



What is an old-growth forest? Towards a Europe-wide definition of 'old-growth'.

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Final Conference of LIFE PROGNOSES :

Characteristics and Ecosystem Services of European Old-Growth Beech Forests



Overview

- IUFRO
- LIFE PROGNOSES
- Definition of primary and old-growth forest
- Criteria and indicators of 'old-growthness'
- Prognoses-dataset
- Results
- Conclusions and outlook





Final Conference of LIFE PROGNOSES :

Characteristics and Ecosystem Services of European Old-Growth Beech Forests

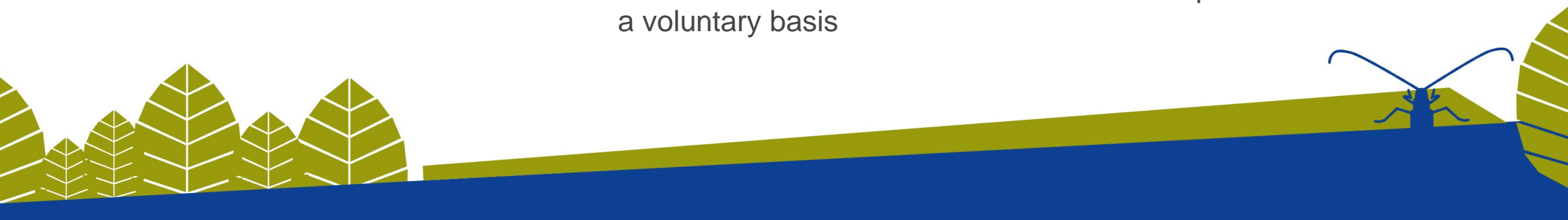


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1.01.07 - Ecology and silviculture of beech

4.02.05 - Remote sensing

8.01.01 - Old growth forests and forest reserves





Final Conference of LIFE PROGNOSSES :

Characteristics and Ecosystem Services of European Old-Growth Beech Forests



Final conference of the LIFE preparatory project **PROGNOSSES** :

LIFE PROGNOSSES - PRotection of **Old Growth**

Forests in Europe: **Natural heritage,**

Outline, Synthesis and Ecosystem Services



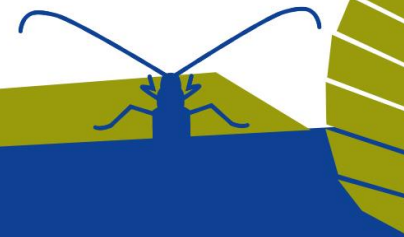
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Ancient and Primeval Beech
Forests of the Carpathians
and Other Regions of Europe
World Heritage since 2007





BE	Sonian Forest Foundation (SOFO)
AT	E.C.O. Institute of Ecology (ECO)
	Joanneum Research (JORE)
	Kalkalpen National Park (NPKA)
BE	INBO Research Institute Nature and Forest (INBO)
BG	Central Balkan National Park (NPCB)
CZ	Czech University of Life Sciences (CULS)
DE	City of Angermünde (CANG)
	Eberswalde University for Sustainable Development (UNIE)
	Northwest German Forest Research Institute (NW-FVA)
IT	Abruzzo, Lazio and Molise National Park (NPAB)
	University of Tuscia (UNITUS)
SI	Ministry of the Environment and Spatial Planning (MESP)
	University of Ljubljana, Biotechnical Faculty (UL)
UA	Carpathian Biosphere Reserve (CBR)



LIFE PROGNoses

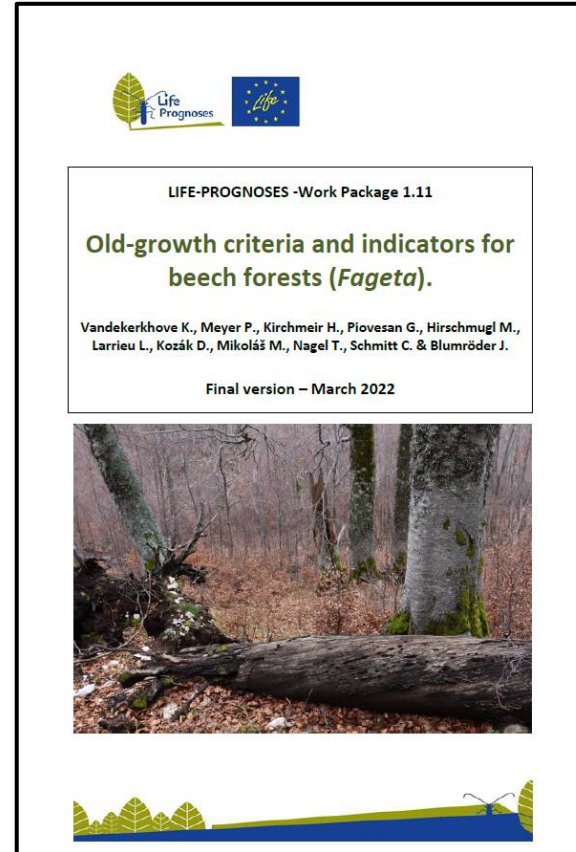
- **WP1 Development of criteria and methods to assess and map old growth forest in Europe**
 - **Definition of oldgrowth; criteria and indicators for ‘old-growthness’**
- **WP2 Assessing the value of ecosystem services of primary and old growth forests :**
 - **ecosystem services assessment :**
 - identify and quantify ecosystem services:
 - carbon storage
 - biodiversity
 - micro- and meso-climatic impact
 - the potential for recreation and creation of green jobs (ecotourism)
- **WP3 Communication and awareness raising to strengthen conservation of old growth**



Definition of old-growth forests

EU-biodiversity strategy:

“all remaining primary and old-growth forests in Europe should be defined, mapped, monitored and strictly protected”



Report

- Literature review
- Definitions Primary and OGF
- Criteria and indicators of OGF applied to beech forests

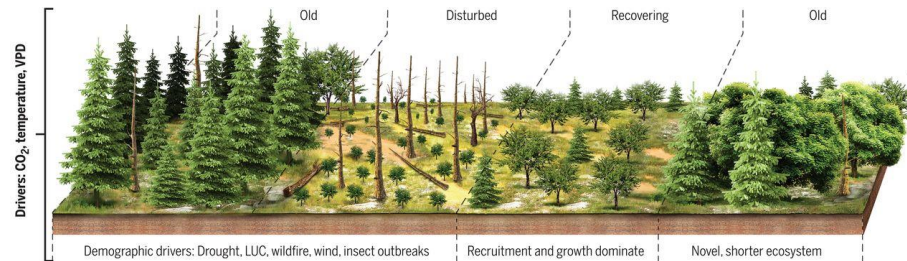
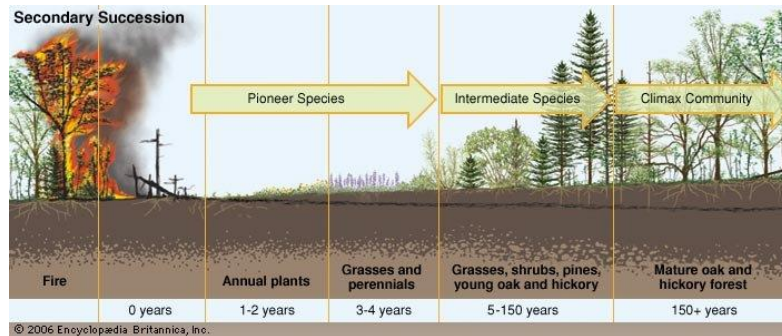
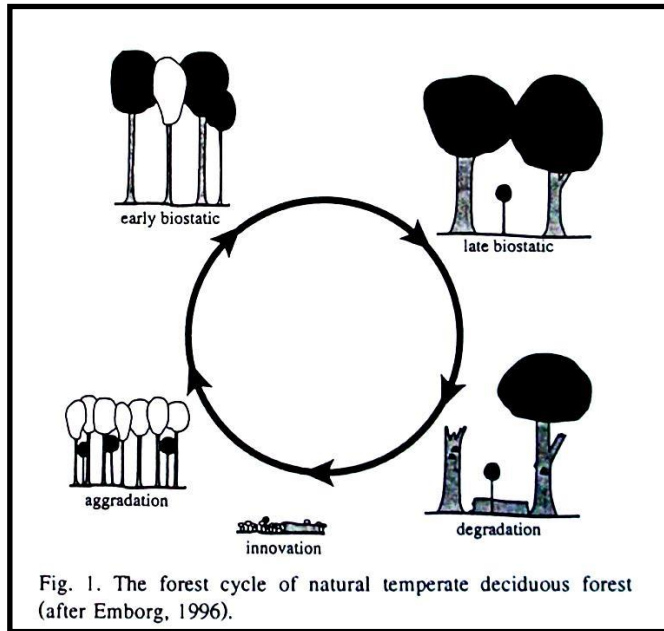
download at:

www.lifeprognoses.eu/outputs-of-the-project/

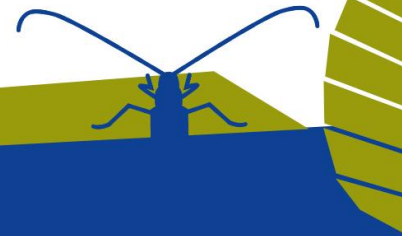


Primary vs. Old-Growth

Primary (FAO) = *“Naturally regenerated forest of native tree species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.”*

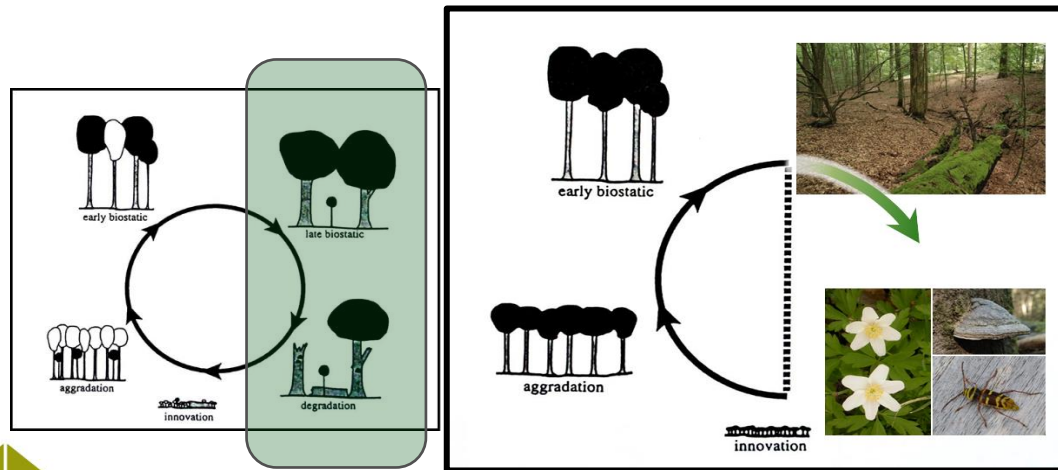


EU-DG-Envir. (2023) Guidelines for defining, mapping, monitoring and strict protection of EU Primary and Oldgrowth forests



Primary vs. Old-Growth

- Old-Growth (EU 2023)** = : *“A forest stand or area consisting of native tree species that have developed, predominantly through natural processes, structures and dynamics normally associated with late-seral developmental phases in primary or undisturbed forests of the same type. Signs of former human activities may be visible, but they are gradually disappearing or too limited to significantly disturb natural processes’.*

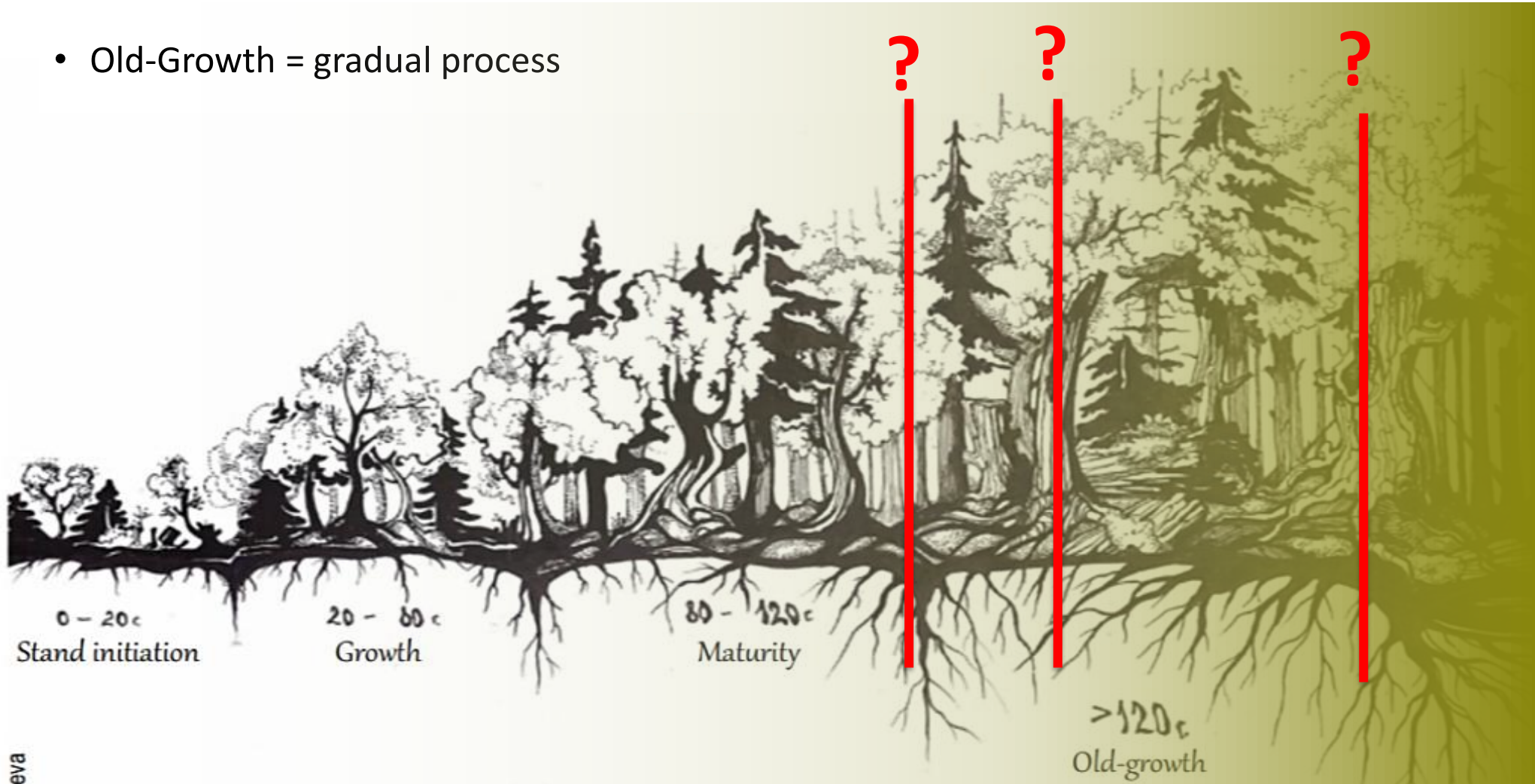


EU-DG-Envir. (2023) Guidelines for defining, mapping, monitoring and strict protection of EU Primary and Oldgrowth forests



Level of 'old-growthness'

- Old-Growth = gradual process



Criteria and indicators of old-growth

- Species composition and mixture
- Large dead wood amounts
- Presence of large/ old trees

- Stand origin : natural regeneration, but planted is not excluded
- Structural complexity (horizontal + vertical); soil microrelief
- Habitat trees = trees containing Tree-related Microhabitats
- Indicator species present



Criteria and indicators of old-growth

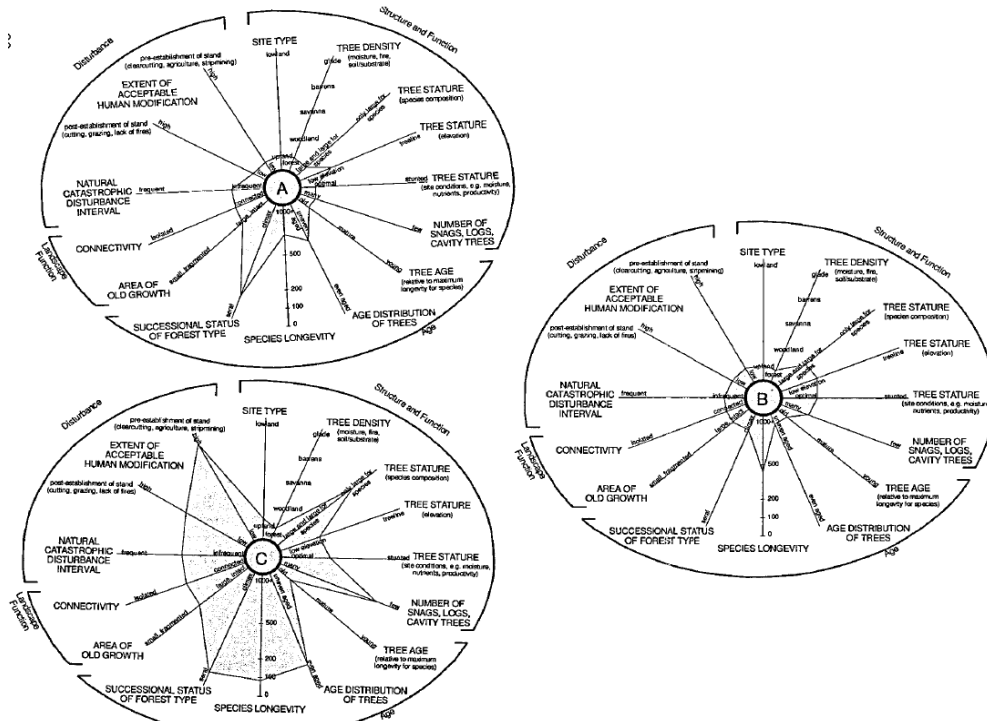


Figure 2.—Examples of the old-growth model for: (A) Douglas-fir, (B) northern hardwoods, (C) aspen.



Tyrell et al. 1998 - USDA General Technical Report NC-197





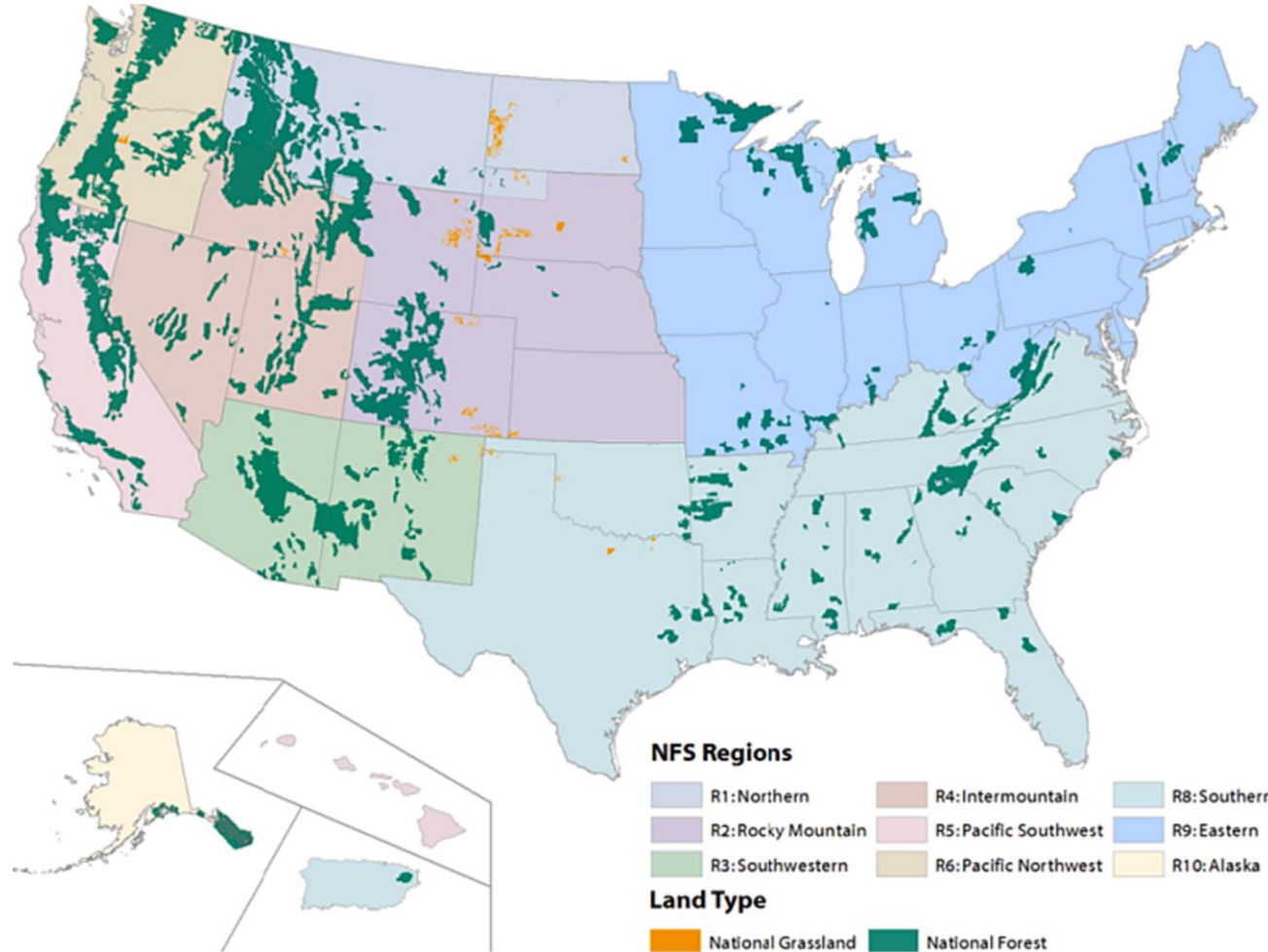
Threshold values : cfr. USA

- Presidential Executive Order (EO#14072, April 22, 2022) :
- The Secretary of the Interior (...) shall, **within 1 year of the date of this order, define, identify, and complete an inventory of old-growth and mature forests on Federal lands**, accounting for regional and ecological variations, as appropriate, and shall **make such inventory publicly available.**
- **Forest on public land : 95 mio ha**



Threshold values : cfr. USA

- 10 regions



Threshold values : cfr. USA

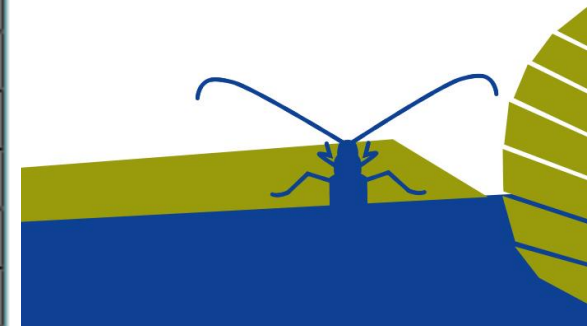
- 10 regions
- Every main forest type per region : Threshold DBH, N/ha, tree age

Table 17.—Eastern Region old-growth community types, corresponding FIA forest types, and large tree diameter and density and stand age minima.

Old-growth type	FIA forest type code	Tree diameter (inches)	Trees per acre	Stand age (years)
Beech maple basswood	805	16	10	141
Northern hardwood	520, 801, 802, 809	16	10	141
Dry oak	162, 163, 165, 167, 182, 184, 404, 405, 501, 502, 506, 507, 509, 510, 513, 515	16	20	101
Mesic northern oak	503, 504, 505, 511, 512, 516	20	5	161
Wetland hardwood	701, 702, 703, 704, 705, 706, 707, 708, 709	18	10	121
Conifer northern hardwood	104, 105, 401	16	10	141
Northern pine	101, 102, 103	12	20	101
Montane spruce	121, 123, 124, 128, 129	15	10	141
Sub-boreal spruce/fir	122, 125	12	10	141
Other	All others	14	10	101

DBH>40 cm; 25/ ha

Ca. 20% = old-growth

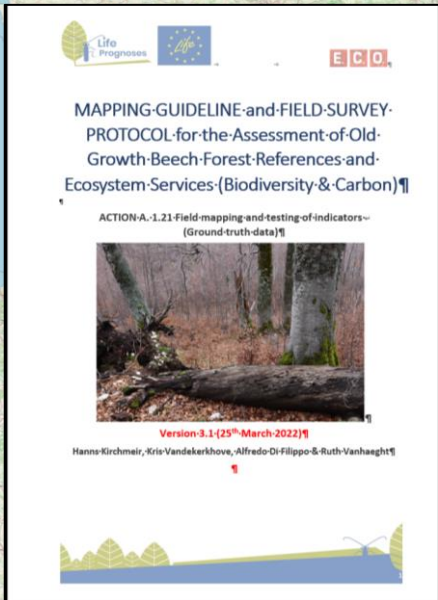


Case-study PROGNOSSES : Eur. beech forests



12 sites : managed up to primary beech dominated forest stands

>2000 sample plots
1000 in managed;
500 in set-aside;
700 in primary and long set-aside



MAPPING-GUIDELINE-and-FIELD-SURVEY-PROTOCOL-for-the-Assessment-of-Old-Growth-Beech-Forest-References-and-Ecosystem-Services-(Biodiversity-&-Carbon)¶

ACTION-A-1.21-Field-mapping-and-testing-of-indicators~(Ground-truth-data)¶

Version-3.1(25th March 2022)¶

Hans Kirchmeir, Kris Vandekerckhove, Alfredo Di Filippo & Ruth Vanhaeght¶



Living volume:

Primary :

M: 450-950 m³/ha

Q1: 400-800 m³/ha

Q3: 500-1000 m³/ha

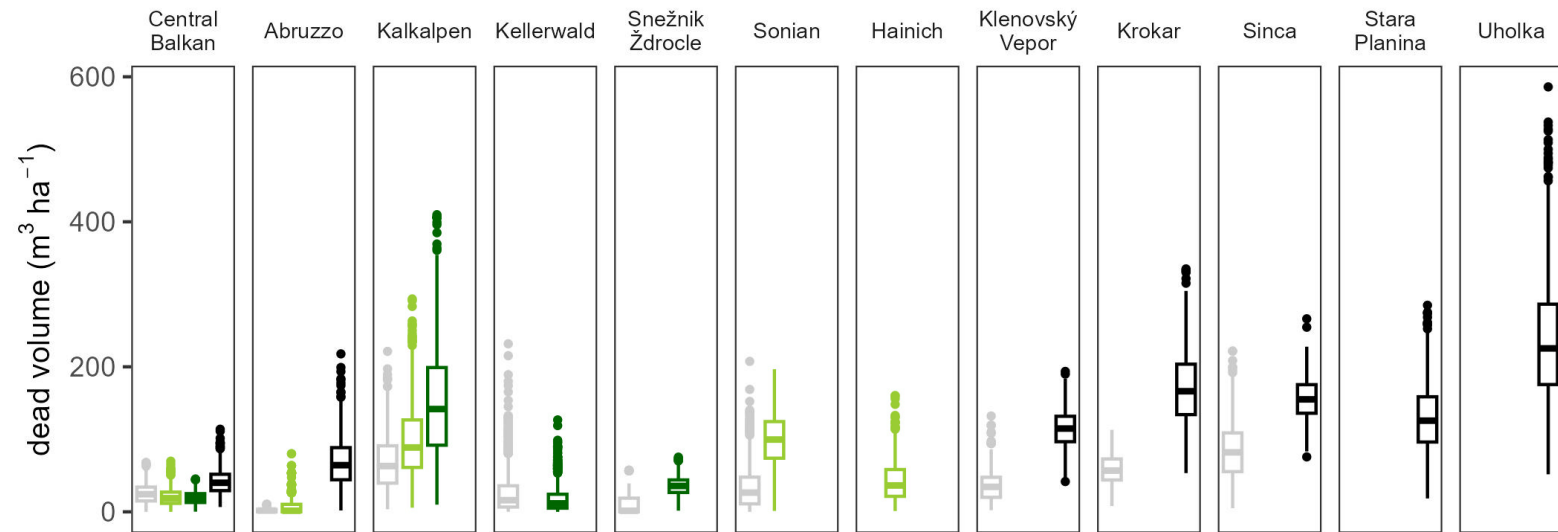
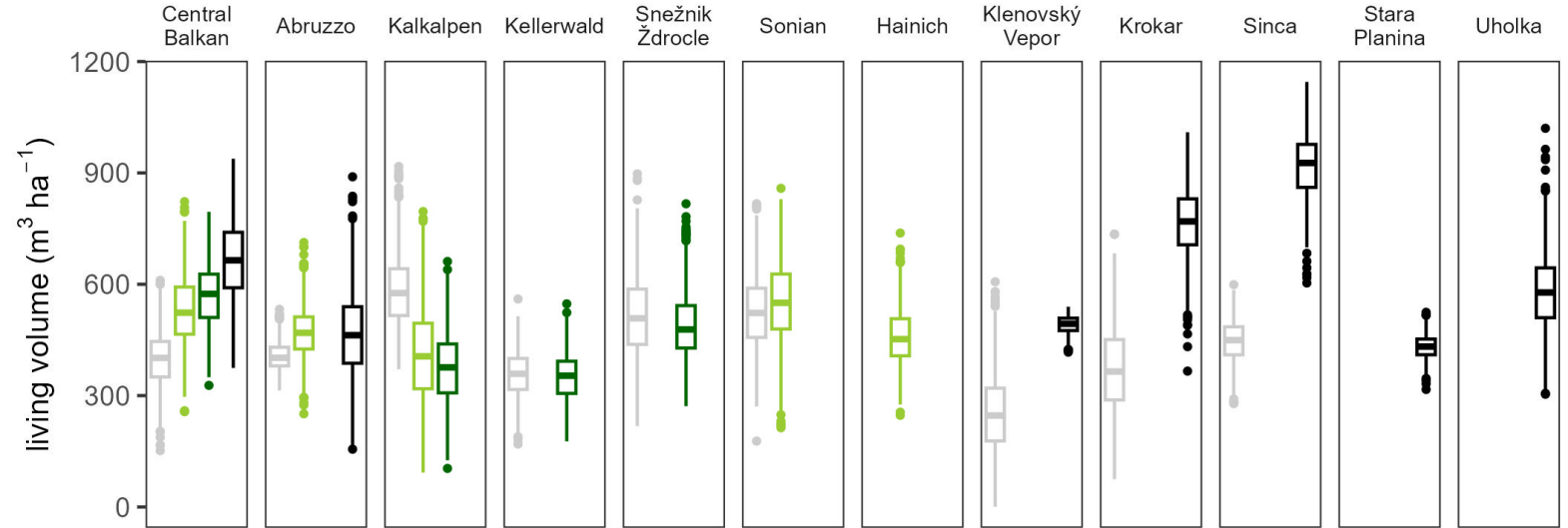
Total dead volume:

Primary :

M: 100-200 m³/ha

Q1: 50-125 m³/ha

Q3: 150-325 m³/ha



● managed ● set aside ● long untouched ● primary

Density VLT:

Primary :

M: 10-30/ha

Q1: 5-15 /ha

Q3: 20-40 /ha

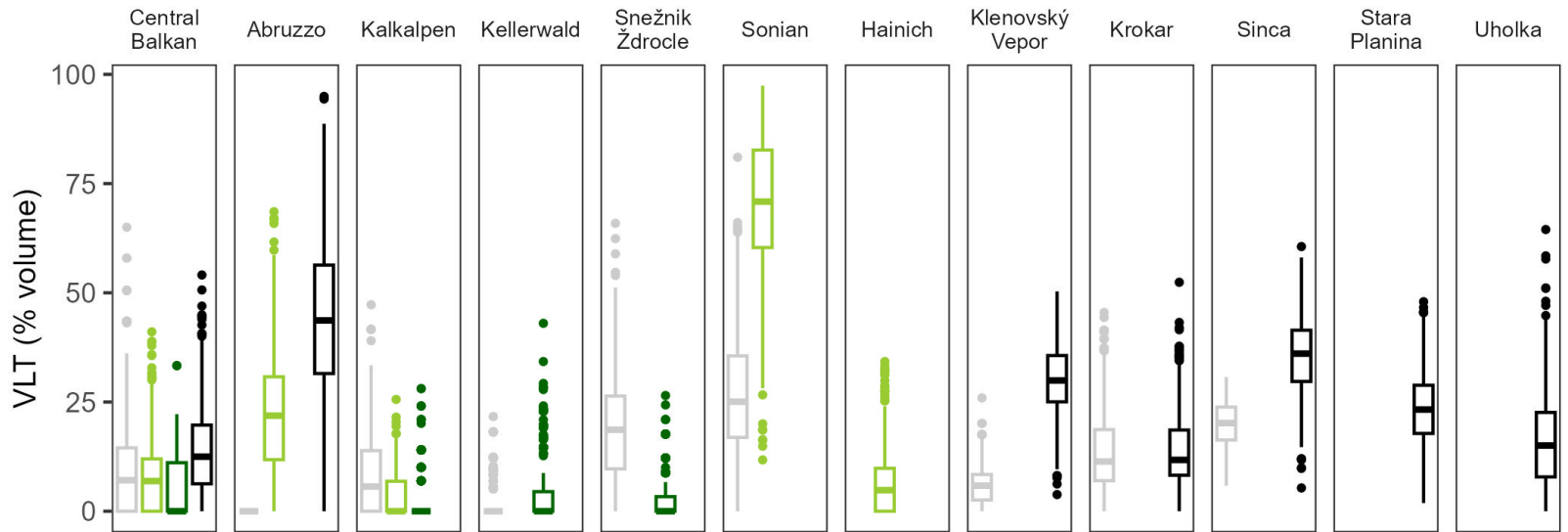
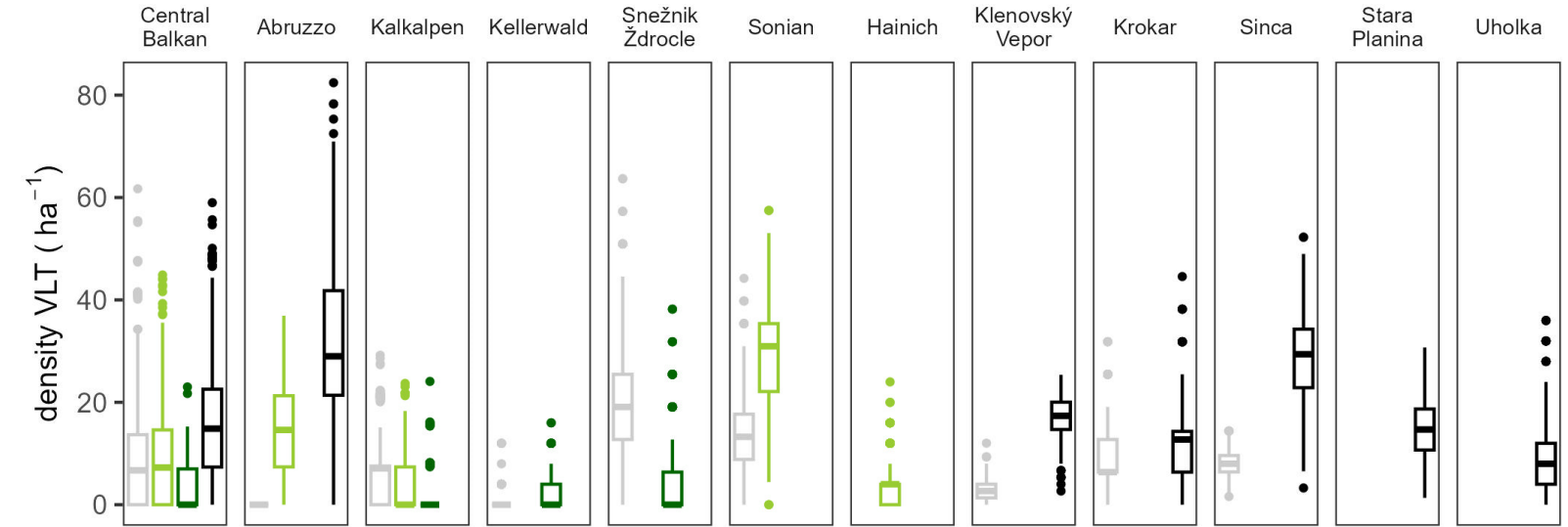
Share VLT in Vol(L):

Primary :

M: 25-40 %

Q1: 10-25 %

Q3: 35-50 %



● managed ● set aside ● long untouched ● primary

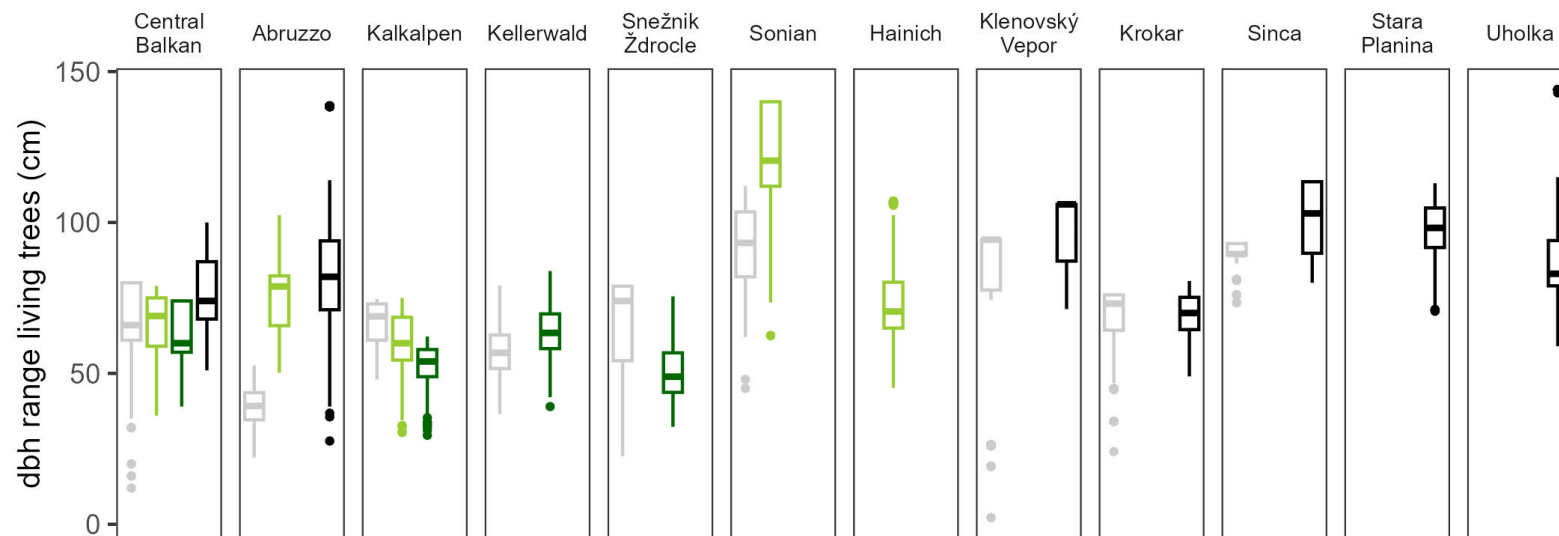
DBH-range

Primary :

M: 50-90 cm

Q1: 45-80 cm

Q3: 65-100 cm



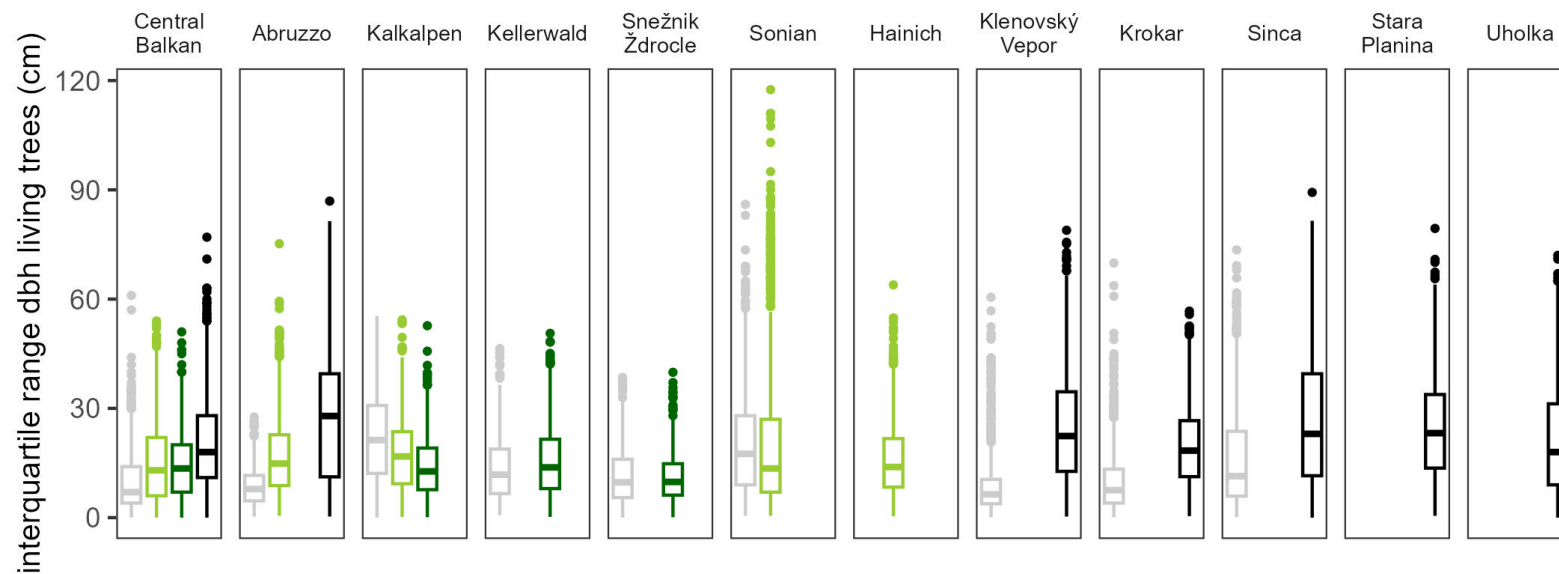
DBH-IQR

Primary :

M: 30 cm

Q1: 20 cm

Q3: 40-50 cm



● managed ● set aside ● long untouched ● primary

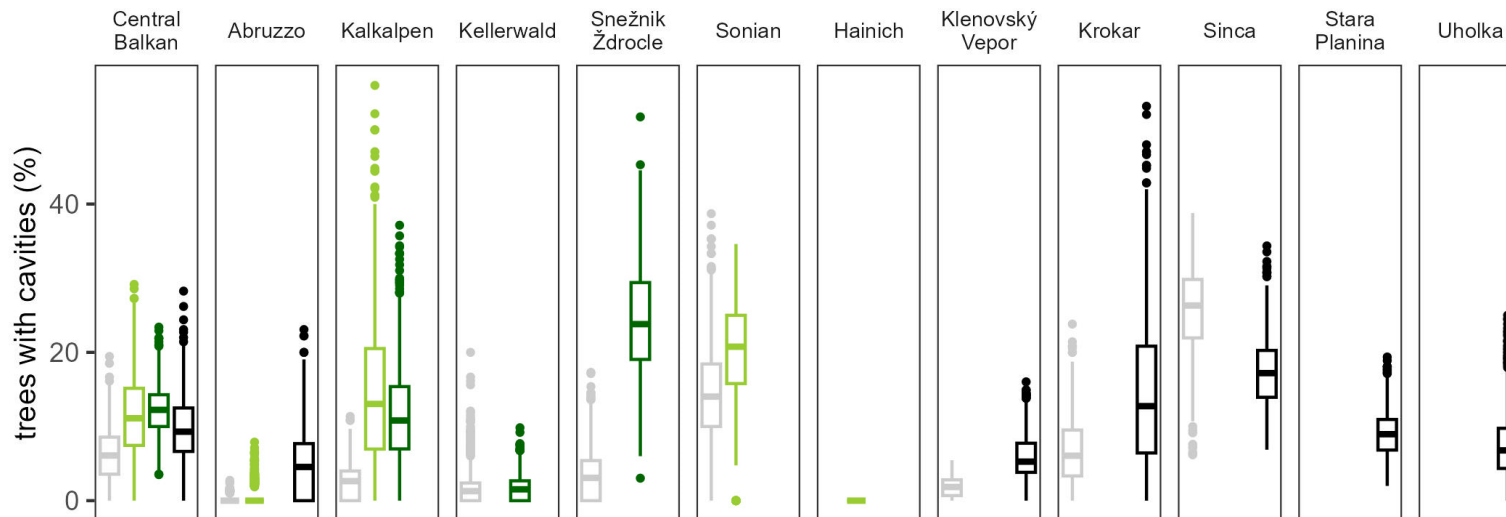
% trees with cavities

Primary :

M: 5-15%

Q1: 0-12%

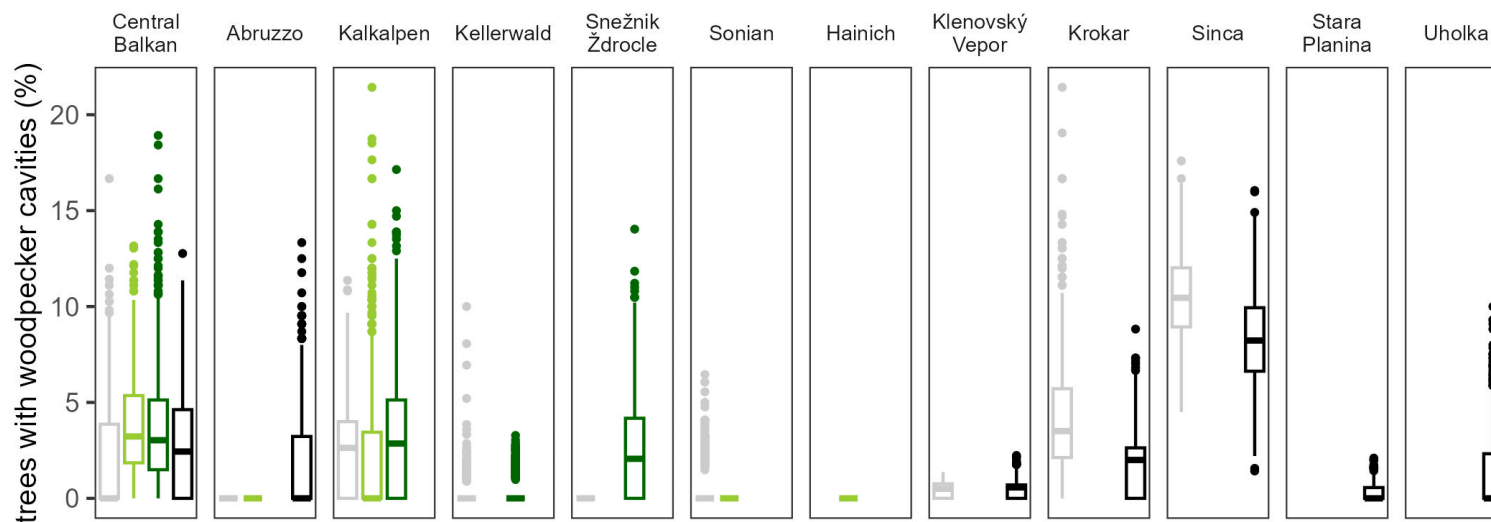
Q3: 10-25%



% trees with Woodpecker cavities

Primary :

M: 0-10%



● managed ● set aside ● long untouched ● primary

- Calculate values on the level of the mapping units
- Reference values and value ranges in relation to site conditions for primary forests
- compare managed, set-aside, long untouched
- Derive potential threshold values for delineation of OGF
- Calculate OGI-values
- Scientific paper





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Q&A



Thank you for your attention

