Club Alpino Italiano
Sezione di Viterbo

UNIVERSITÀ DEGLI STUDI DELLA TUSCIA

Aspetti forestali della Tuscia

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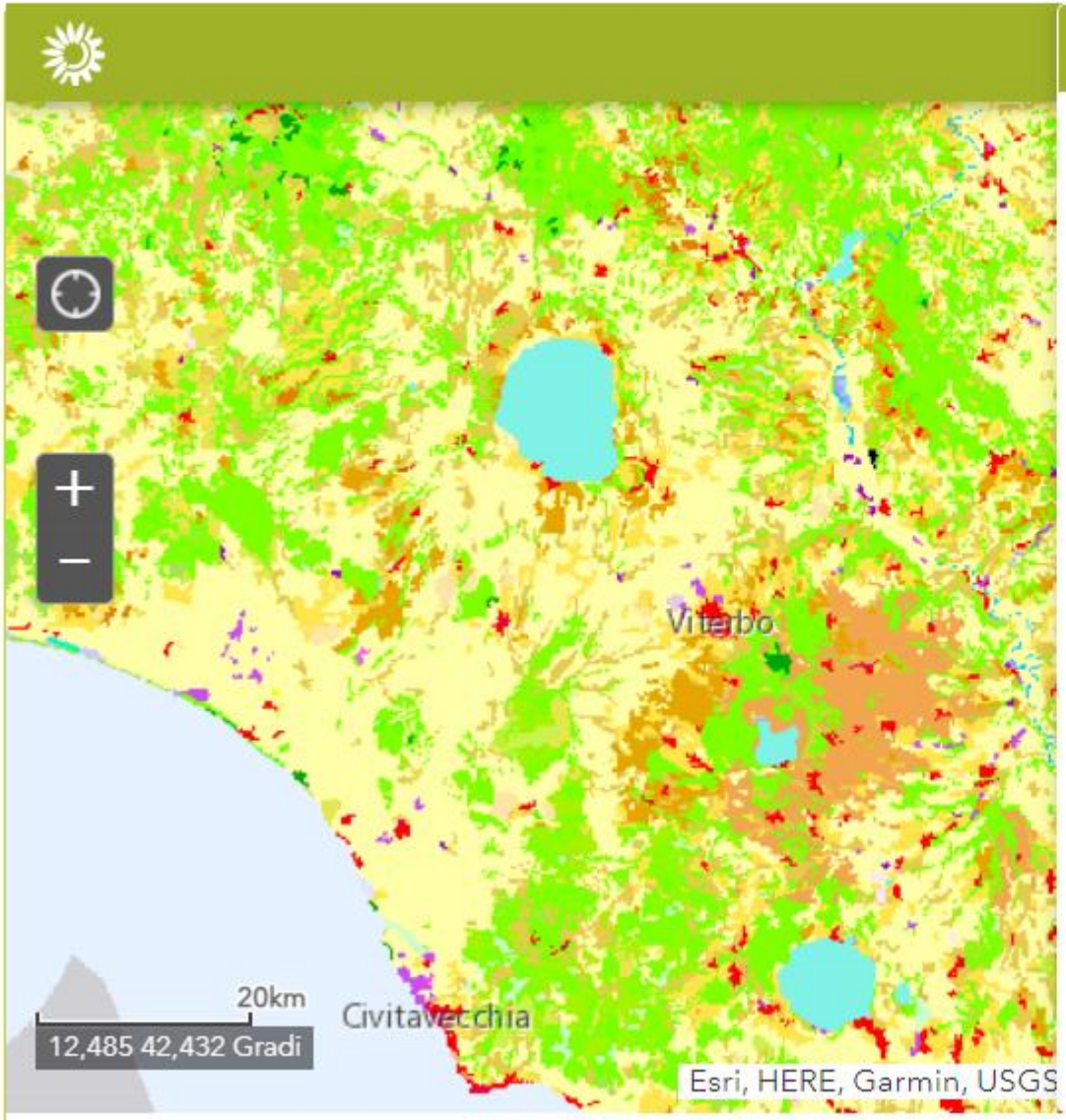
Università degli Studi della Tuscia - Viterbo

LX CORSO NAZIONALE DI FORMAZIONE PER INSEGNANTI DELLA SCUOLA PRIMARIA E SECONDARIA DI PRIMO E SECONDO GRADO

CLC 2018

Map View | Metadata | Download

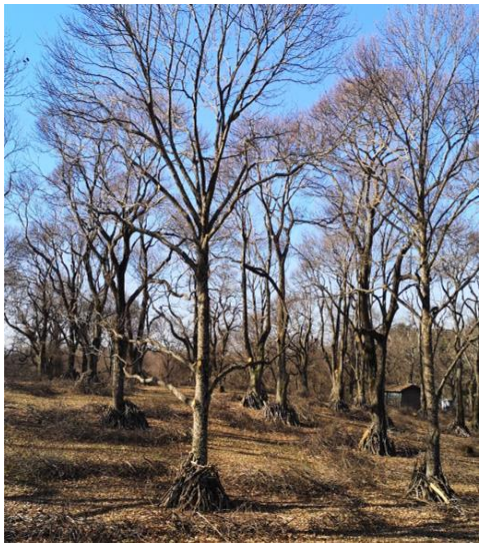


Legend_2

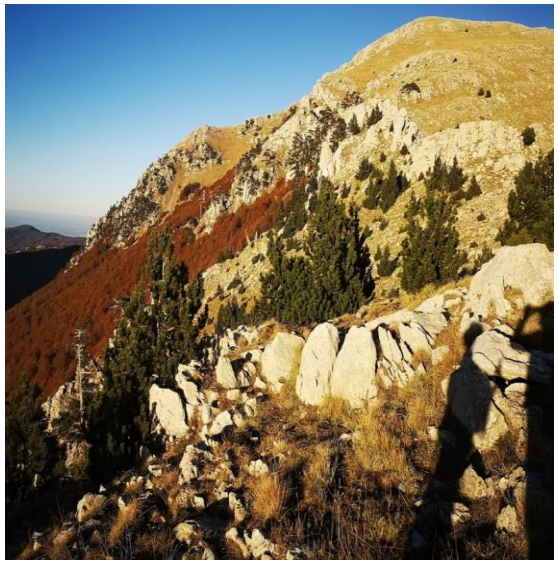
- Non-irrigated arable land
- Permanently irrigated land
- Rice fields
- Vineyards
- Fruit trees and berry plantations
- Olive groves
- Pastures
- Annual crops associated with permanent crops
- Complex cultivation patterns
- Land principally occupied by agriculture, with significant areas of natural vegetation
- Agro-forestry areas
- Broad-leaved forest
- Coniferous forest
- Mixed forest
- Natural grasslands
- Moors and heathland
- Sclerophyllous vegetation
- Transitional woodland-shrub


Talamone
Marsiliana
Albinia
Valentano
Ischia di Castro
Marta
Montefiascone
Sant'Angelo
Amelia
Terni
Piediluco
Rivodutri
Attigliano
Narni
Stroncone
Celliere
Canino
Bomarzo
Vitorchiano
A1
Orte
Località Produttiva Poggino
Orte Scalo
Greccio
Capalbio
Orbetello
Borgo Carige
Capalbio Scalo
Tuscania
Viterbo
Soriano Nel Cimino
Vasanello
Contigliano
Rieti
Porto Ercole
Pescia Romana
Il Carrubo
Vignanello
San Martino Al Cimino
Magliano Sabina
Montalto di Castro
Montalto Marina
Corchiano
Caprarola
Vetralla
Ronciglione
Civita Castellana
Forano
Poggio Mirteto
Monte Romano
Tarquinia
Capranica
Sutri
Nepi
Sant'Oreste
Lido di Tarquinia
E80
Bassano Romano
Calcata Vecchia
Fara in Sabina
Poggio Moiano
A1
Fiano Romano
Scandriglia
Oriolo Romano
Tolfa
Parco Naturale Regionale di Bracciano Martignano
Campagnano di Roma
Capena
Manziana
Scaglia
Civitavecchia
Riano
E35
Cesano
Formello
Palombara Sabina
E80
Monterotondo
Santa Marinella
Santa Severa
Cerveteri
Guidonia Montecelio
La Giustiniana
Castel Madama
Tivoli
Zona L'Ottavia
A90
Tivoli Terme
Ladispoli
Aranova
A24
E80
Roma
Passoscuro
Maccarese

Arboriculture vs **Silviculture**



Cultural Landscapes



Natural Landscapes

Rewilding vs **Old-growth forest**

Sviluppo sostenibile e grado di naturalità degli ecosistemi: il rewilding per le foreste vetuste del domani

Naturalità/Rewilding → Wilderness

Le foreste vetuste

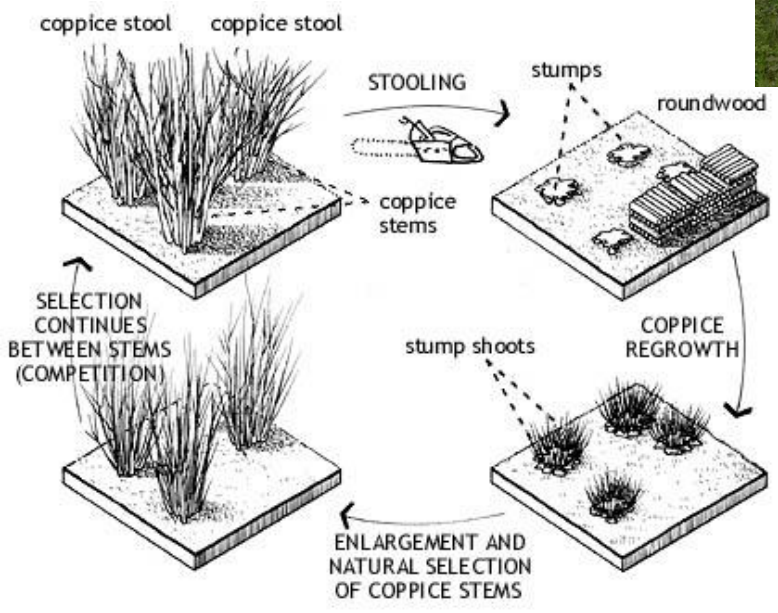
Ambito della selvicoltura

Infrastrutture e Aree urbane

Ambito dell'agricoltura

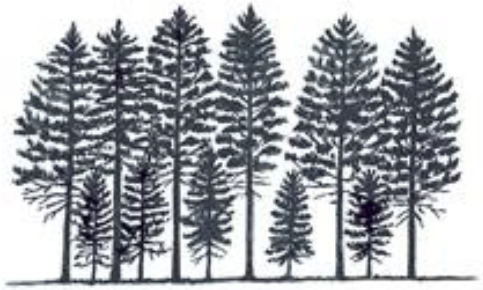
Illustrazioni a cura di Marisa Ceccarelli

Il governo a ceduo

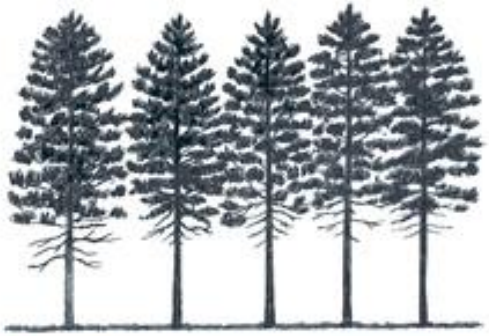


Il governo a fustaia

Uneven-aged: a stand with trees of three or more distinct age classes, either intimately mixed or in small groups.



Two-aged: a stand with trees of two distinct age classes separated in age by more than plus or minus 20% of the rotation age.



Even-aged: a stand composed of a single age class of trees in which the range of tree ages is usually plus or minus 20% of the rotation age.

I sistemi forestali

- Bosco ceduo quercino e la legna da ardere: il paesaggio delle Università Agrarie
- Bosco ceduo castanile e la paleria: i Monti Cimini e i Monti Sabatini
- I castagneti da frutto e la castanicoltura
- Bosco di alto fusto: le cerrete e le faggete (Vetralla, Manziana, Lago di Vico, Monte Cimino)
- I rimboschimenti litoranei e montani

La foresta vetusta

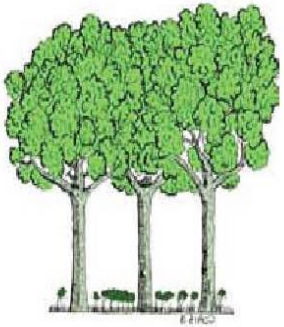
The US Forest Service developed a generic definition for old-growth and specific sets of criteria and indicators for a wide range of forest types. The generic definition states: "**Old-growth forests are ecosystems distinguished by old trees and related structural attributes. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function**" (USDA, 1989; White & Lloyd, 1994).

In the working document by CBD (2006), old-growth is described as follows: '**Old-growth forest stands are stands in primary or secondary forests that have developed the structures and species normally associated with old primary forest of that type and have sufficiently accumulated to act as a forest ecosystem distinct from any younger age class**.'

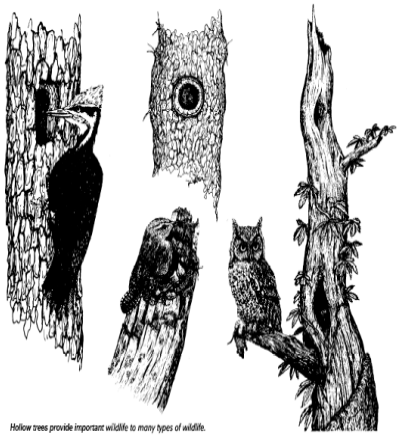
L'ecosistema foresta

(tratto da Marco Paci. Ecologia forestale. Edagricole)

Fig. 1.3 - L'ecosistema foresta (*da Arrigoni, 1994*). Per le spiegazioni si rimanda al testo.

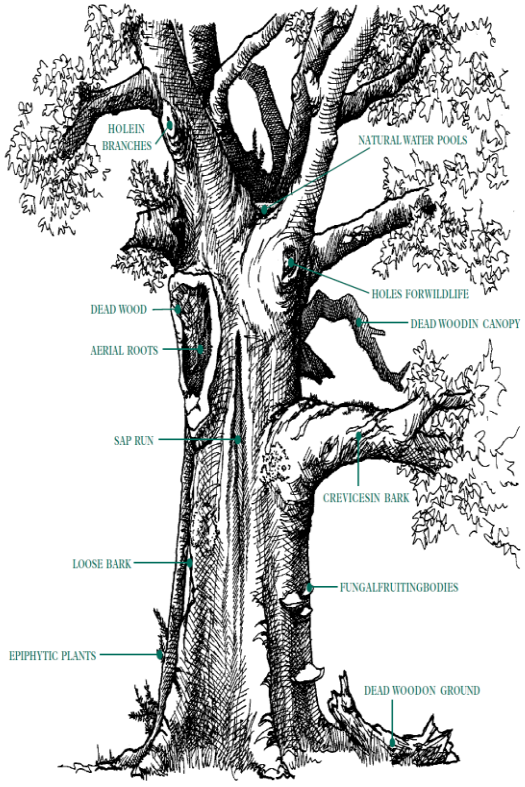


Utilizzazione forestale



Hollow trees provide important wildlife to many types of wildlife.

Figure 3*. *Diagram to show the features characteristic of a veteran tree.*



Taglio

1-semplificazione strutturale

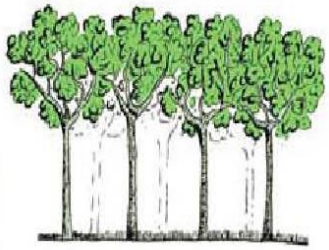
2-minore necromassa

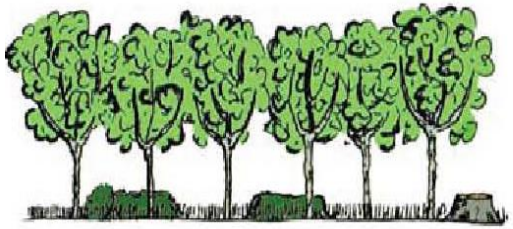
3-assenza di alberi habitat

4-perdita di biodiversità

5-minore fertilità

6-aumento di erosione





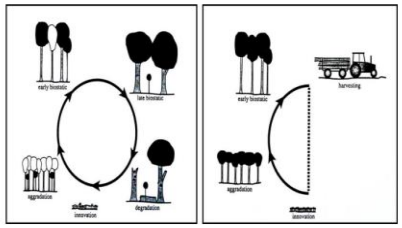
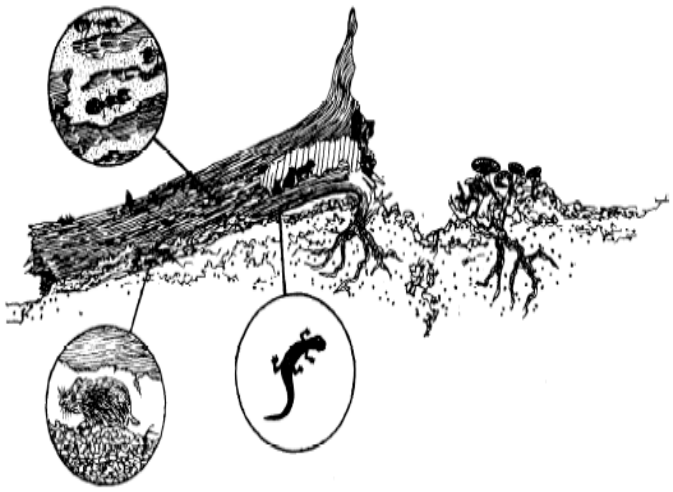


Fig 2. The 'management shortcut', eliminating the late-seral (late biostatic) and generation-transition phases (degradation phase) of the forest (Emborg & Christensen, 1990).

- **Ecological Integrity**
- **Key structural process**



Ciclo ontogenetico degli alberi e necromassa

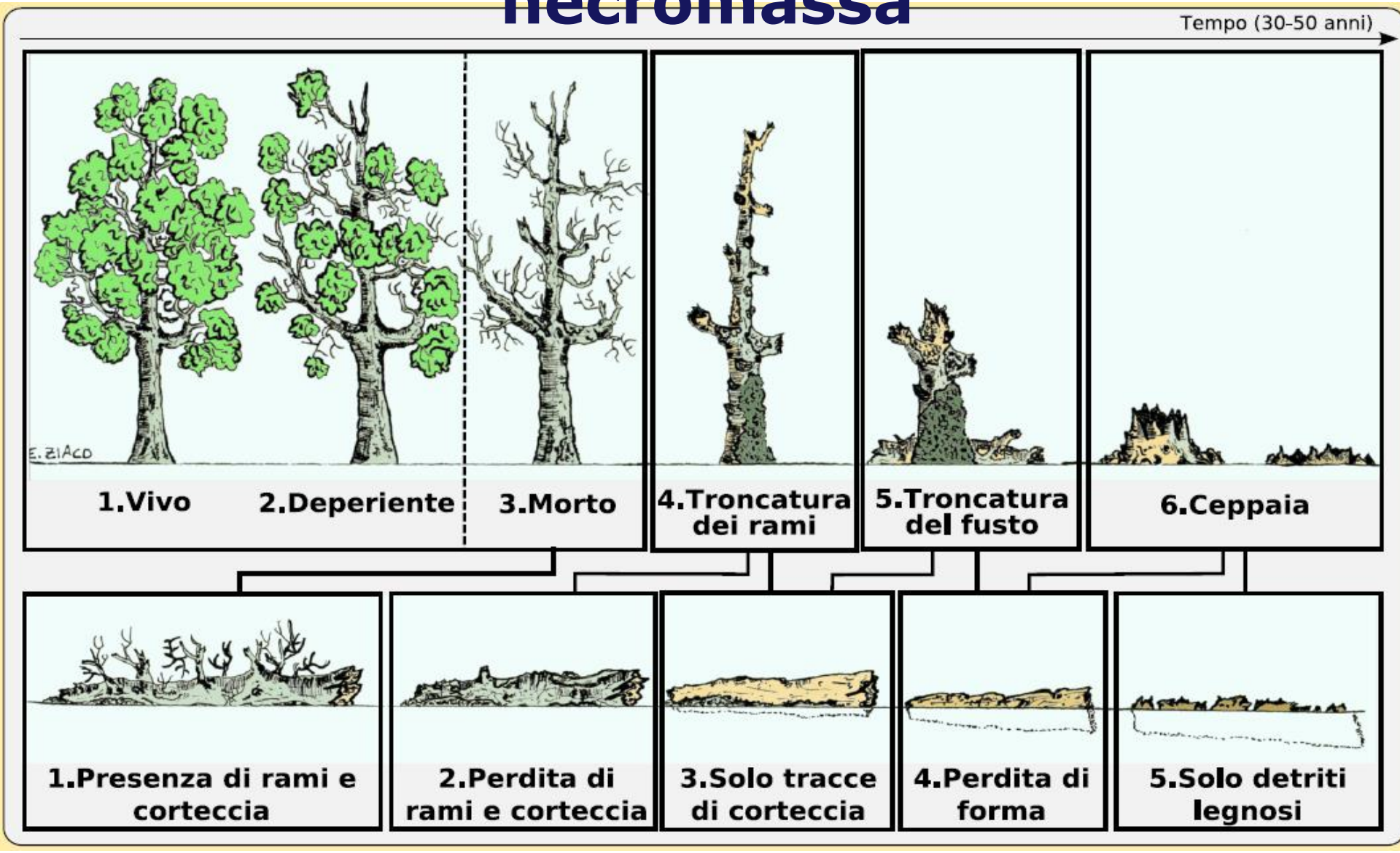


Figure 12. *The stages in the life of a tree.*

VETERAN TREES INITIATIVE

A	B	C	D	E	F	G

STAGES				*IDEAL NATURAL STATE: OPTIMUM GROWTH*	
				GERMINATION	
FORMATIVE	A - B	INFANCY PRE-SEXUAL MATURITY:	YOUNG TREE, HIGH VITALITY GROWTH ENHANCED BY MYCORRHIZAL ROOT ASSOCIATES		
	B - C	JUVENILE TO EARLY MATURITY:	CONTINUED FAST GROWTH NET INCREASE IN ANNUAL INCREMENT LOW VOLUME OF DYSFUNCTIONAL TISSUE	LOW HABITAT CONTRIBUTION	HIGH VITALITY
FULL TO LATE MATURITY	C - D	FULL TO LATE MATURITY:	GROWTH TO PEAK CROWN SIZE COLONISATION BY SAPROXYLIC (DEADWOOD) INVERTEBRATES MAXIMUM POLLINATION AND SEED CAPACITY ONSET OF NATURAL LIMB LOSS INCREASE OF DYSFUNCTIONAL TISSUE ACCELERATED FUNGAL COLONISATION AND ACTIVITY		
ANCIENT	D - E	EARLY ANCIENT STAGE:	RETRENCHMENT OF CROWN: REDUCTION IN NET ANNUAL INCREMENT CONTRACTION OF LIVE CROWN INCREASED VEGETATIVE VITALITY IN LOWER CROWN INCREASED FUNGAL ACTIVITY AND WOOD DECAY INCREASED COLONISATION BY FLORA AND SAPROXYLIC FAUNA		
	E - F	LATE ANCIENT STAGE:	ADVANCED RETRENCHMENT DECLINE IN CROWN SIZE AND ANNUAL INCREMENT EXTENSIVE HOLLOWING CROWN COLLAPSE DECLINING VITALITY ADVANCED HEARTWOOD DECAY AND HOLLOWING ADVANCED ACTIVITY BY FAUNA AND FLORA	INCREASING NUTRIENT STATUS OF TREE FOR COLONISERS INCREASING HABITAT	GRADUAL DECLINE IN VITALITY
	F - G	SENESCENT:	TERMINAL DECLINE: TREE DEATH CONTINUING FUNGAL ACTIVITY PEAK OF SAPROXYLIC ACTIVITY NUTRIENT RECYCLING		
				DEATH	

The altitudinal gradient:
Bioclimate control tree growth and longevity.

Moving from low elevation to high mountain beech stands forest cycle (turnorver) pass from **200** years to more than **400** hundred years.

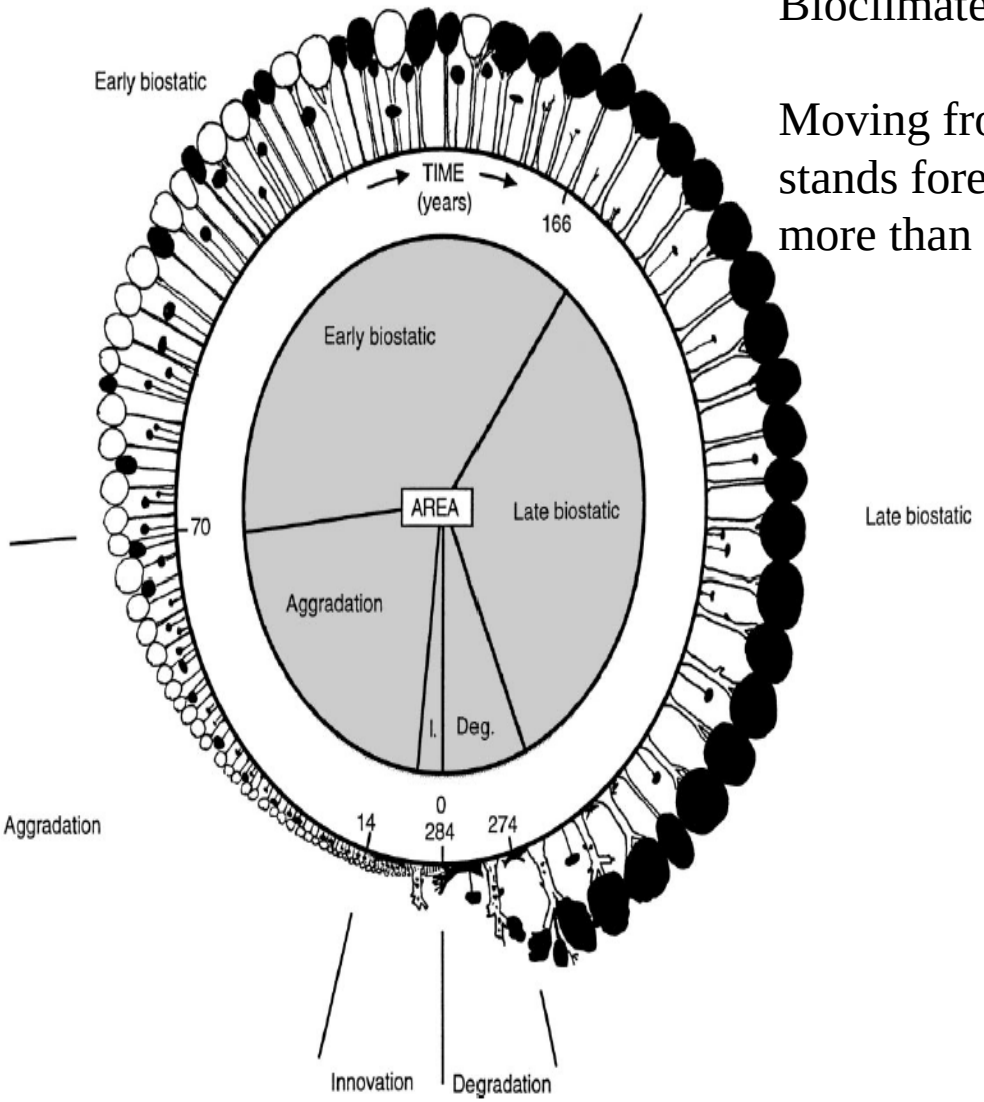
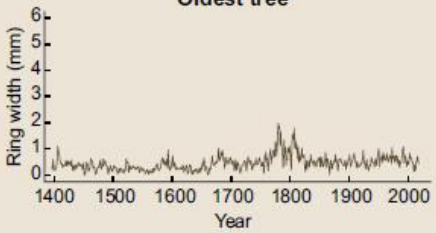


Fig. 5. The mosaic cycle in time and space, Suserup Skov, 1992. The pie in the middle shows the accumulated area of each phase of the shifting mosaic. The outer circle indicates the calculated duration of each phase of the forest cycle, numbers indicate years from start of the cycle. The typical structure of the forest throughout the forest cycle is illustrated. Note the climax microsuccession from *Fraxinus excelsior* (white) to *Fagus sylvatica* (shaded) during the innovation, the aggradation and the early biostatic phases.

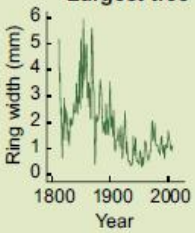
European beech (*Fagus sylvatica*)

Oldest tree



Michele
DBH = 65 cm
Height = 12 m
Age = 623 yr

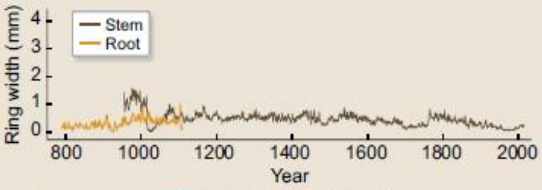
Largest tree



DBH = 110 cm
Height = 50 m
Age = 210 yr

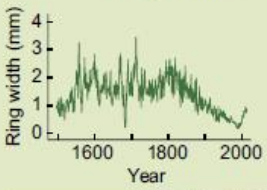
Heldreich's pine (*Pinus heldreichii*)

Oldest tree



Italus
DBH = 160 cm
Height = 15 m
Age = 1230 yr

Largest tree



DBH = 180 cm
Height = 20 m
Age = 550 yr

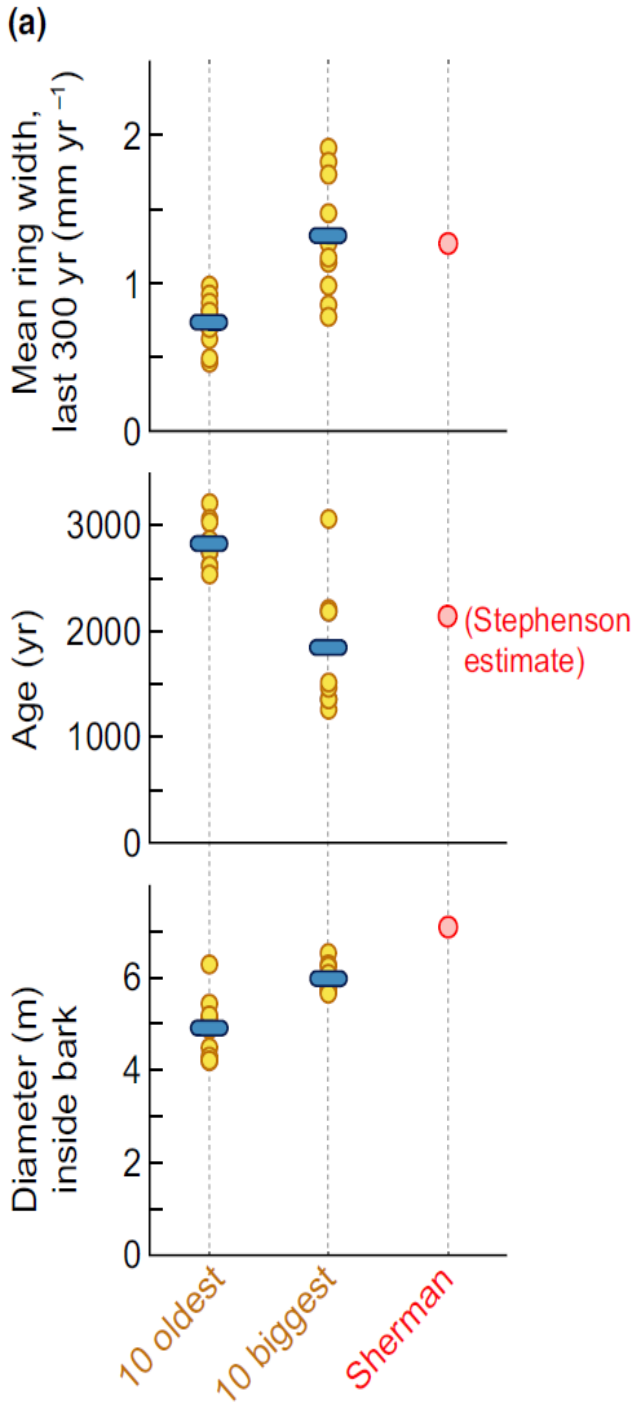
Sessile oak (*Quercus petraea*)

Oldest tree

Demeter
DBH = 80 cm
Height = 6 m
Age = 934 ± 65 yr

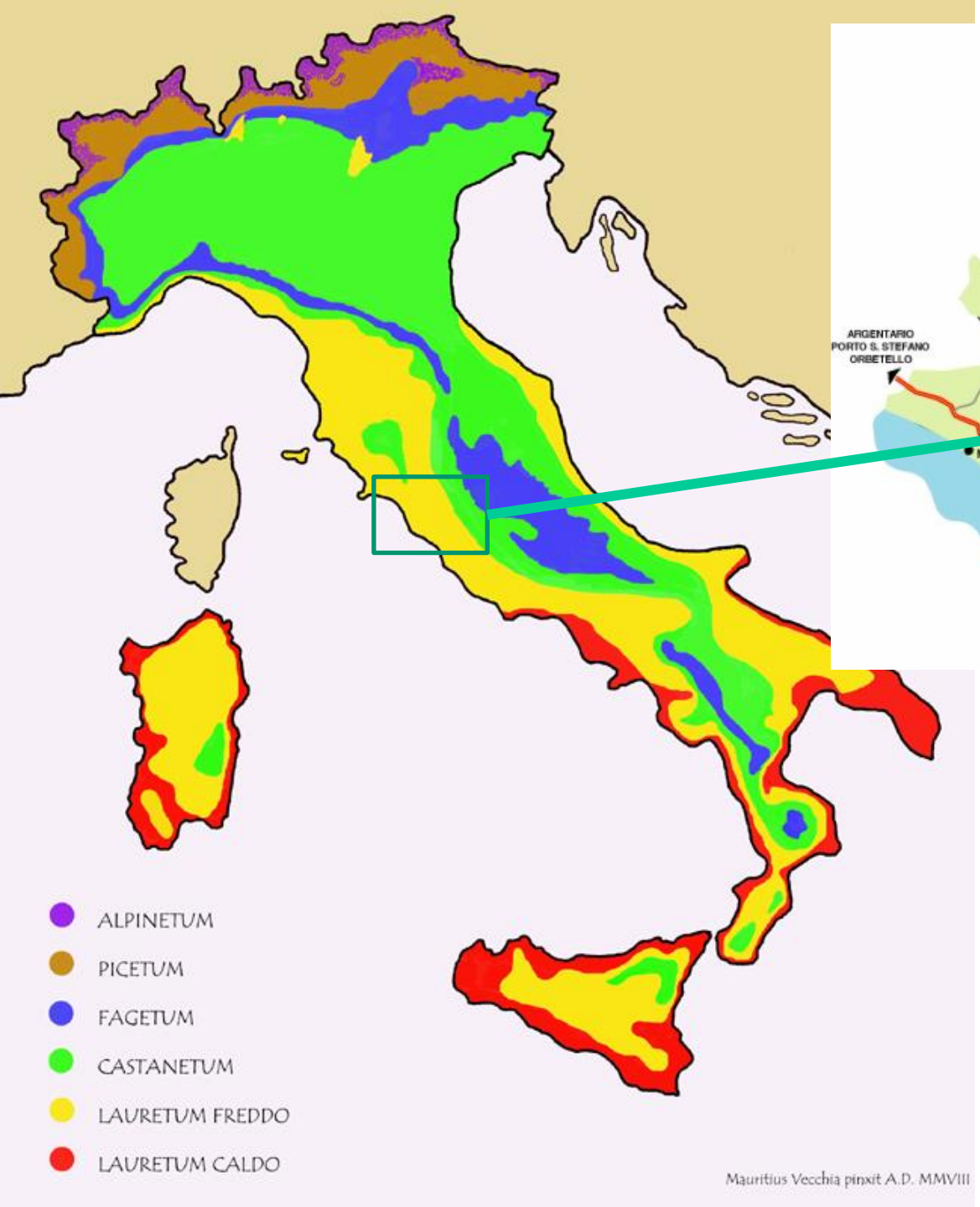
Largest tree

DBH = 195 cm
Height = 20 m
Age = 570 ± 45 yr



Gli Ecoservizi

- Oltre le funzioni produttive (legno, frutti, funghi, sughero, selvaggina)
- La funzione idrogeologica: regimazione delle acque e delle sorgenti
- La funzione turistico-ricreativa (e.g. pinete e faggete)
- Salvaguardia dell'ambiente naturale: la biodiversità e la mitigazione dei cambiamenti climatici (i pozzi di carbonio)


ALPINETUM
PICETUM
FAGETUM
CASTANETUM
LAURETUM FREDDO
LAURETUM CALDO
Mauritius Vecchia pinxit A.D. MMVIII


SIENA
Acquapendente
ORVIETO
MILANO
BOLOGNA
FIRENZE
A1
PITIGLIANO
Bolsena
Bagnoregio
Lago di Bolsena
Valentano
Capodimonte
Montefiascone
Marta
Bomarzo
PERUGIA
RIETI
TERNI
ARGENTARIO
PORTO S. STEFANO
ORBETELLO
Canino
Vulci
Tuscania
Viterbo
Orte
S. Martino al Cimino
Montalto Marina
Vetralla
Caprarola
Lago di Vico
Cura
Monteromano
Civita Castellana
Tarquinia
Marina Velca
Sutri
Nepi
Monteros
ROMA
NAPOLI
A12
CIVITAVECCHIA
ROMA

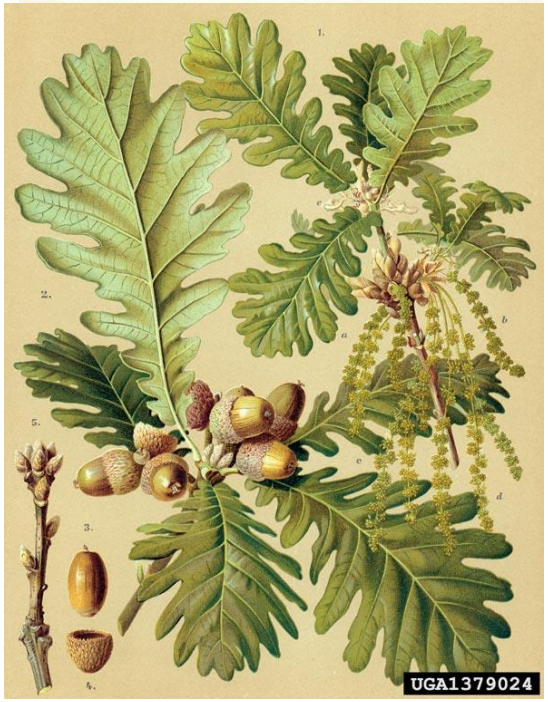
Il bioclima

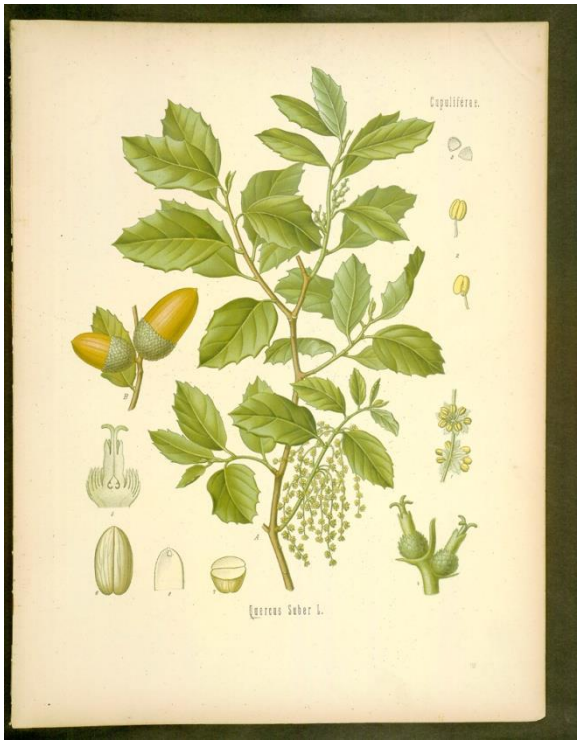
Carta del Territorio di Tarquinia sec. XVIII
(proprietà Lidia Zennoli in De Cesaris)

Le querce


Fagaceae


UGA1379025

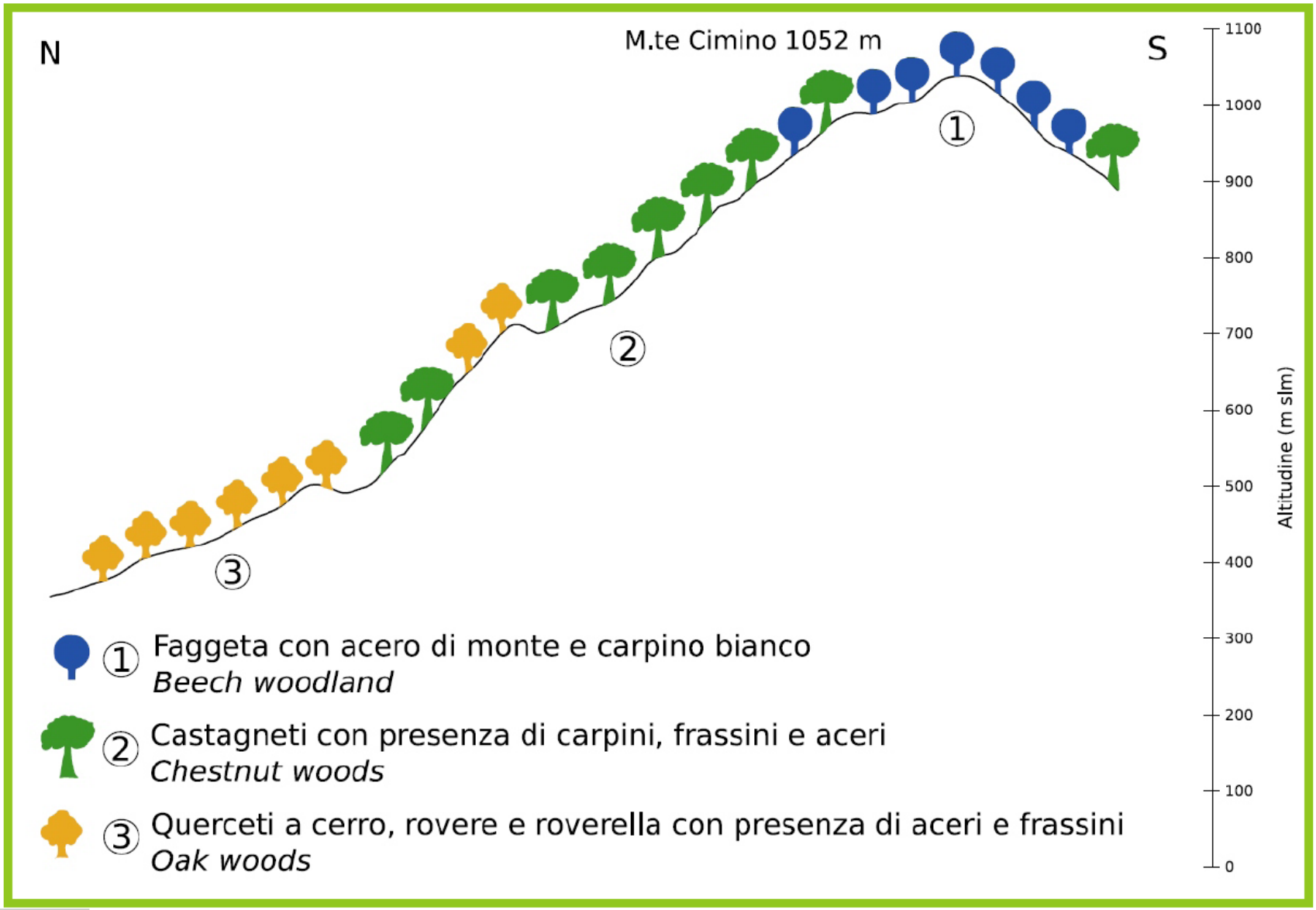

UGA1379024


Cupulifères.
Quercus Suber L.


UGA1379026

I pini montani e mediterranei

Bioclimatologia

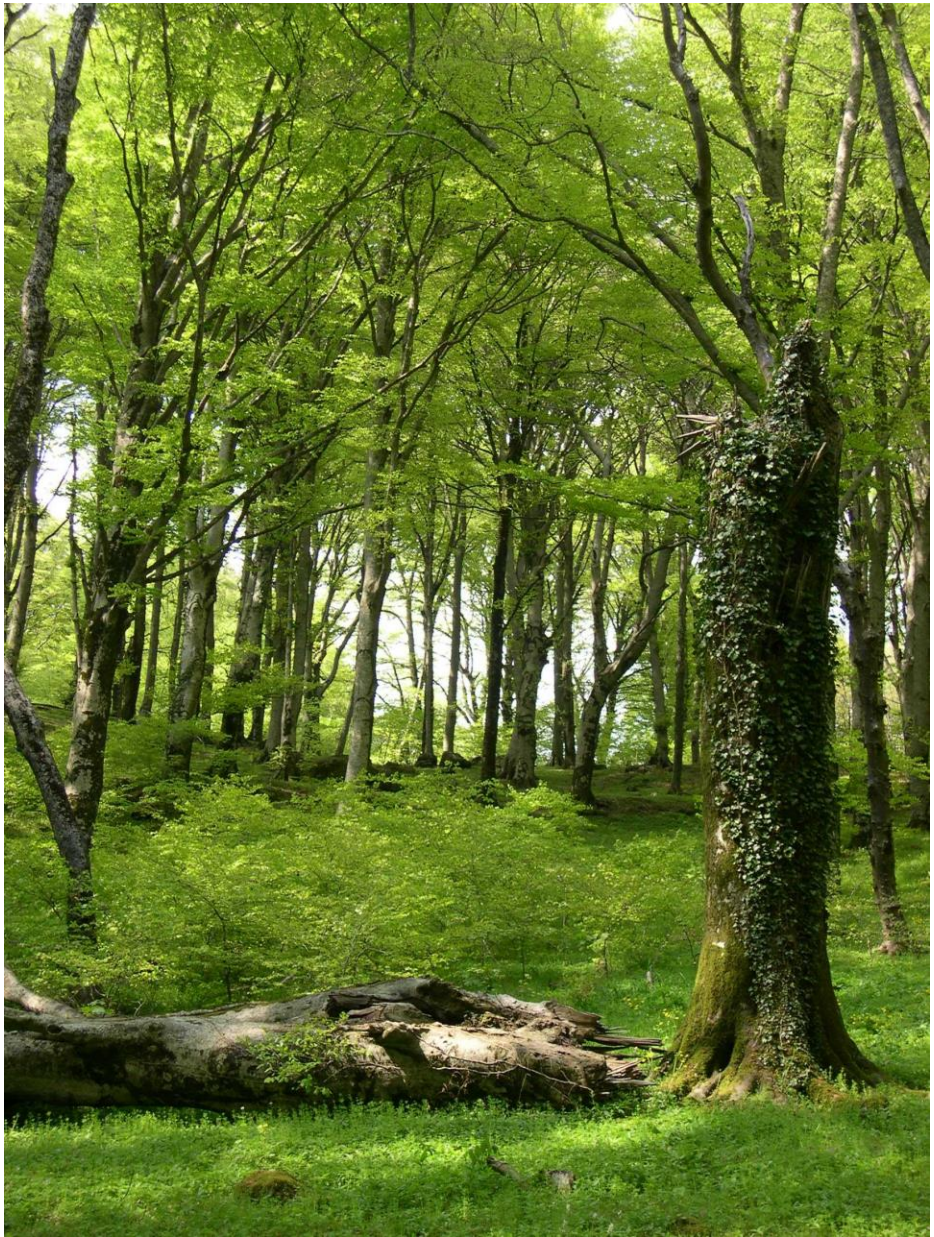


Il castagno


XVI. 5.
34. Cupuliferae.
139. Castanea vulgaris Lamarque. Kastanie.

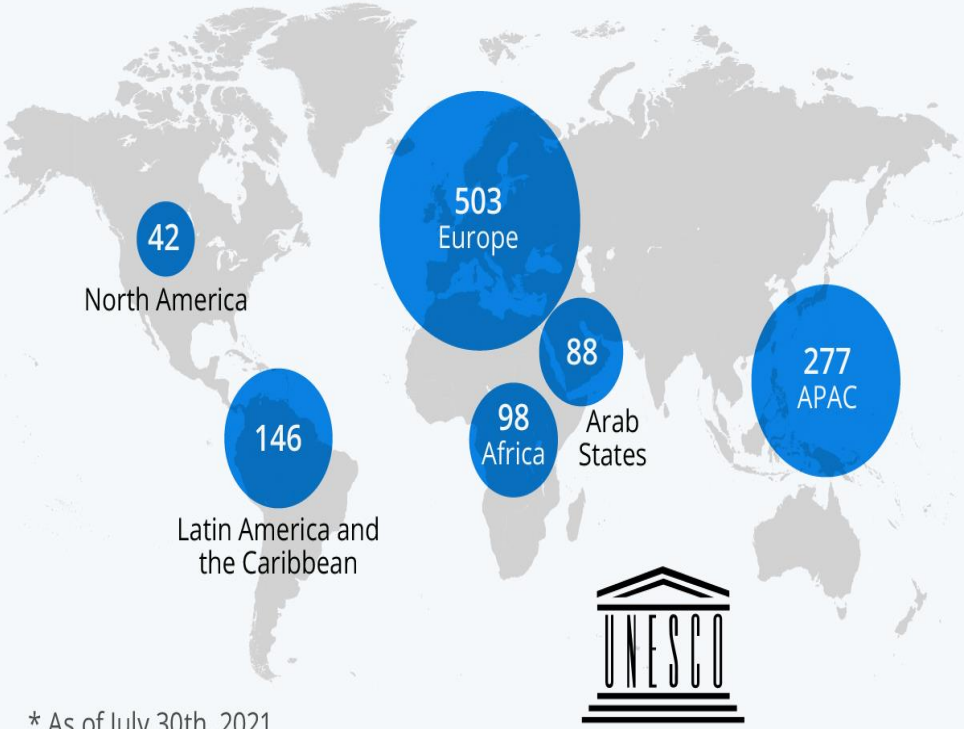
Il faggio


XXI. 5.
34. Cupuliferae.
A
B
WMÜLLER GERA.
160. Fagus silvatica L. Rotbuche.



Europe home to the most World Heritage Sites

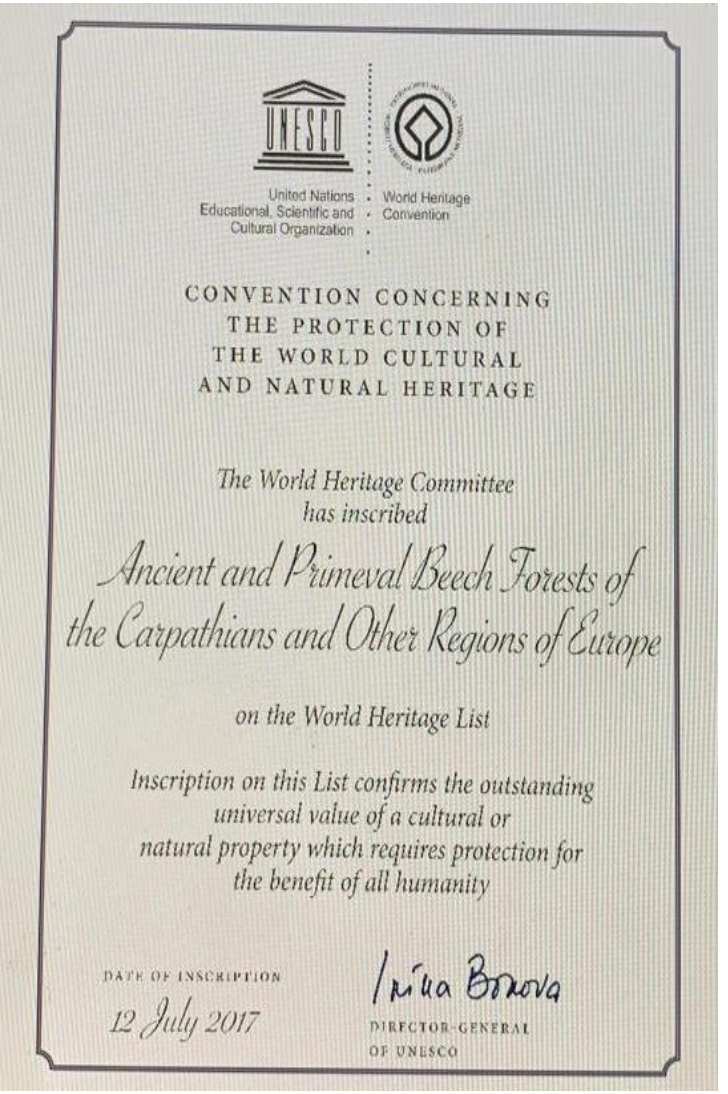
Number of UNESCO world heritage sites per region*



* As of July 30th, 2021

Source: UNESCO

statista



United Nations Educational, Scientific and Cultural Organization · World Heritage Convention

CONVENTION CONCERNING THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE

The World Heritage Committee has inscribed

Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe

on the World Heritage List

Inscription on this List confirms the outstanding universal value of a cultural or natural property which requires protection for the benefit of all humanity

DATE OF INSCRIPTION
12 July 2017

Irina Bokova
DIRECTOR-GENERAL OF UNESCO

United Nations Educational, Scientific and Cultural Organization · 44th session of the World Heritage Committee

Organisation des Nations Unies pour l'éducation, la science et la culture · 44e session du Comité du patrimoine mondial

44th Session of the World Heritage Committee
FUZHOU, CHINA 2021
第44届世界遗产大会

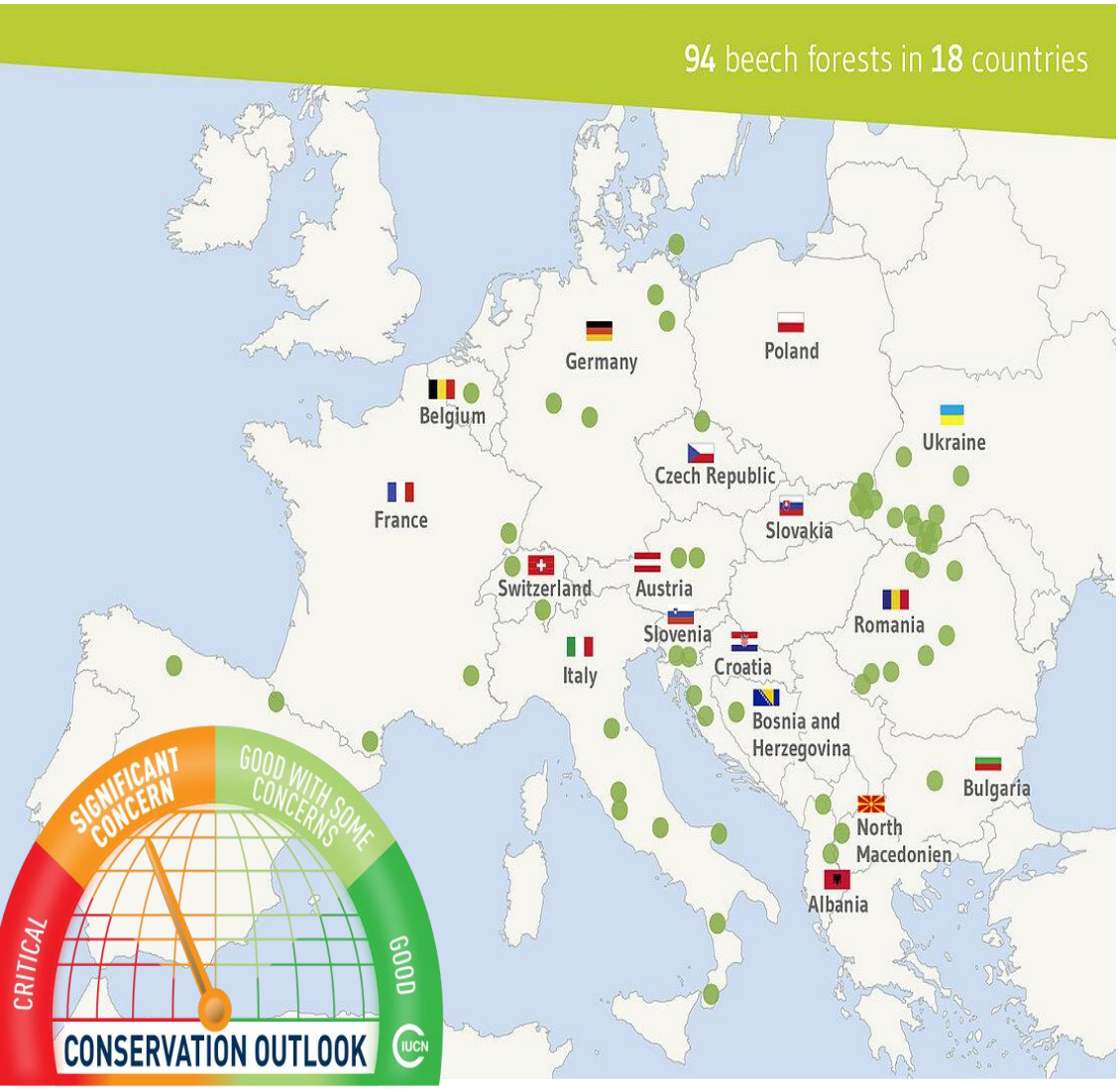
第44届世界遗产大会

Extended 44th Session of the World Heritage Committee
44e session élargie du Comité du patrimoine mondial

16-31 July 2021 Fuzhou, China

The largest serial World Heritage property gets even larger: Unesco World Heritage Series "**Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe**"

This World Heritage series is currently the largest serial World Heritage property. With 94 components part in 18 countries



It is the only World Heritage Site globally that connects so many component parts. It covers areas in Albania, Austria, Belgium, Bosnia& Herzegovina, Bulgaria, France, Germany, Italy, Croatia, Czechia, North Macedonia, Poland, Romania, the Slovak Republic, Slovenia, Spain, Switzerland, and the Ukraine.

This requires collaboration across boundaries and illustrates the close relationship of the beech forest with European culture.

A total of 98.000 hectares strictly protected: the last old-growth beech forests and primeval beech forests in Europe

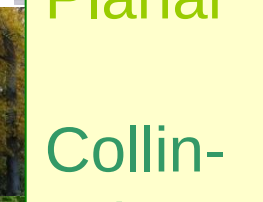
https://www.europeanbeechforests.org/world-heritage-beech-forests/our-beech-forest-family

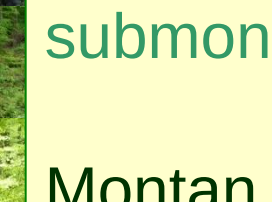
- Albania
- Austria
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Czechia
- France
- Germany
- Italy
- North Macedonia
- Poland
- Romania
- Slovakia
- Slovenia
- Spain
- Switzerland
- Ukraine

Date of Inscription: 2007
Significant modifications to the boundaries : 2011,2017,2021
Criteria: (ix)
Property : 98,124.96 ha
Buffer zone: 294,716.32 ha
Dossier: 1133quater

N48 54 0 E22 11 0

Wide latitudinal and altitudinal extension

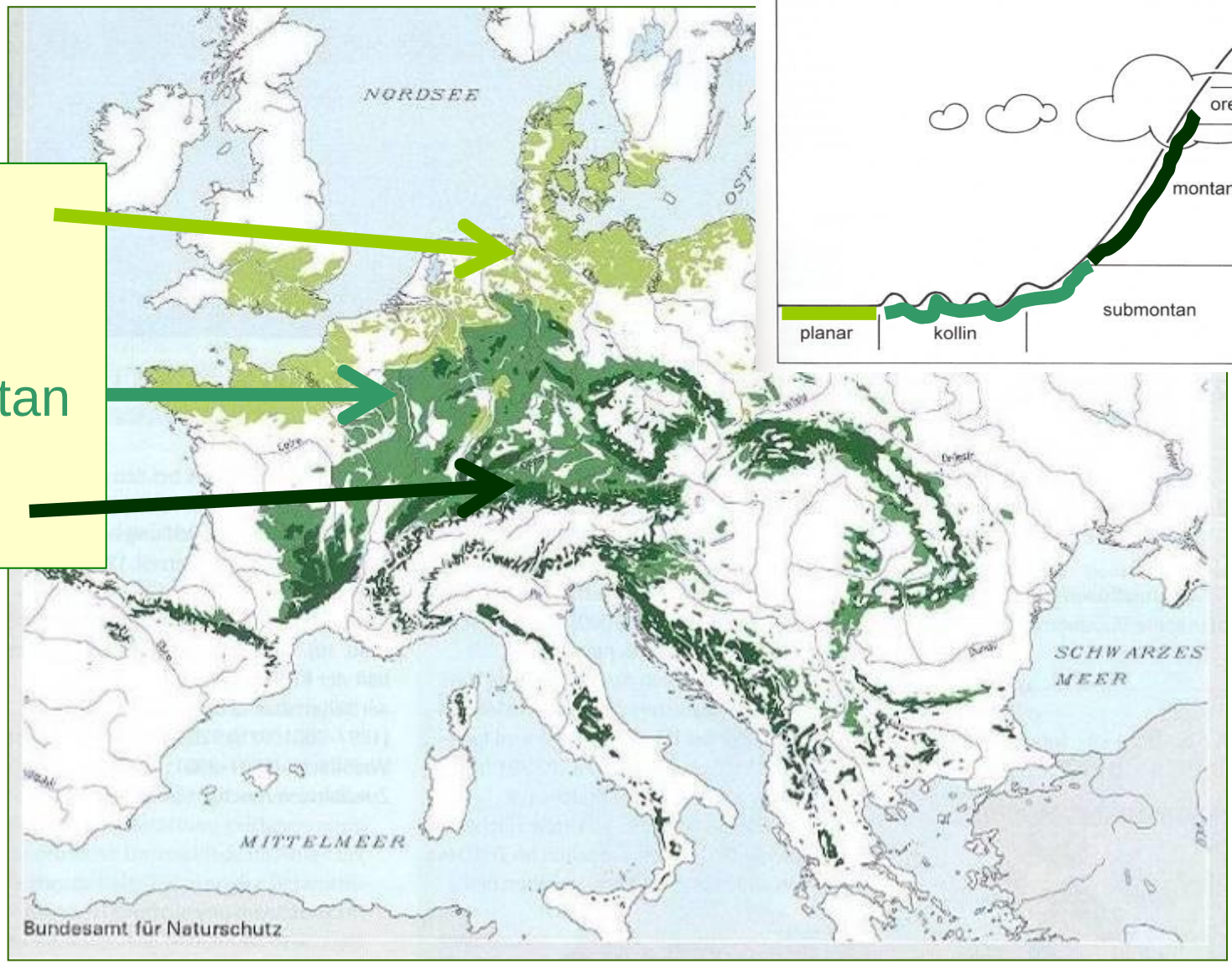




Planar

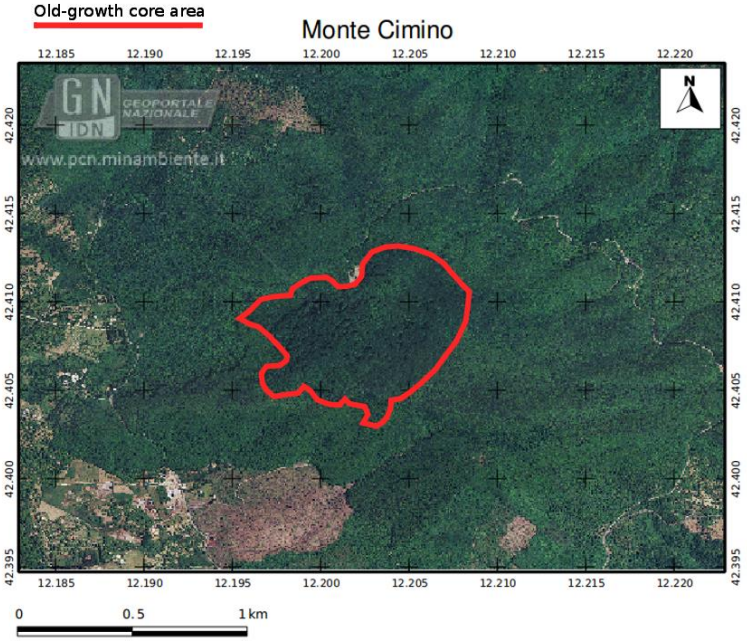
Collin-submontan

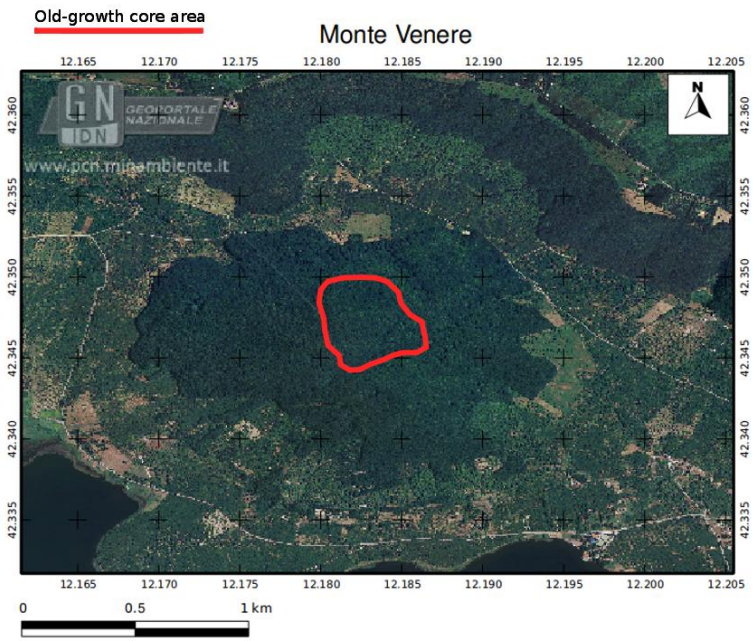
Montan

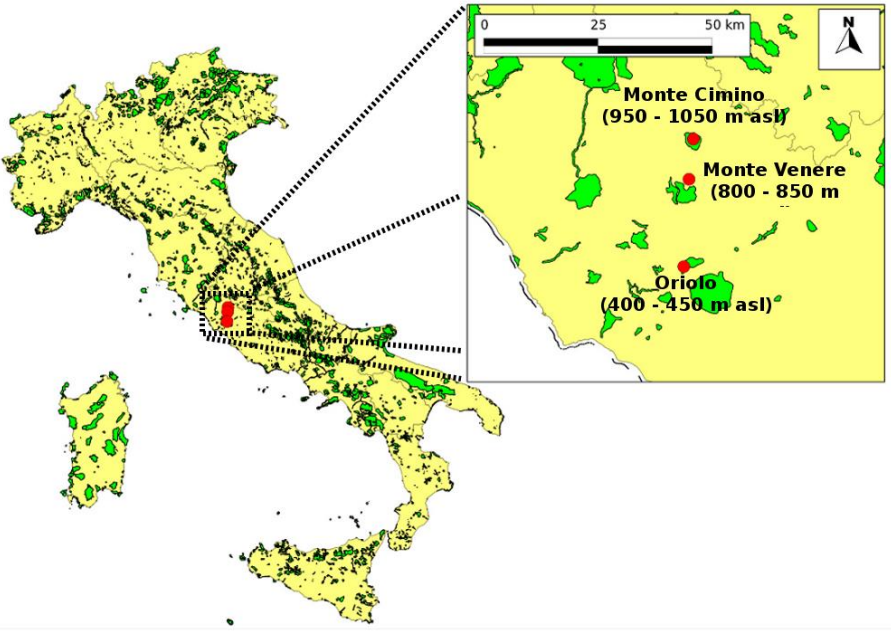


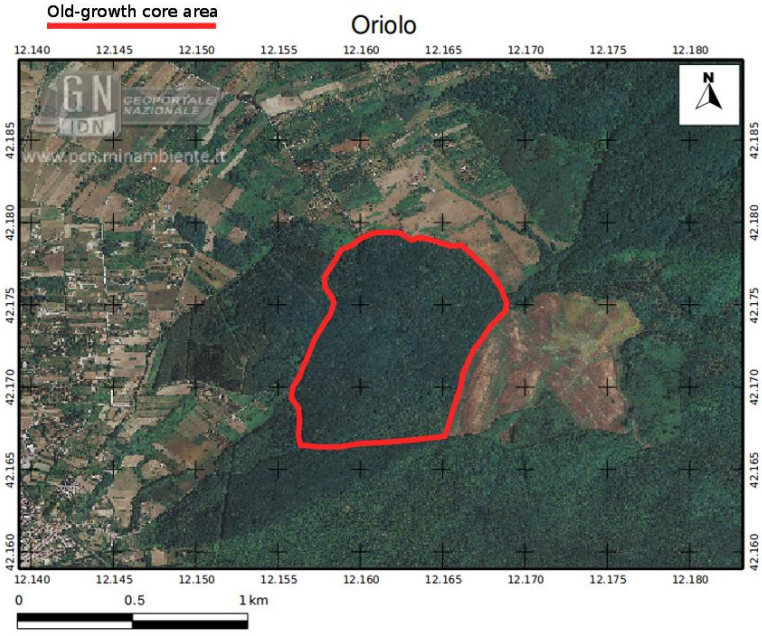
The low-elevation ("heterotopic") old-growth beech forests: Monti Cimini and Sabatini. Characteristic species of the association Allio pendulini-Fagetum sylvaticae: *Anemone ranunculoides, Corydalis cava, Mercurialis perennis, Gallium odoratum, Acer obtusatum, Carpinus betulus*

Beech woods of submontane belt of Latium volcanoes and Monte Amiata
Altitude range 200-1000 m

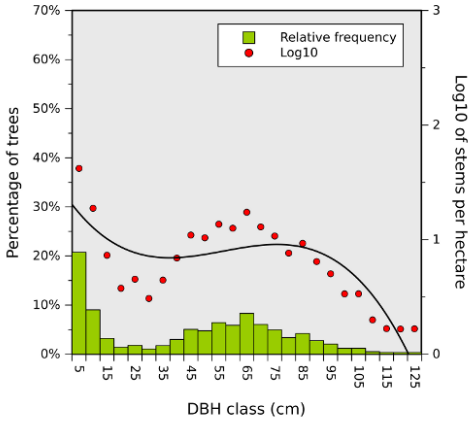

Old-growth core area
Monte Cimino
12.185 12.190 12.195 12.200 12.205 12.210 12.215 12.220
42.420 42.415 42.410 42.405 42.400 42.395
www.pcn.minambiente.it
0 0.5 1 km

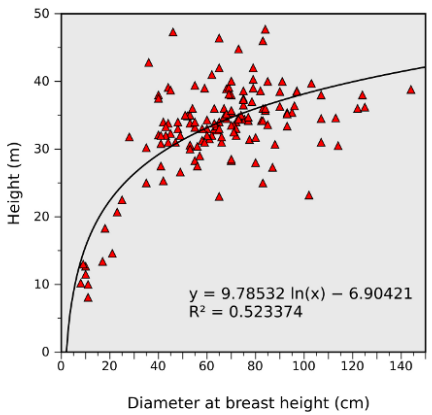

Old-growth core area
Monte Venere
12.165 12.170 12.175 12.180 12.185 12.190 12.195 12.200 12.205
42.360 42.355 42.350 42.345 42.340 42.335
www.pcn.minambiente.it
0 0.5 1 km


0 25 50 km
Monte Cimino
(950 - 1050 m asl)
Monte Venere
(800 - 850 m
Oriolo
(400 - 450 m asl)

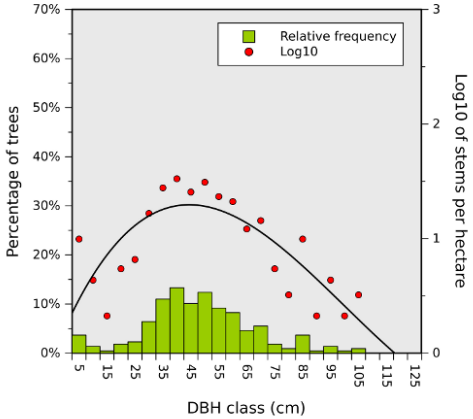

Old-growth core area
Oriolo
12.140 12.145 12.150 12.155 12.160 12.165 12.170 12.175 12.180
42.185 42.180 42.175 42.170 42.165 42.160
www.pcn.minambiente.it
0 0.5 1 km

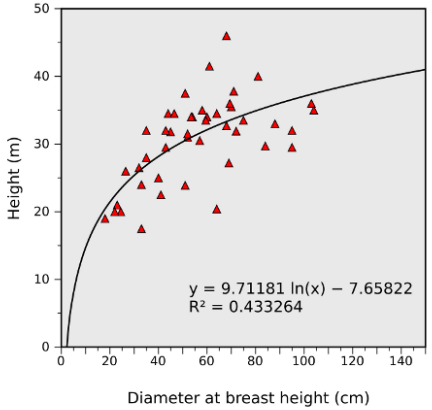
Monte Cimino



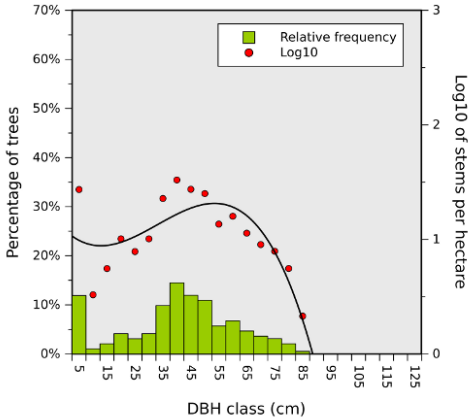


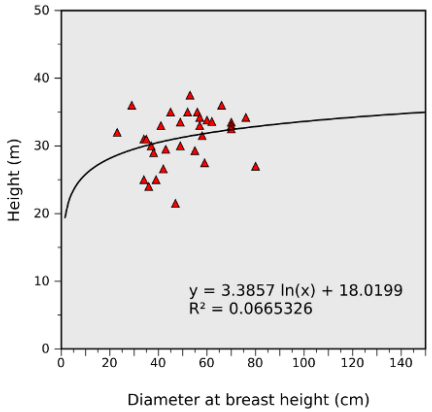
Monte Venere





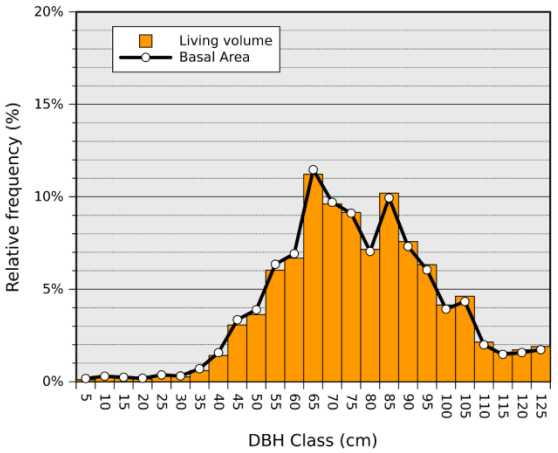
Oriolo



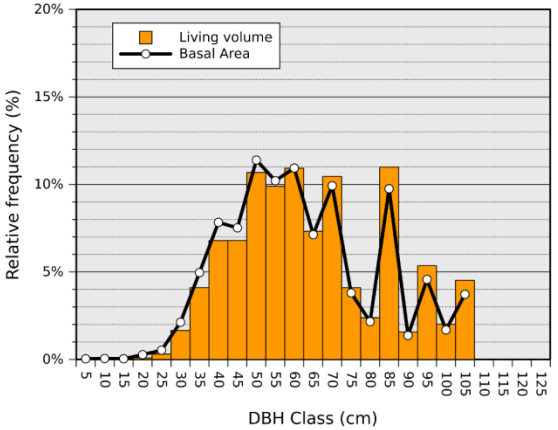


Secondary old-growth forests on volcanic soils were intensively exploited until a few decades ago but, thanks to site fertility, they have shown a surprisingly fast restoration of high biomass stocks following logging.

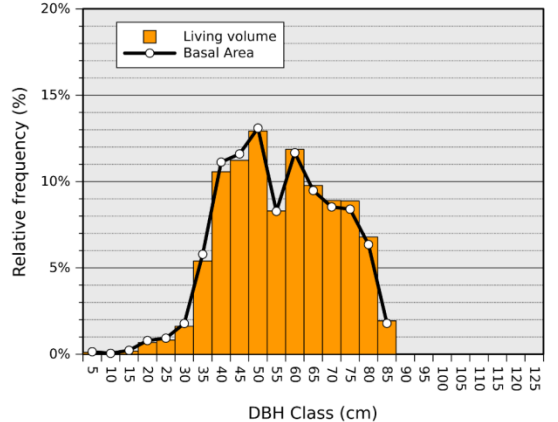
Monte Cimino

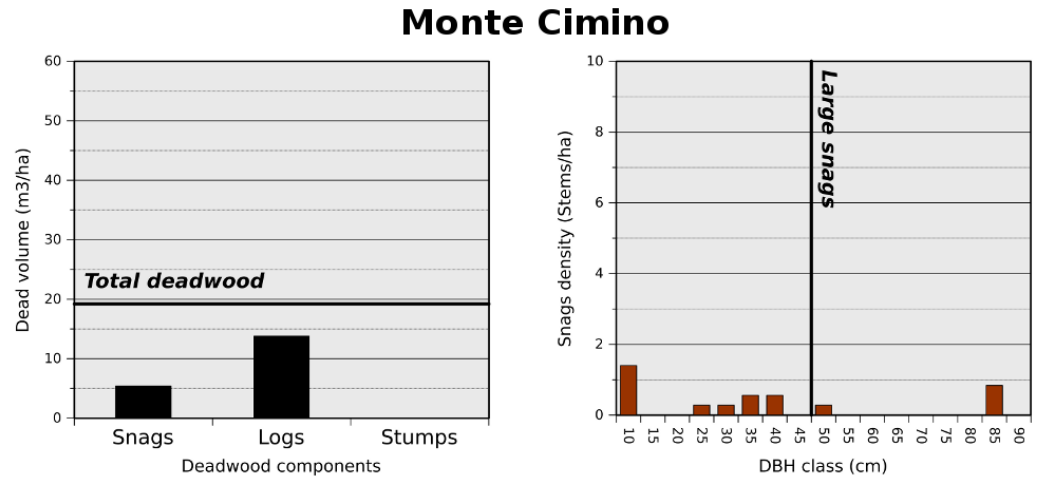


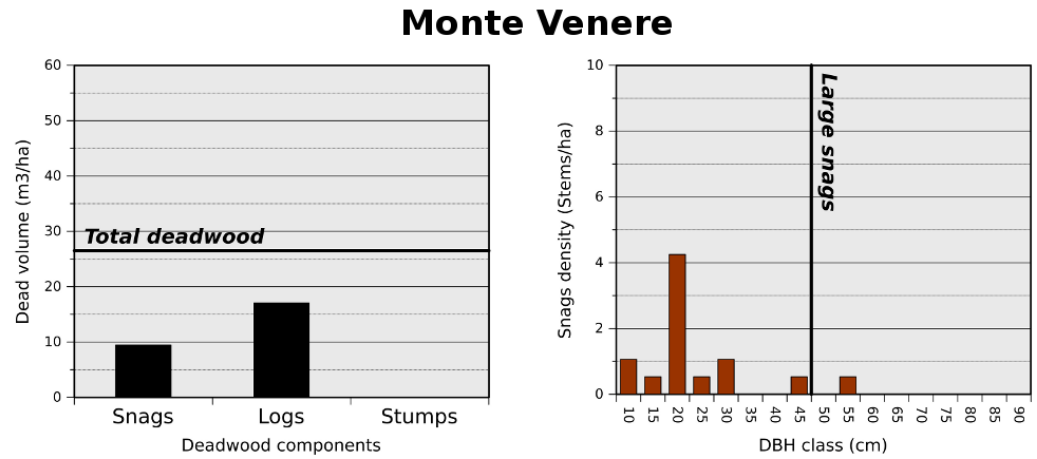
Monte Venere

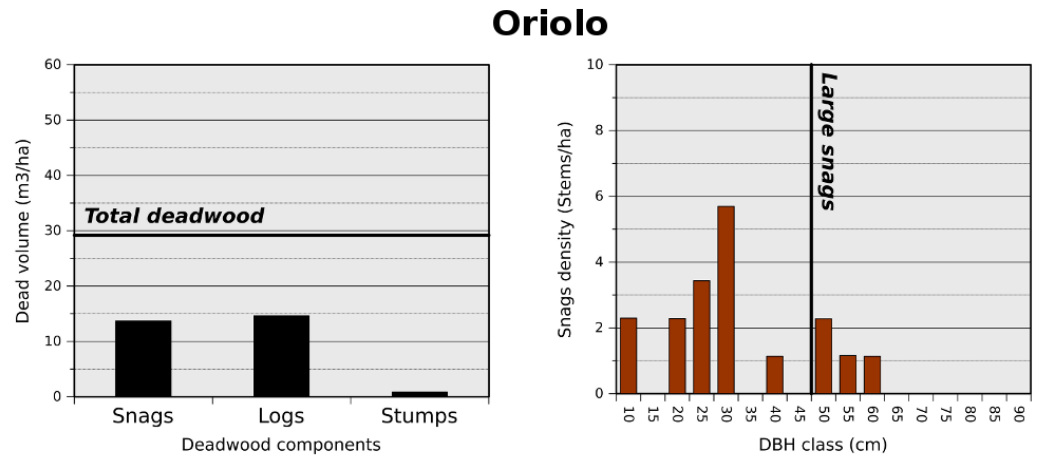


Oriolo





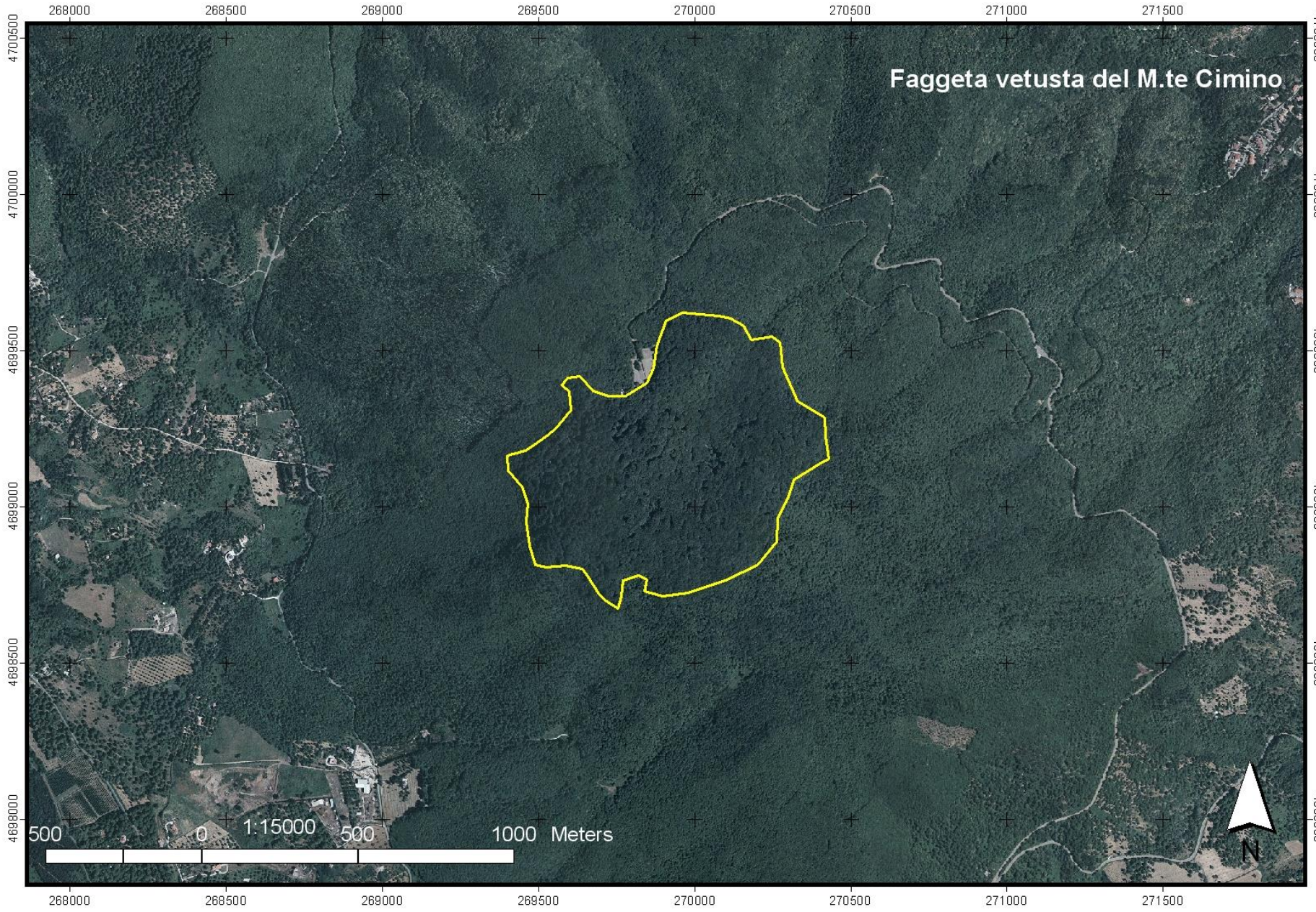


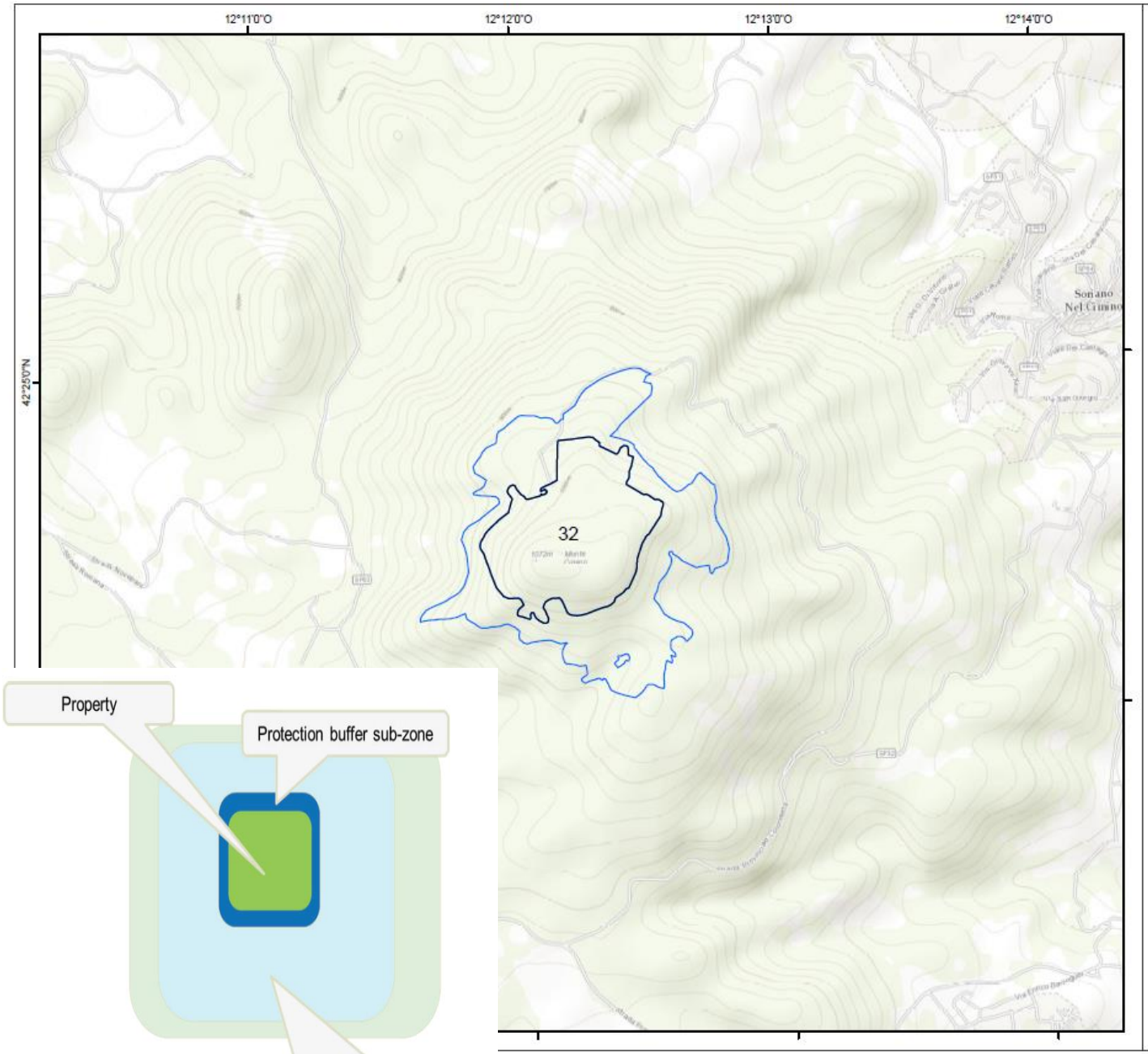


Deadwood

Human influences substantially altered the amount of deadwood in natural stand at lower elevations. At Monte Cimino, for instance, until a few years ago it was permissible to remove large logs.

La Faggeta (Viterbo, Latium)





Annex 1.e.IT_CIMI

Topographic map of the nominated component part(s)
Monte Cimino
Italy
Beech Forest Region:
Central Mediterranean

Component part number(s):	032
Size of property in hectar:	57.54
Size of buffer zone in hectar:	87.96

Borders

- World Heritage Property
- Buffer Zone

Primeval Beech Forests of the Carpathians and Other Regions of Europe

Background: ESRI Topografic Baselayer
Projection: Europe Albers Equal Area Conic

N

0 0,25 0,5 1 Kilometer

Scale: 1:20.000

Date: 21.01.2016

Figure 46: Clear cuts closer than 50–80m to the property can have effects on the microclimate inside the property

T

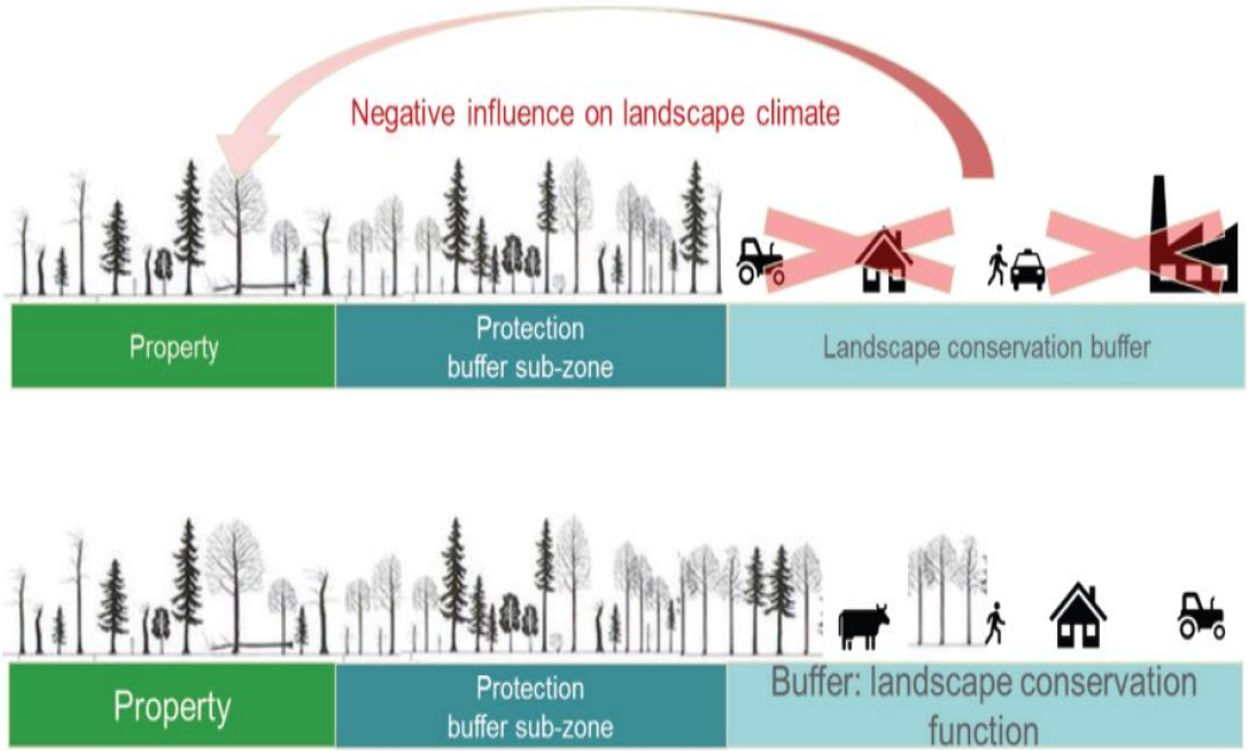
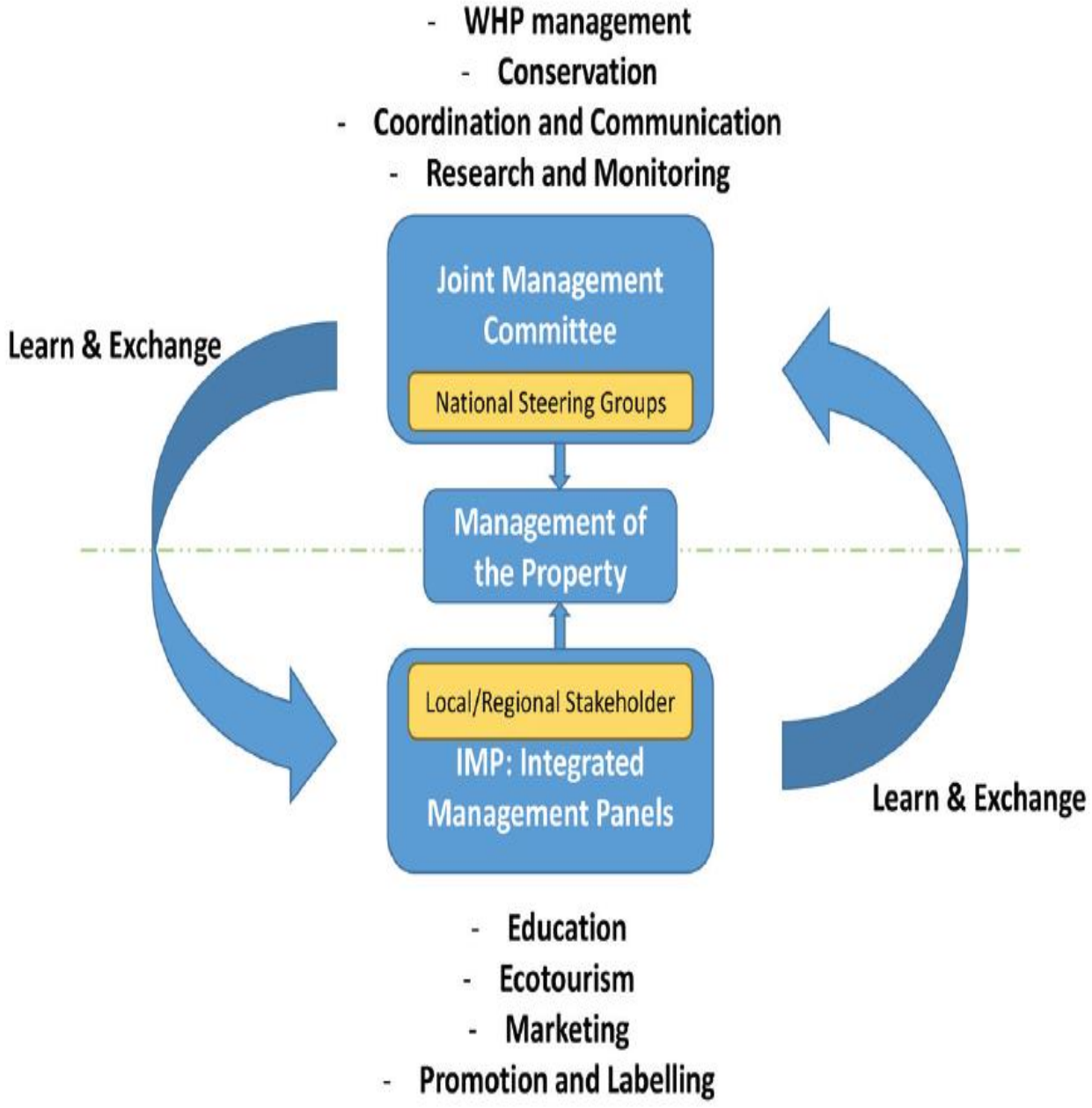
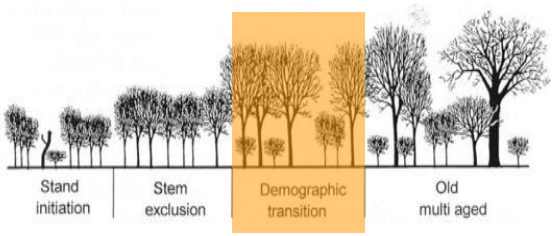


Figure 47: The landscape conservation buffer sub-zone should protect the wider landscape from negative developments

Figure 49: Combined top-down and bottom-up IMS model

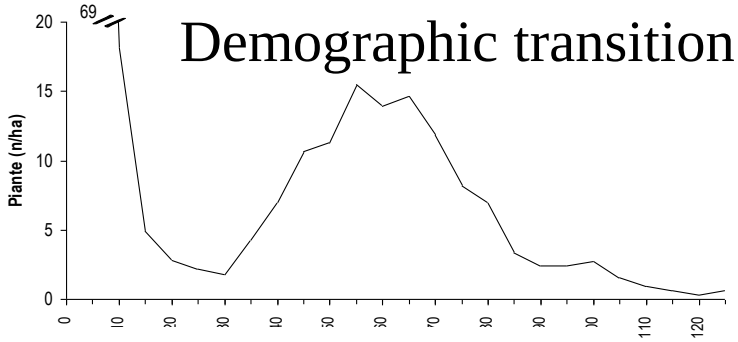


Faggeta del Monte Cimino

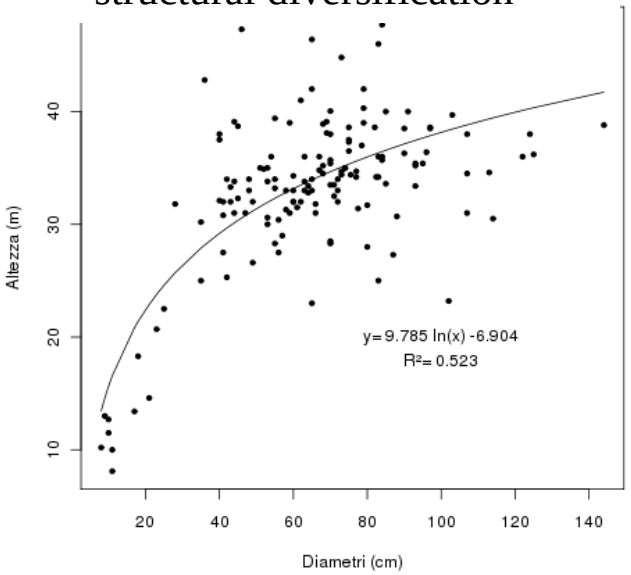


A

Demographic transition



Bimodal distribution:
structural diversification



High fertility due to deep volcanic soils: Impressive tree height.

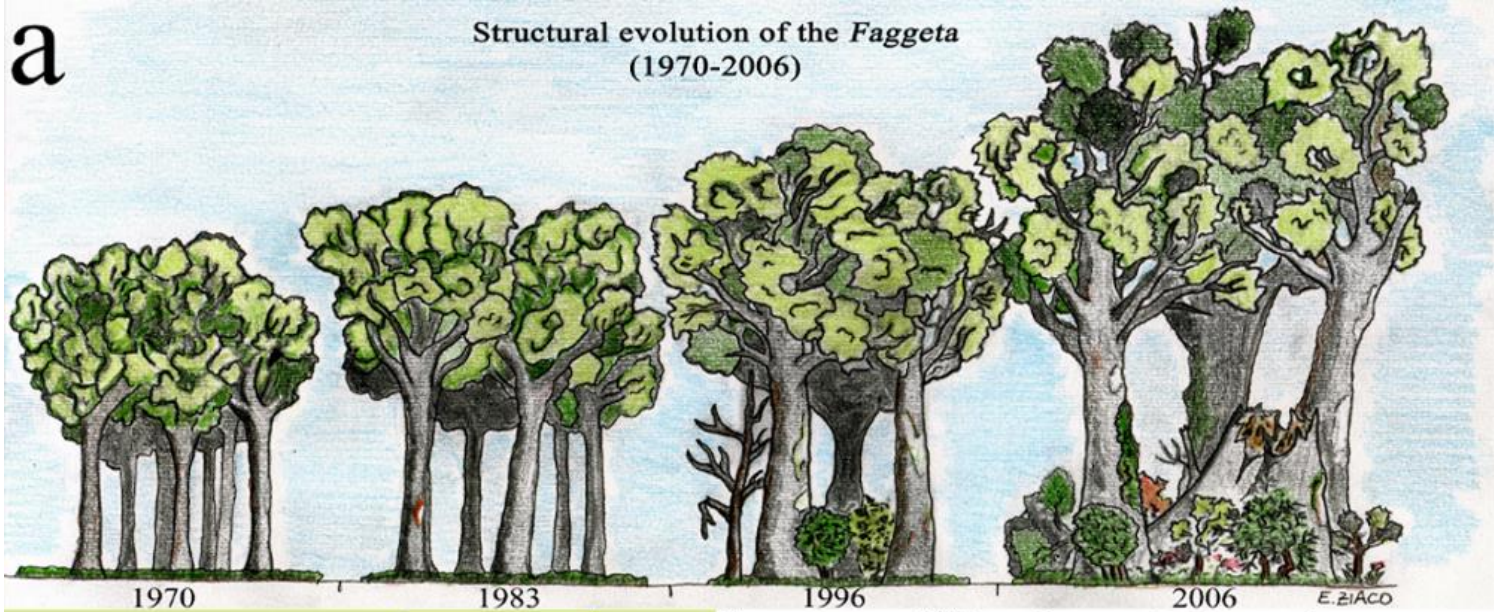
The highest beeches are **50 m and are growing**!

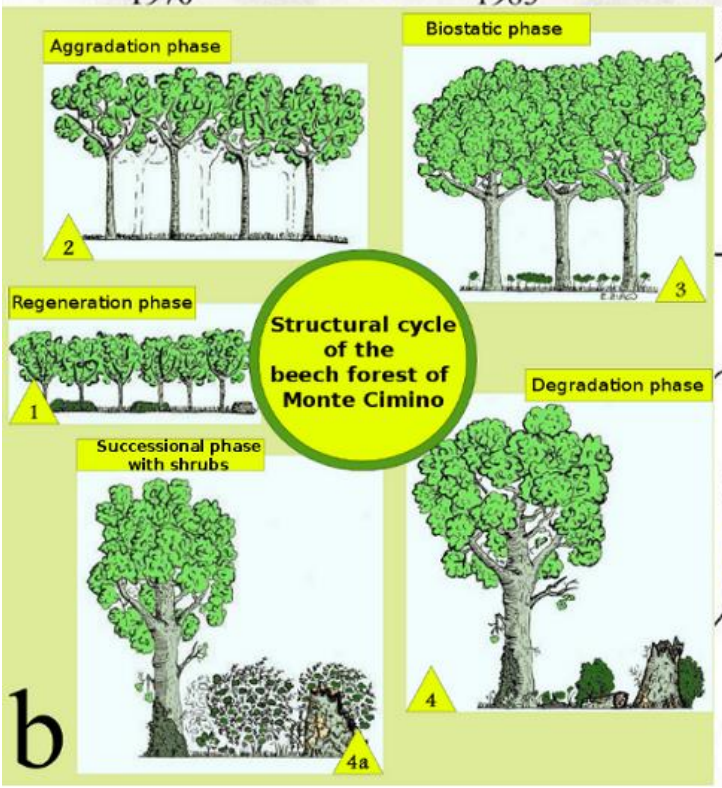
Last forest harvesting: 1947-49 north section

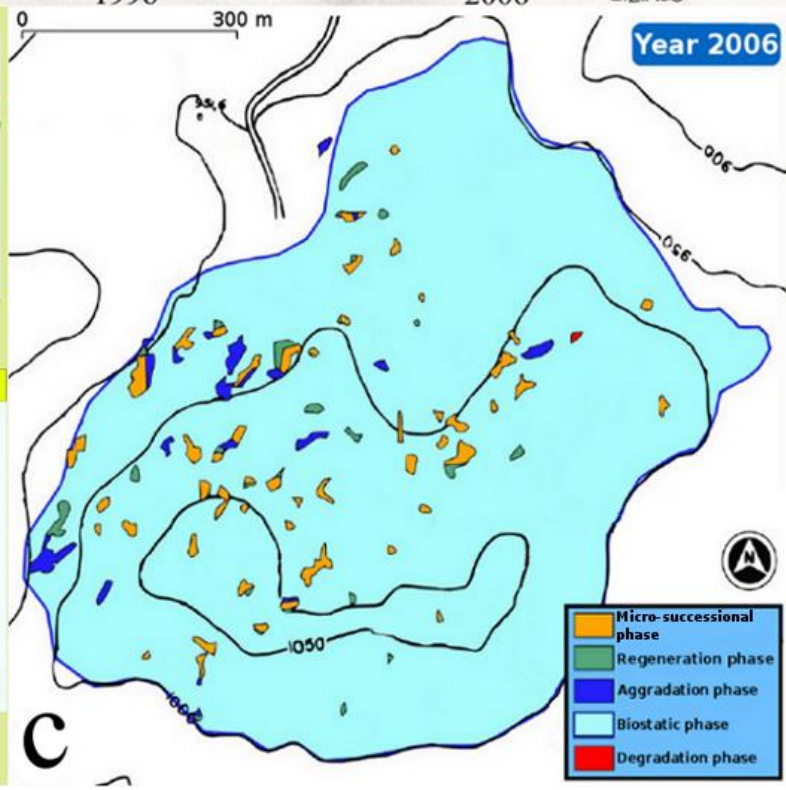
Main conservation reason the historic- aesthetic value (Silva Cimina a sacred wood from bronze age)

The structural cycle = ~ 150-200 years

Shifting mosaics of structural diversified patches in their different developmental stages and phases: Natural disturbance created a wider range of gap sizes (<10–5,000 m2) resulting in reversion of some portions of the stand to an earlier stage of development

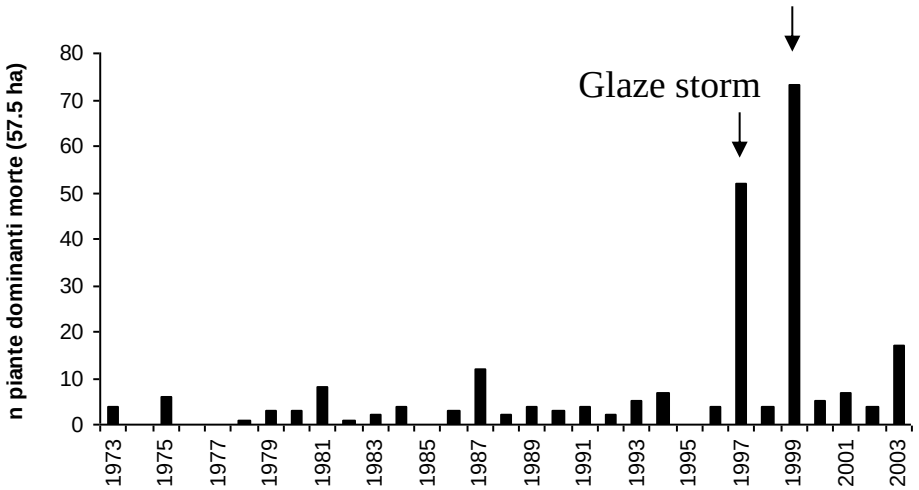






Faggeta del Monte Cimino

High-Wind storm



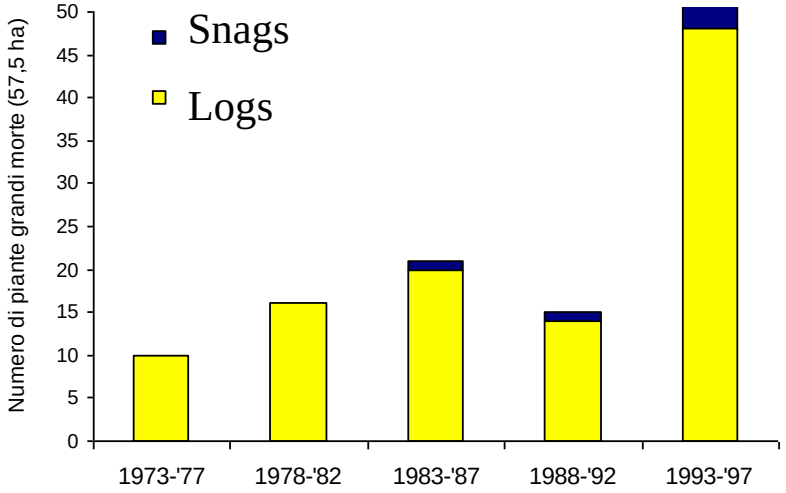
Monitoring tree death

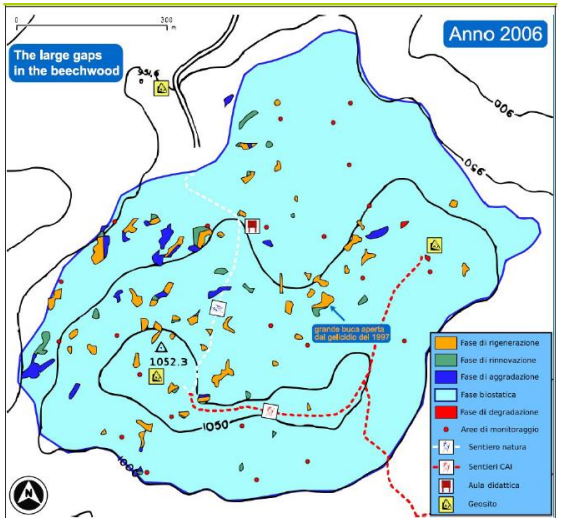
(Forest service of CFS di Soriano al Cimino)

300 large trees have died in the last 30 years (4% of large trees) mostly in consequence of episodic extreme storm events

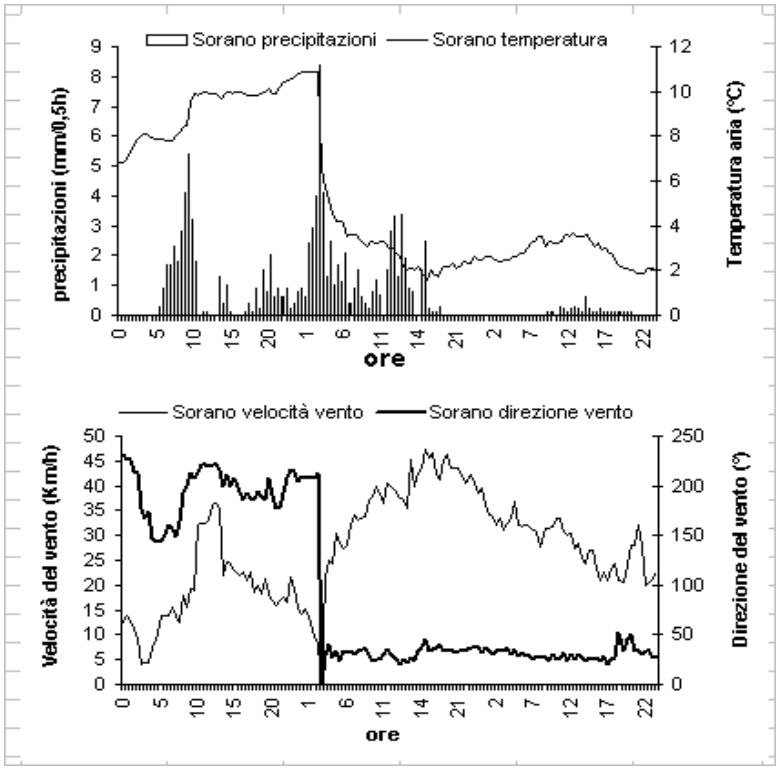
Mixed disturbance regime with canopy gaps and patches

Very low % of snag





The glaze storm of 21/04/1997

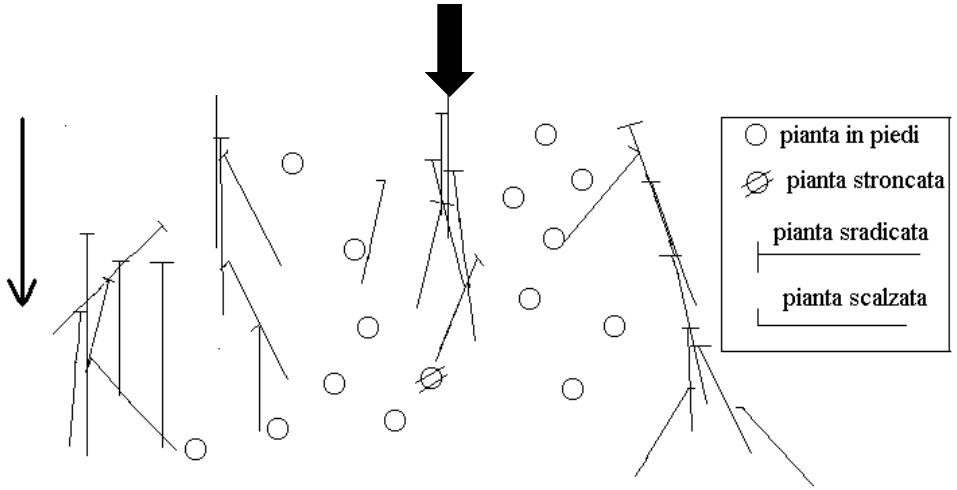


During an ice storm, the thick, clear coating of ice covering surfaces is known as glaze or glaze ice. It is formed when supercooled water droplets known as freezing rain come in contact with cold surfaces on the ground. It is one of the most hazardous types of winter precipitation. Surfaces coated with glaze are very slick and the ice is heavy often causing damages to plants, trees, buildings, and powerlines

Fast change of wind direction: From south wind to northern winds (> 50 km/h)

+ precipitation (> 50 mm)

+ Temperature (< 2 °C)



N Aspect

28 large trees downed

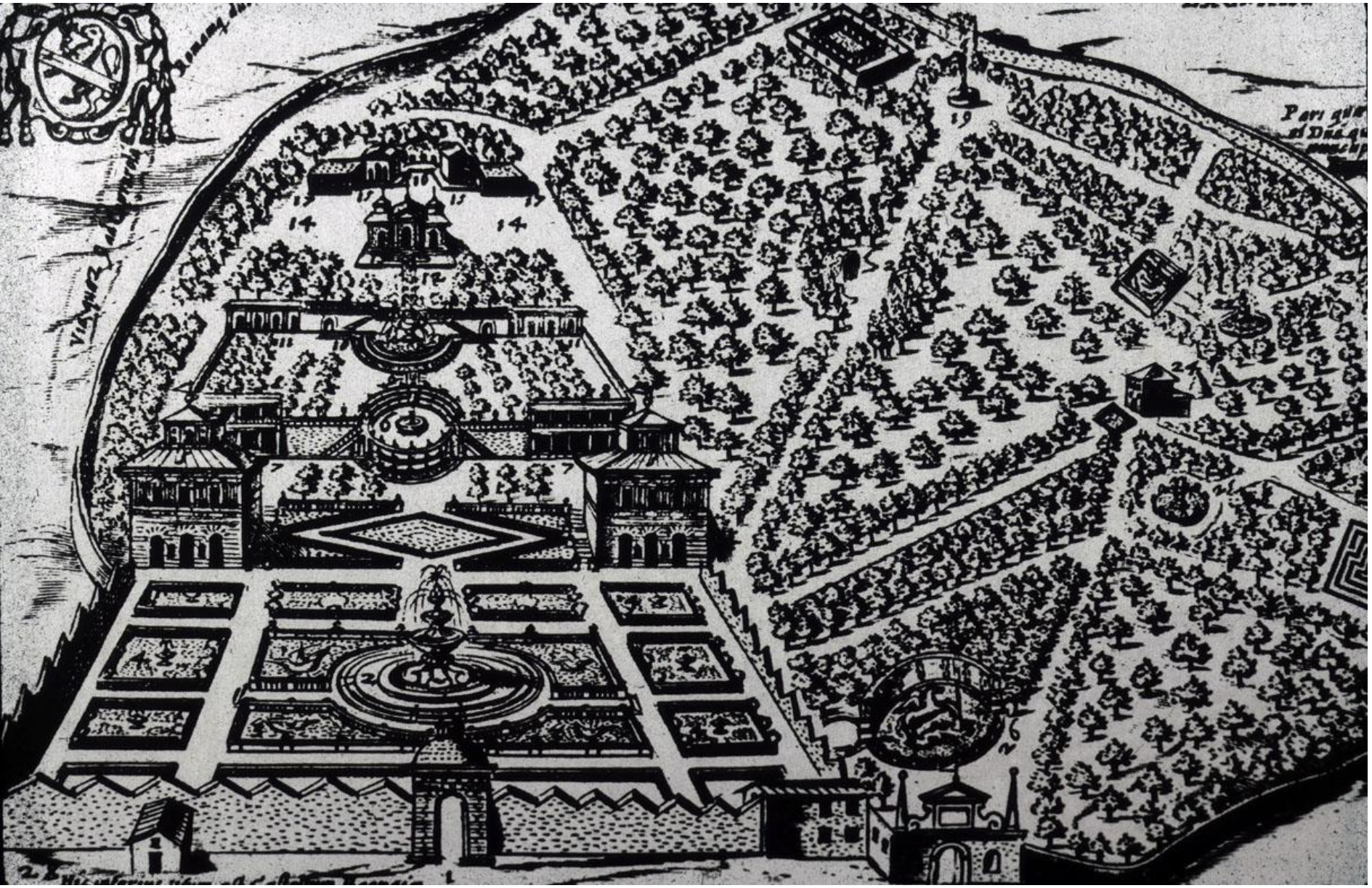
Patch of 4000 m^2

Domino effect (→ up to 8 trees)

I Parchi e le emergenze naturali

- I parchi regionali: aree protette
provincia di Viterbo
  - Parco Naturale Regionale Antichissima Città di Su
  - Parco Naturale Regionale Bracciano - Martignano
  - Monumento Naturale Corviano
  - Monumento Naturale Forre di Corchiano
  - Riserva Naturale Regionale Lago di Vico
  - Parco Naturale Regionale Marturanum
  - Riserva Naturale Regionale Monte Casoli di Bomarzo
  - Riserva Naturale Regionale Monte Rufeno
  - Monumento Naturale Pian Sant'Angelo
  - Riserva Naturale Statale Saline di Tarquinia
  - Riserva Naturale Regionale Selva del Lamone
  - Riserva Naturale Regionale Tuscania
  - Parco Naturale Regionale Valle del Treja
  - Riserva Naturale Regionale Valle dell'Arcionello
- La rete Natura 2000: numerosi SIC e ZPS
- Le faggete vetuste: Venere, Cimino, Monte Raschio, Allumiere
- I parchi delle Ville rinascimentali: la lecceta del barco di Villa Lante

Villa Lante e il Barco



I problemi di conservazione

Necessità di una pianificazione ecologica del territorio a scala provinciale e di un monitoraggio con particolare riferimento a:

- Le specie aliene e l'impatto sui sistemi forestali
- la selvicoltura prossima alla natura e il restauro degli ecosistemi
- L'urbanizzazione della campagna e la frammentazione
- L'impatto dei cambiamenti climatici sulla produttività dei sistemi forestali e sulla conservazione della flora e fauna
- Inquinamento diffuso e lineare
- Erosione costiera

I prodotti e le risorse del bosco


Grazie per l’attenzione