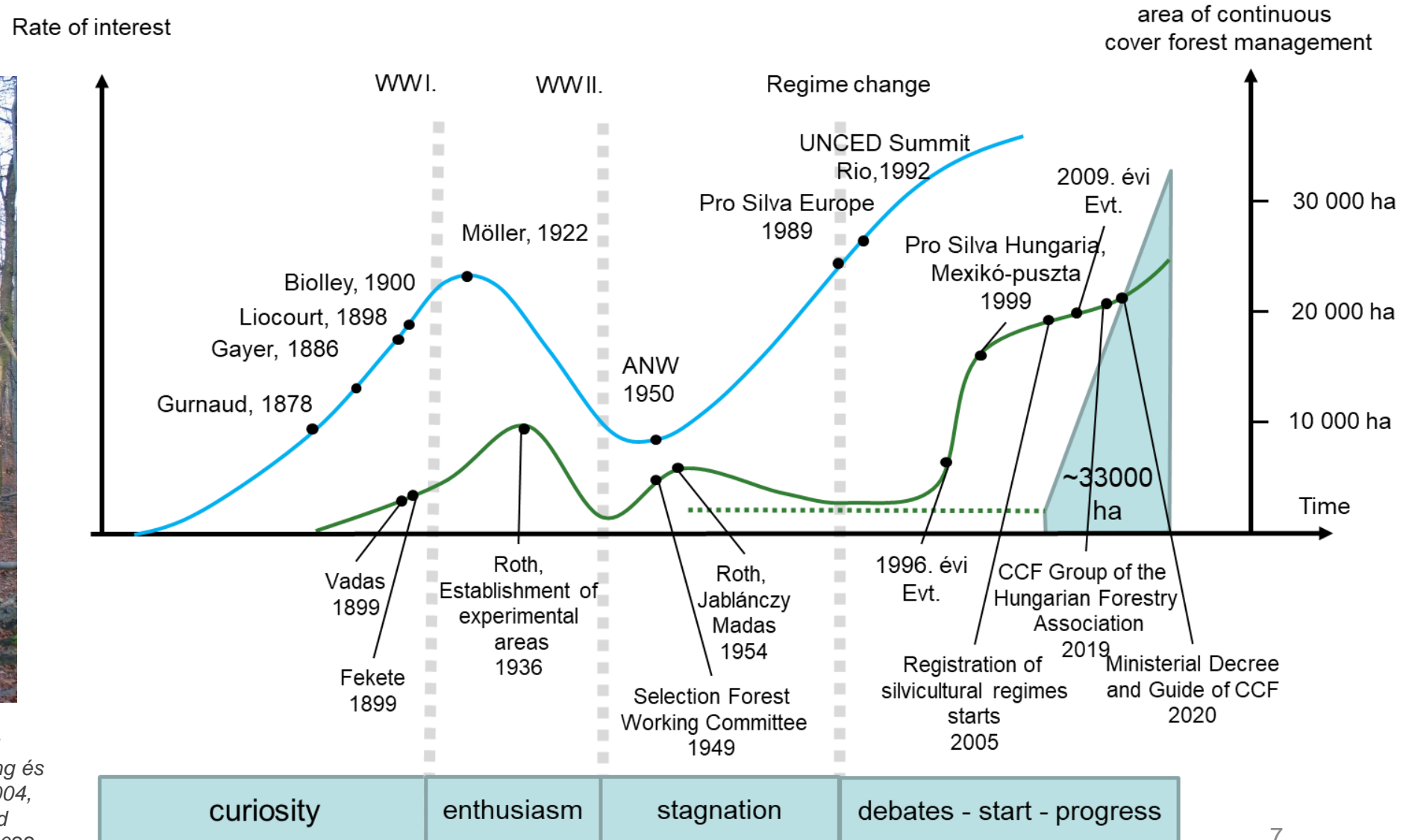
Plans for educational use

- **secondary** forestry education
- **forest engineer** program
- **nature conservation engineer** program

Development of interest in close-to-nature forest management



Source:
Pommerening és
Murphy 2004,
modified
Csépanyi 2022-



Integrated forest management in legislation

Forest Act 2009:

- naturalness of forests, close-to-nature of forest management, gradually increasing obligation to introduce CCF
- clearcut is prohibited: in stands with function conservation, Natura 2000, landscape protection or public welfare which can be naturally regenerated,
- Within the age-class-rotation system, natural regeneration is legally mandatory in suitable native tree stands.
- At final cuttings authority can require the retention trees and tree-groups up to 5 percent of the growing stock, in natural and close to natural or semi-natural stand.
- In 2020: ministerial decrees setting out the legal framework for CCF were published, which clarified the rules of this system, helping forest owners and managers to see clearly

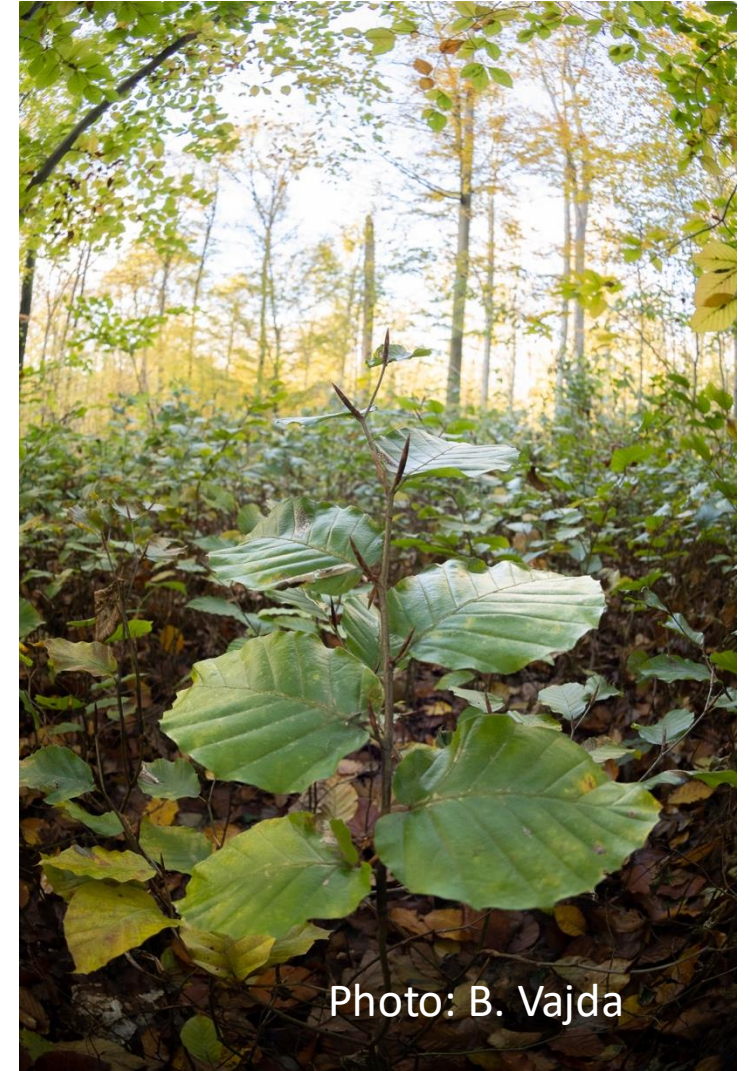
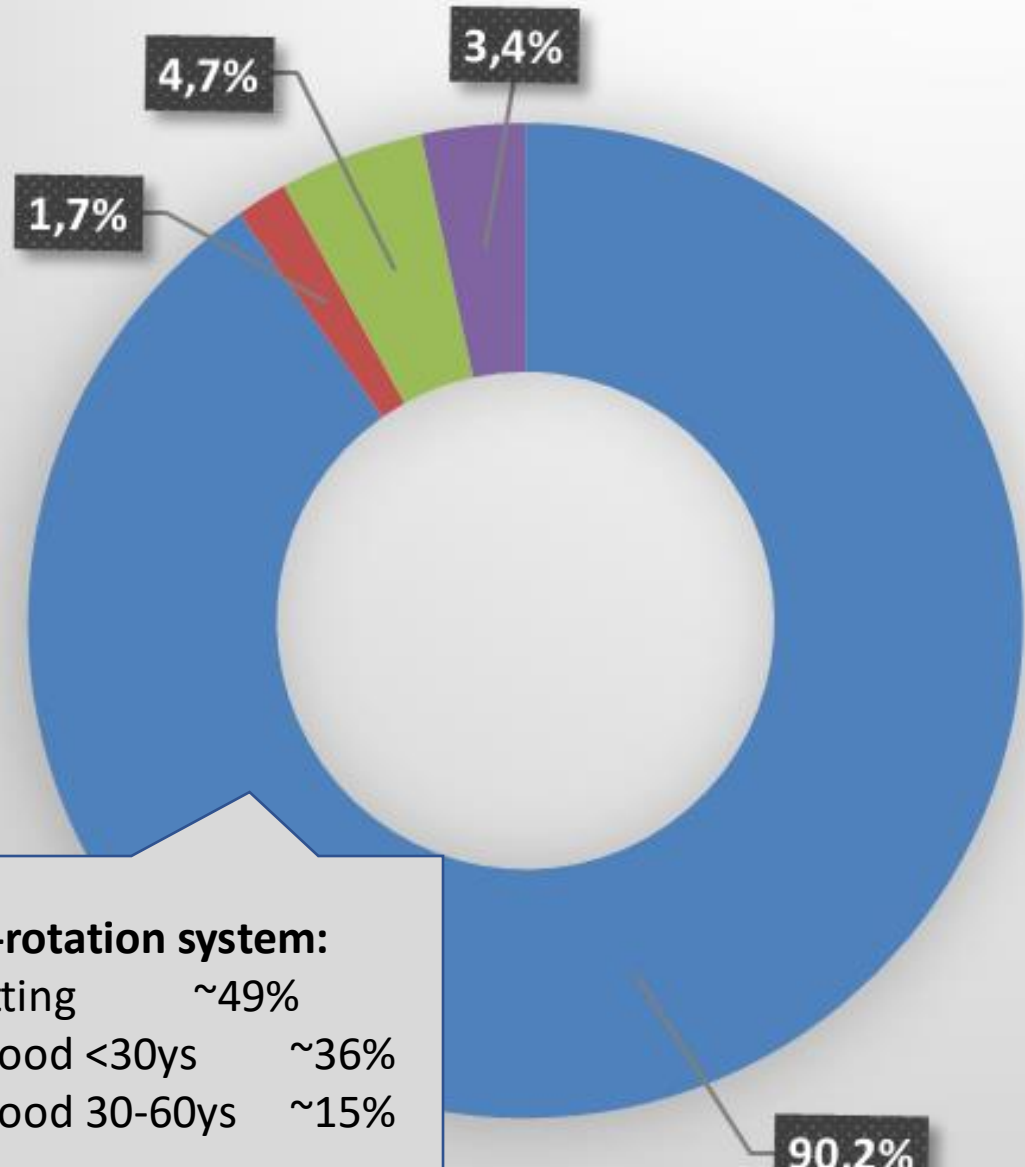


Photo: B. Vajda

Silvicultural systems in Hungary

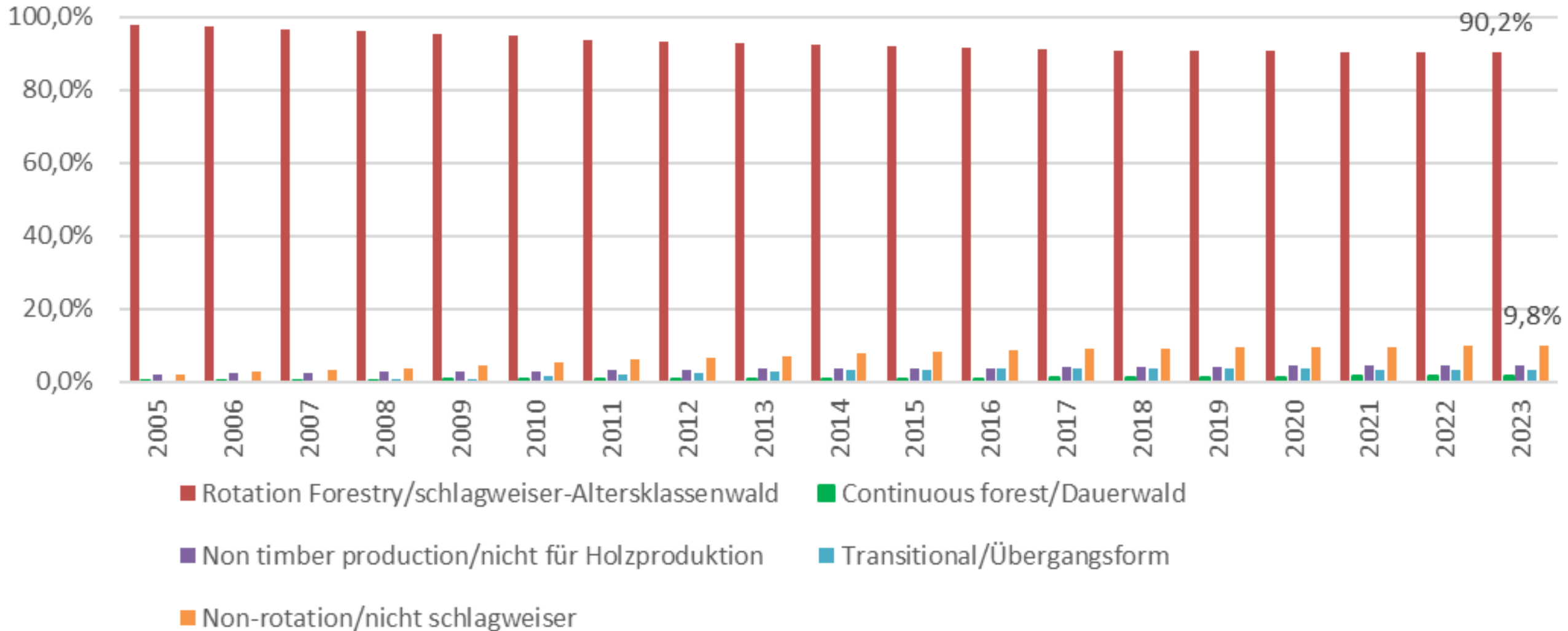


- Age-class-rotation
- Forestry/schlagweiser-Altersklassenwald
- Continuous forest/Dauerwald
- Non-timber production/nicht für Holzproduktion
- Transitional/Übergangsform

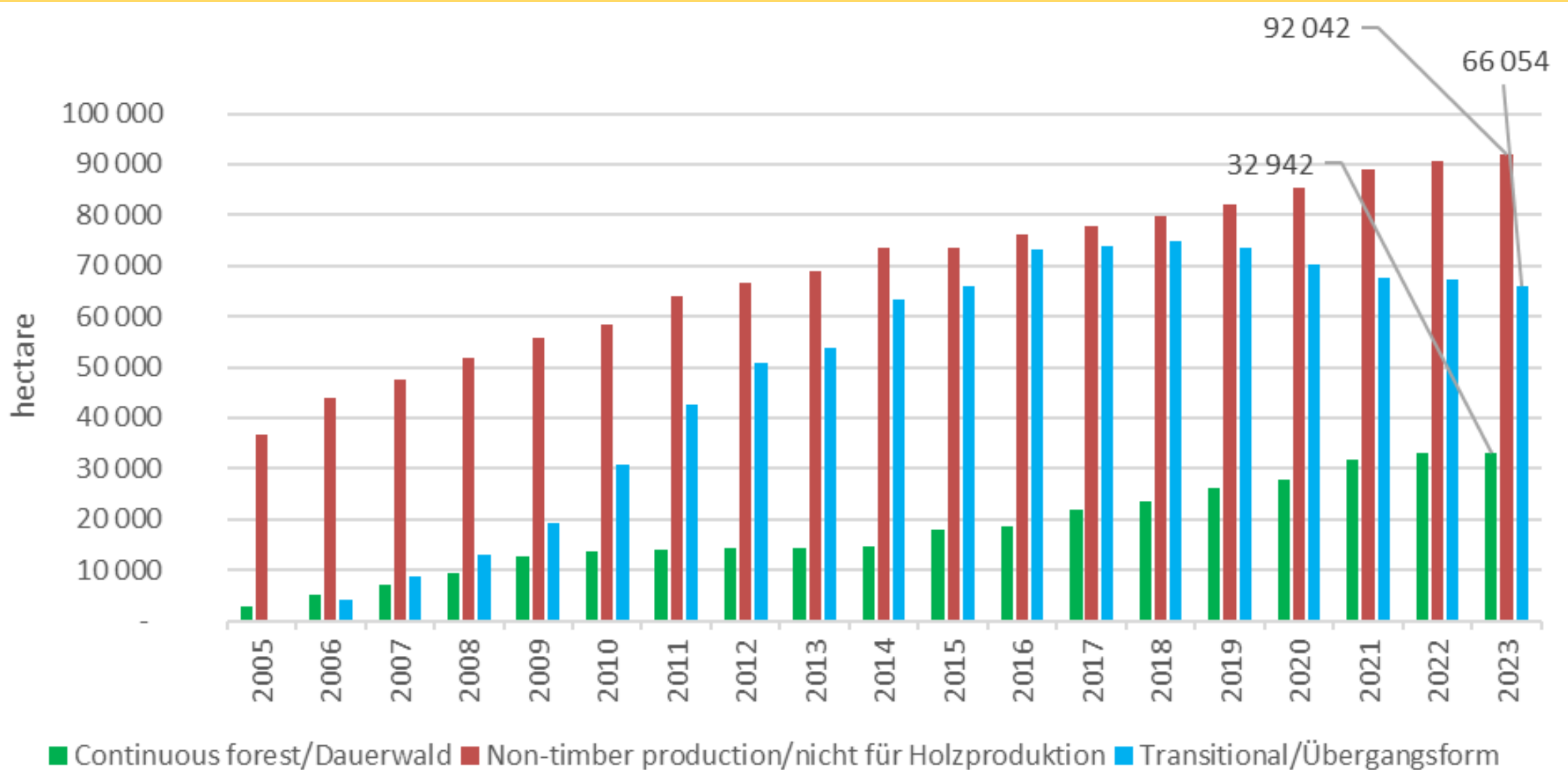
Age-class-rotation system:

- Clear-cutting ~49%
- Shelterwood <30ys ~36%
- Shelterwood 30-60ys ~15%

Change among silvicultural systems



Change in the area of irregular silvicultural systems



Source: NFK, 2023

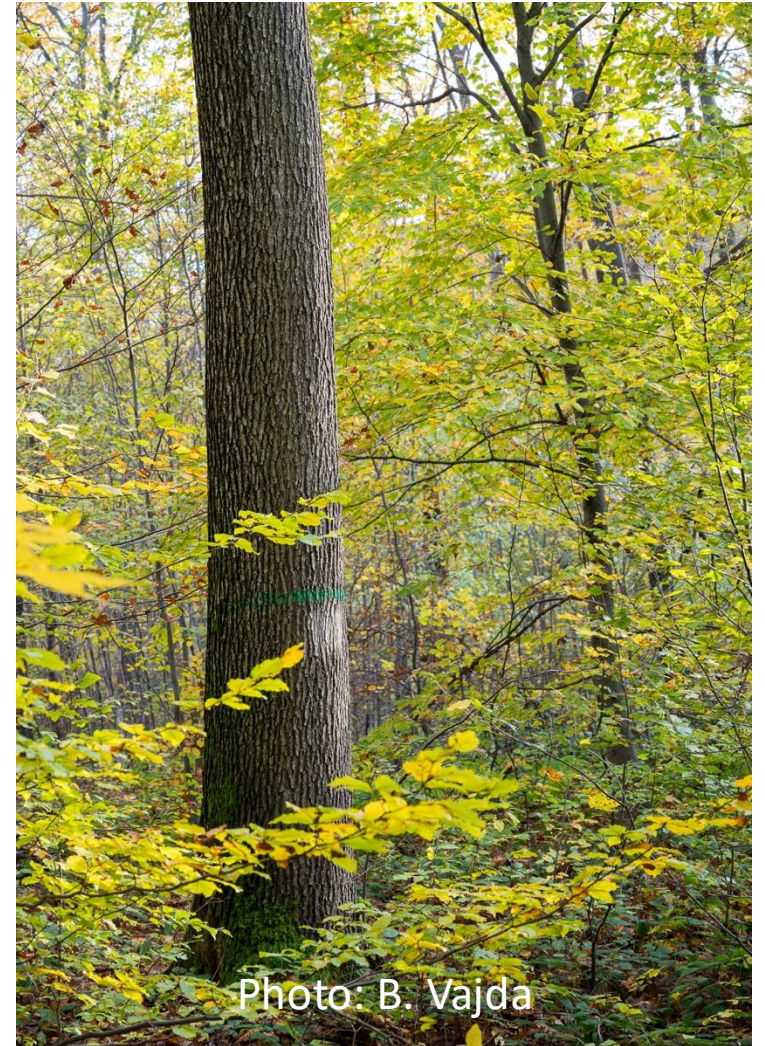
The situation of CCF in Hungary in 2023

2023, CCF system: 32,942 ha

- In privat forests: 3.771 ha, 11 %
- In state forests: 28.800 ha, 88 %
 - ✓ Pilisi Park Forestry Company: 13.189 ha, 40%
 - ✓ Mecsek Forest Company: 4.680 ha 14%
 - ✓ Bakony Forest Company.: 2.828 ha 9%
 - ✓ ...

2023, Transitional system 66.279 ha

- Privat forests: 16.075 ha, 24%
- State forests: 49.270 ha, 74%



Challenges of integrated forest management

- How can forests be professionally managed in a large area according to the CCF forestry system?
- How to integrate nature conservation measures well?
- How to help adapt to climate change, and increase the resilience of forests?
- **How light-demanding tree (e. g. oaks) species can be treated in the continuous cover forest system? /CCF was invented in stands with shade-tolerant tree-species/**

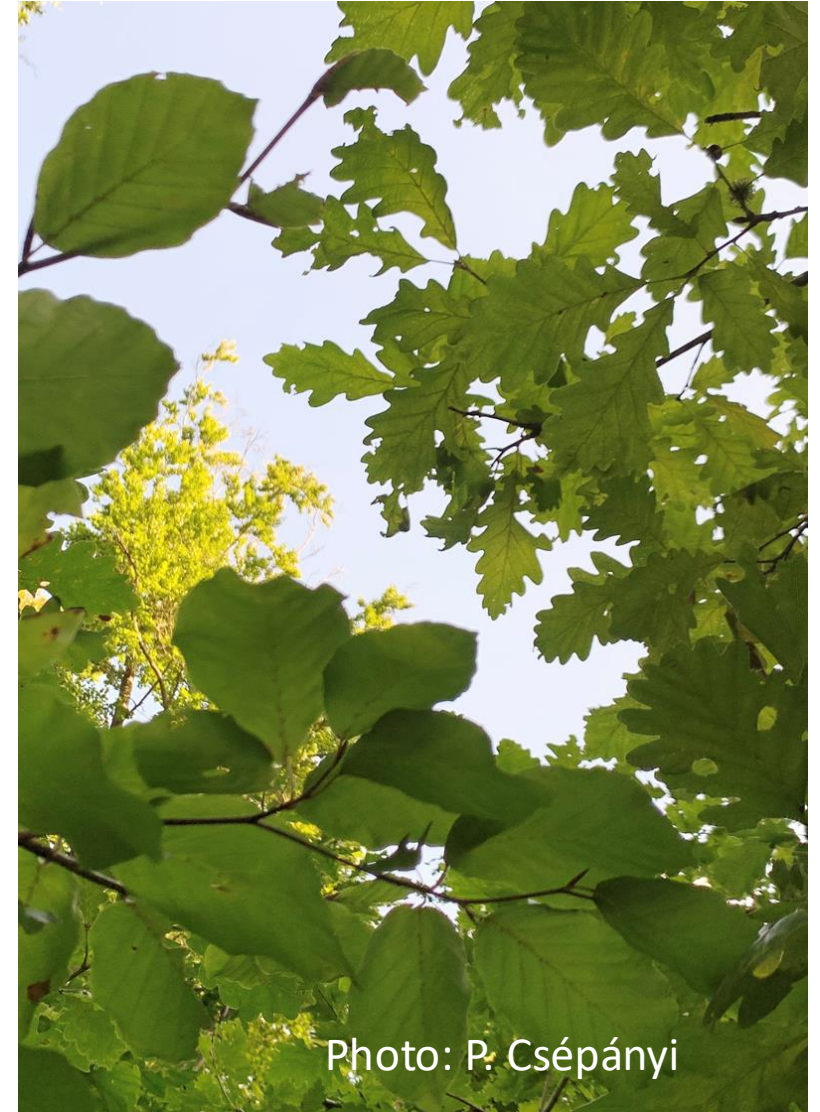


Photo: P. Csépanyi

Answers to challenges

- The digitization of the - **CCF Modul!**
- **With GPS technology** to treat small stand mosaics, spots:
 - successful treatment of some 100 m² spots – **GAP monitoring App**
 - distinguish and preserve ecologically **important conservation areas**
 - distinguish and preserve ecologically habitat trees – **Habitat tree monitoring App**



U02/01/4 Erdőanyai tömb - Visegrádi Erdészet / Éves gazdálkodási

Visegrád 77 A / 5554077010

Éves gazd. egységek

Erdőrészlet összegző

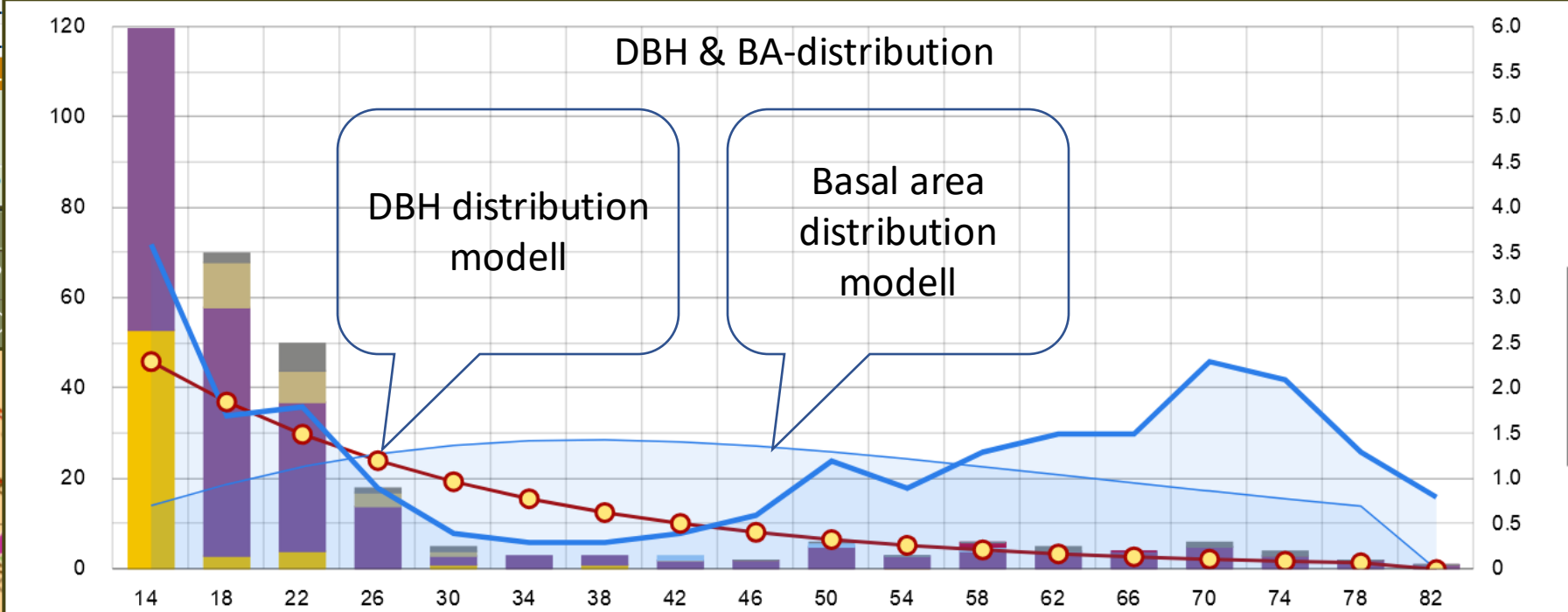
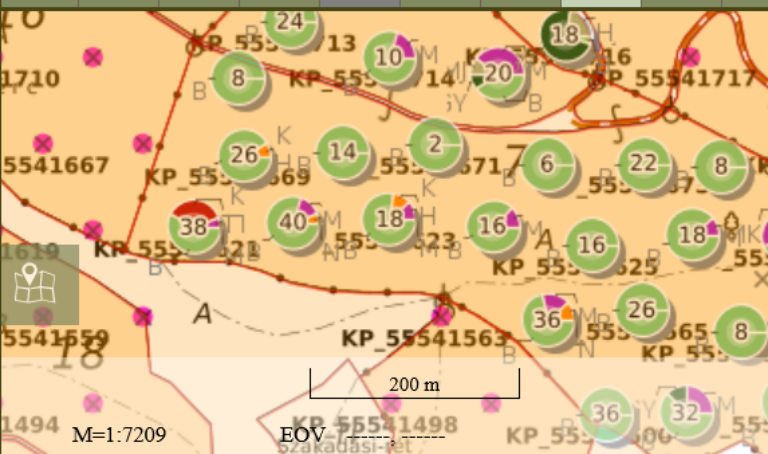
Visegrádi Erdészet		
Azonosító	Név	Ter.
5554014010	Visegrád 14 A	9.
5554014030	Visegrád 14 C	16.
5554014050	Visegrád 14 E	11.
5554016010	Visegrád 16 A	15.
5554077010	Visegrád 77 A	22.

B	22	17	1.2	33
B	26	10	0.7	14
B	30	2	0.1	2
		324	22.9	449

5 db. 75

Törzsszámeloszlás

Örökerdő tömb nyilvántartási térkép



GY
 B
 NH
 KTT
 KH
 MJ
 MK
 Törzsszám modell
 Célkörkép

Körlepeloszlás

Gap monitoring App

date
user
Gap-ID
Gap coord.
Target-Tree

Esztergom-Pilis... - LF

Lék jegyzőkönyv

Alapadatok Állapotleírás

Dátum: 2024. 10. 11.

Felhasználó: admin

Lék azonosító: 20241011/1

Lék koord: 19.035088, 47.529609

Célfafaj: KTT

Gap Ø N-S
Gap Ø W-E
Fence?
Mix-prop.
Dens. pcs/m²
Height
DBH
Game impact

Esztergom-Pilis... - LF

Lék jegyzőkönyv

Alapadatok Állapotleírás

Átm. É-D (m): 15

Átm. K-Ny (m): 12

Kerítés típusa: Lék/panel

LUP EA (%): KTT50/GY40/B10

LUP (db/m²): 5/4/1

LUP mag. (m): 3.5/3/3.1

LUP d1,3 (cm): 2/2/2

Vadhatás: Mérsékelt vadhatás

Extension?
Tending?
Fence repair?
Time (minutes)
Preparedness
Remarks

Esztergom-Pilis... - LF

Lék jegyzőkönyv

Alapadatok Állapotleírás Feladás

Lékbővítés:

LUP ápolás:

Kerítésjavítás:

Időszüks. (perc): 15

Készültség: Folyamatos

Megj.



Habitat tree App and database

Esztergom-P... - HBT

Jegyzőkönyv

Adatok Mikroélőhelyek

user Felvételező CsepanyiP

date Felv. dátum 2024. 10. 11.

H-tree-ID Egyedi azonosító HB20241011/1

tree species Fafaj KTT

Tree coord. Koordináta 19.038208, 47.670886

DBH Átmérő 65

remark Megj.

Microhabitat
type and
quantity

Esztergom-P... - HBT

Jegyzőkönyv

Adatok Mikroélőhelyek

Mikrohabitat	db		
CV11	1		
CV14	1		
BA12	1		
3			
BA12			
CV	IN	BA	DE
GR	EP	NE	OT
7	8	9	
4	5	6	C
1	2	3	-
0	.		+

Catalogue of
tree
microhabitats

12:55 68%

Esztergom-P... - HBT

Jelmagyarázat

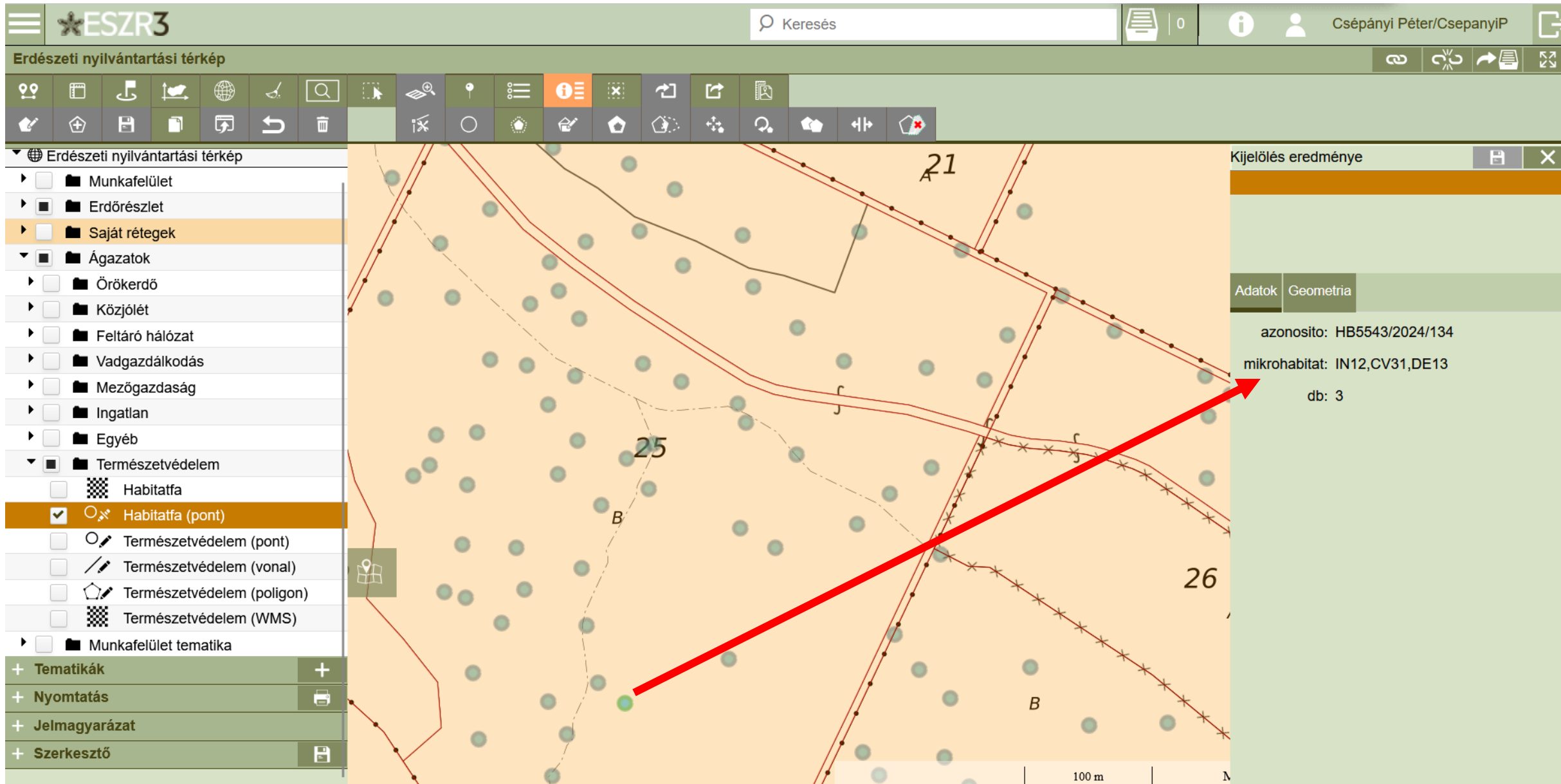
1/4

Odúk

Harkály által készített odúk:

- CV11 Ø = 4 cm, a korona ágában.
- CV12 Ø = 5-6 cm, törzsön, letört ághelyeken vagy korhadó ágakban.
- CV13 Ø ≥ 10 cm, ágmentes törzsrészen, ovális bejáratú.
- CV14 Ø ≥ 10 cm, harkályok táplálkozó üregei
- CV15 legalább 3 odú 2 m-en

Habitat tree database



ESZR3

Keresés

Erdészeti nyilvántartási térkép

Erdészeti nyilvántartási térkép

- Munkafelület
- Erdőrészlet
- Saját rétegek
- Ágazatok
 - Örökerdő
 - Közjólét
 - Feltáró hálózat
 - Vadgazdálkodás
 - Mezőgazdaság
 - Ingatlan
 - Egyéb
- Természetvédelem
 - Habitatfa
 - Habitatfa (pont)
 - Természetvédelem (pont)
 - Természetvédelem (vonal)
 - Természetvédelem (poligon)
 - Természetvédelem (WMS)
- Munkafelület tematika

Tematikák

Nyomatás

Jelmagyarázat

Szerkesztő

Kijelölés eredménye

Adatok	Geometria
azonosito: HB5543/2024/134	
mikrohabitat: IN12,CV31,DE13	
db: 3	

100 m

CAP- Forest environmental protection target programs

- 1/a: New entry into CCF system, (10 years), 1. y. 236€/ha, 2-9 ys. 208 €/ha
- 1/b: Maintenance of CCF system, previously entered CCF (10 years) 104 €/ha/y
- 1/c: Transition to non-timber production system (10 year) just for private forests – 79 €/ha/y
- 2/a: Continuous structural transformation (without clear/final cutting) (5-10 years) max. 5672-6987 €/ha
- 2/b: Continuous (without clear/final cutting) improved renovation (5-10 years)
- 3: Suppression of non-native species (5 years) 249 €/ha/y
- 4: Glade restoration (5 years) 208 €/ha/y
7. Modular: small-scale ecosystem services (5 years): Minimum of 50 euros/ha/year, a maximum of 100 EUR/ha/year
- 7.1. preservation of micro-habitats: 5 pieces/ha
 - 7.2. placement of dens: 1 piece/ha
 - 7.3. placement and filling of acorn trays: 1/piece/ha/year,
 - 7. 4. habitat preservation: wetland - lawn - shrub (TN) - biotope trees: 5 pieces/ha
 - 7.5 . scattered mixture preservation: rare mixture: 1 piece/ha, other mixture: 10 pieces/ha

Interreg Hungary –Slovakia 2021-2027

- HUSK/2302/1.2/067 HUSK Biosphere Reserves (2024-2026):
expected results:
 - Designation of conservation areas of 420 ha, each with an average area of 0.1-0.5 ha (stepping stones) in 9,200 ha continuous cover forest area - Ebrach Model
 - Designation of 16,000 habitat trees in an area of 9,200 ha - in 9,200 ha continuous cover forest area
- HUSK/2302/1.2/168 OakAdapt 1.2.1/A (2024-2027):
 - development of a Gap monitoring methodology that helps the treatment of light-demanding tree species in the CCF silvicultural system
 - development of an operational wildlife impact methodology in order to create a wildlife density appropriate to the forest's tolerance



Interreg
Hungary – Slovakia



Co-funded by
the European Union

Summary

Responses to challenges such as climate change, integration of nature conservation considerations or the management of light-demanding tree species are the answers

on behalf of the state:

- ✓ the development of legislation and official practice,
- ✓ ensuring support for farmers (CAP);

on behalf of the forest manager:

- ✓ creating a precision forest management module and app based on GPS technology.

Thanks to these, the CCF is steadily increasing in Hungary, currently covering 33,000 ha.

A photograph of a forest during autumn. The trees have green and yellow leaves. In the center, a tree trunk is heavily damaged by woodpeckers, with many holes visible. The ground is covered in fallen leaves.

Thank you for your attention!

Photo: B. Vajda