FINAL EUROPEAN CONFERENCE

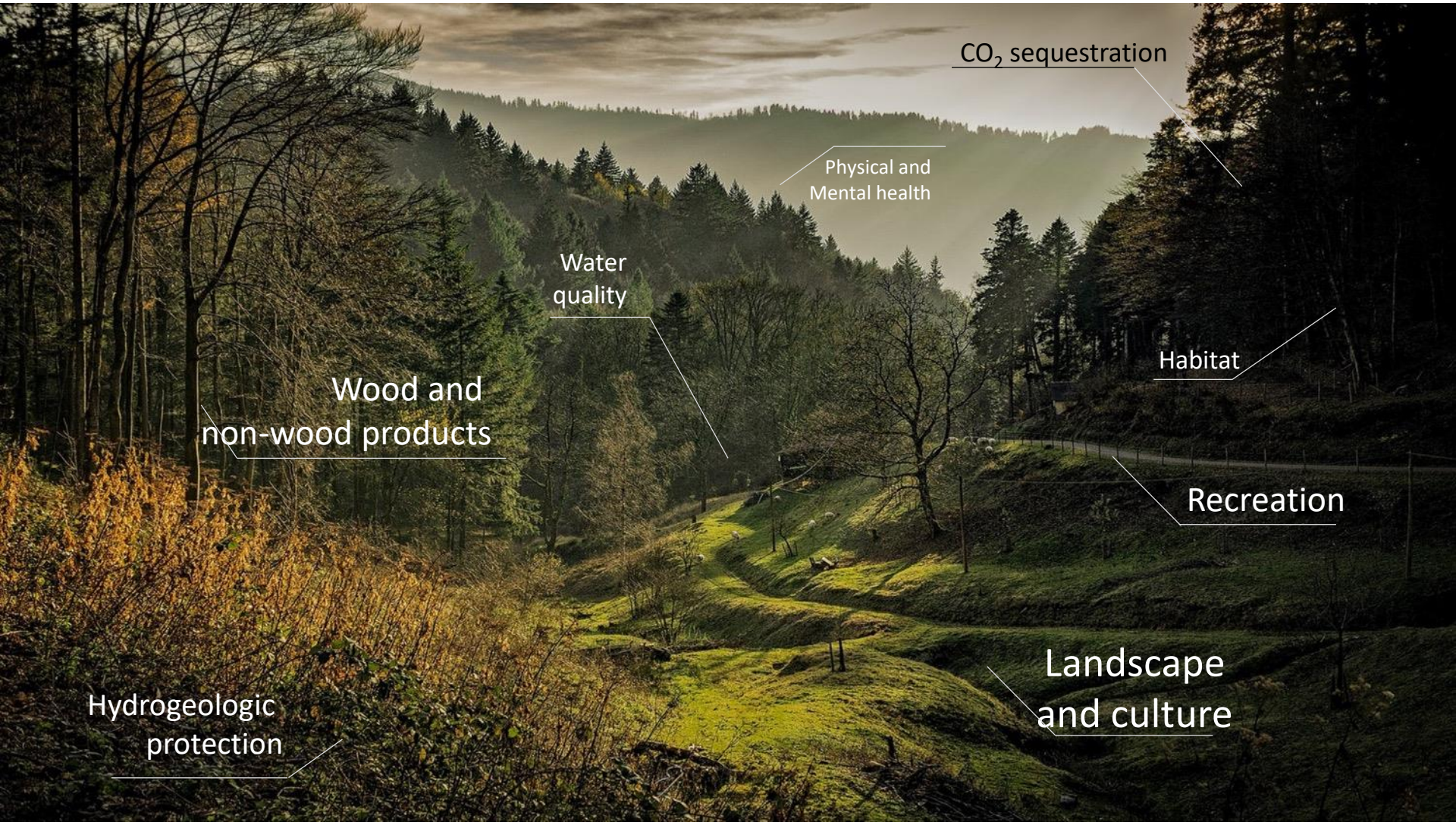
Towards Forest Management in line with the Protection and Conservation of Biodiversity

16-18 February 2022

Good practices in forest management to preserve and restore biodiversity

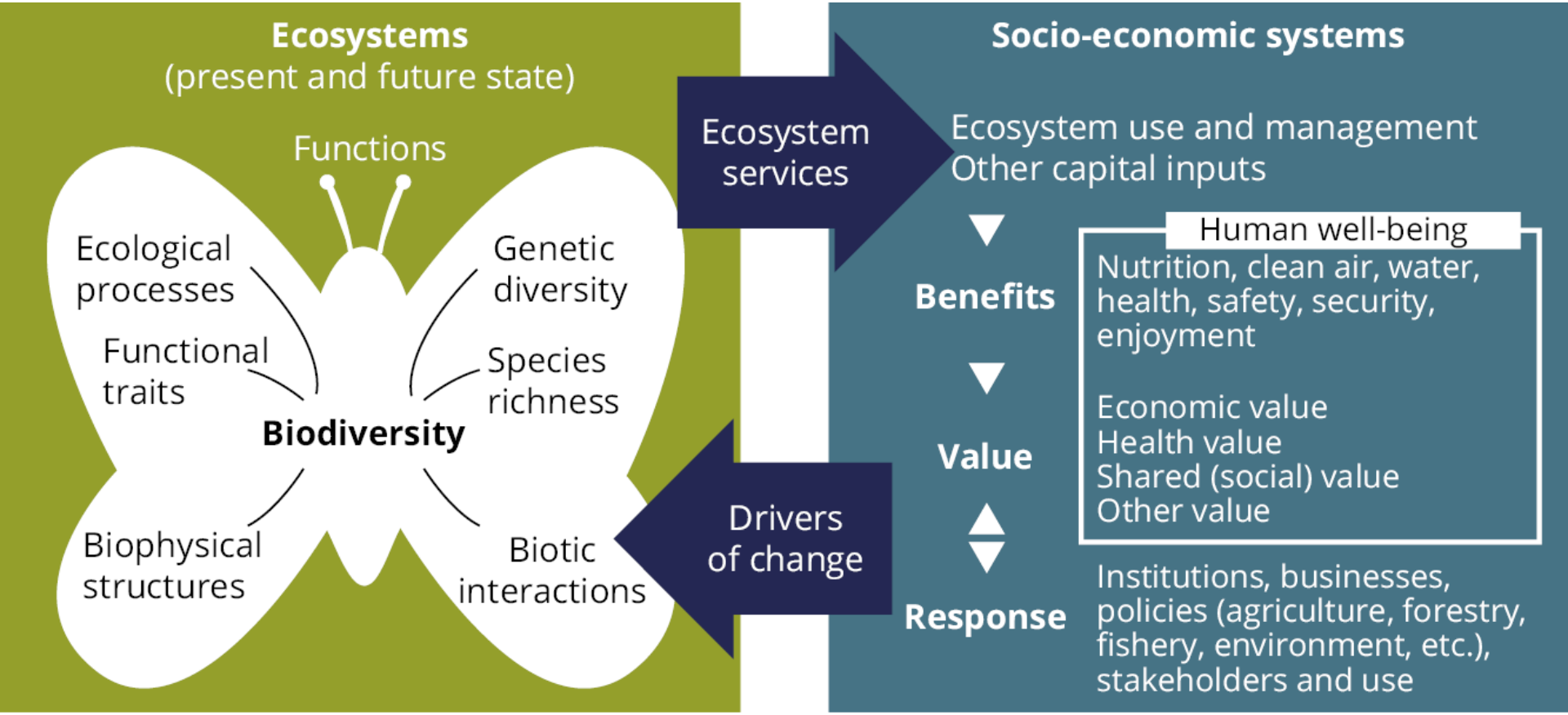
Giorgio Vacchiano
(University of Milan)

Forest contributions to society

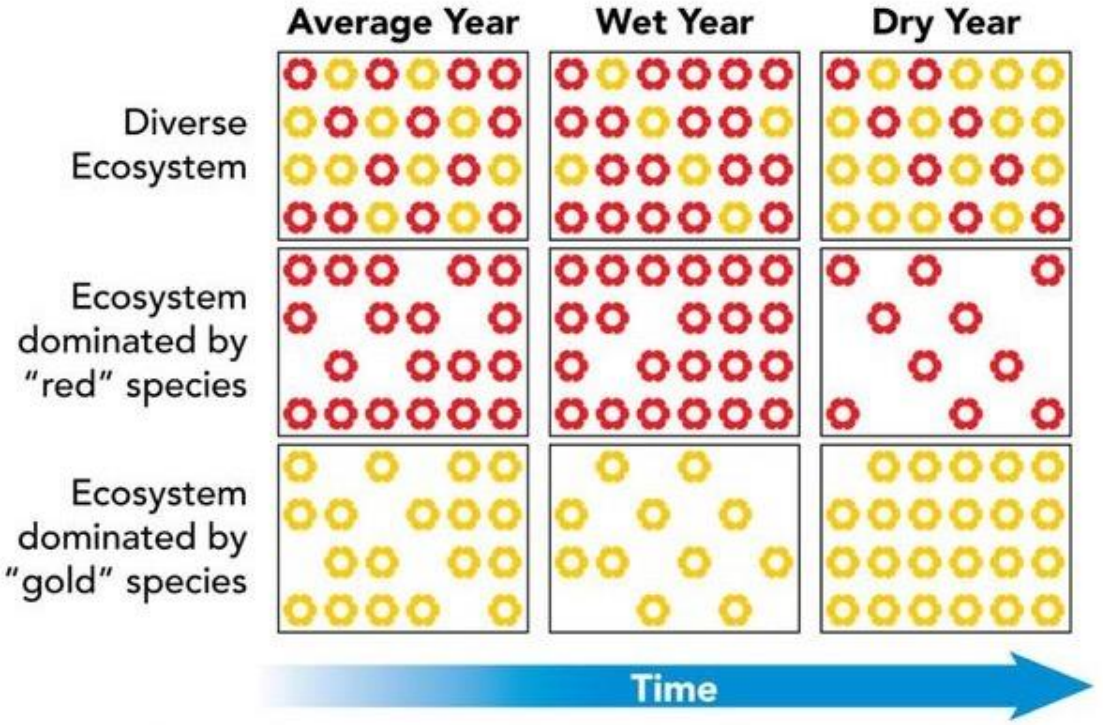


Why using a «biodiversity» lens?

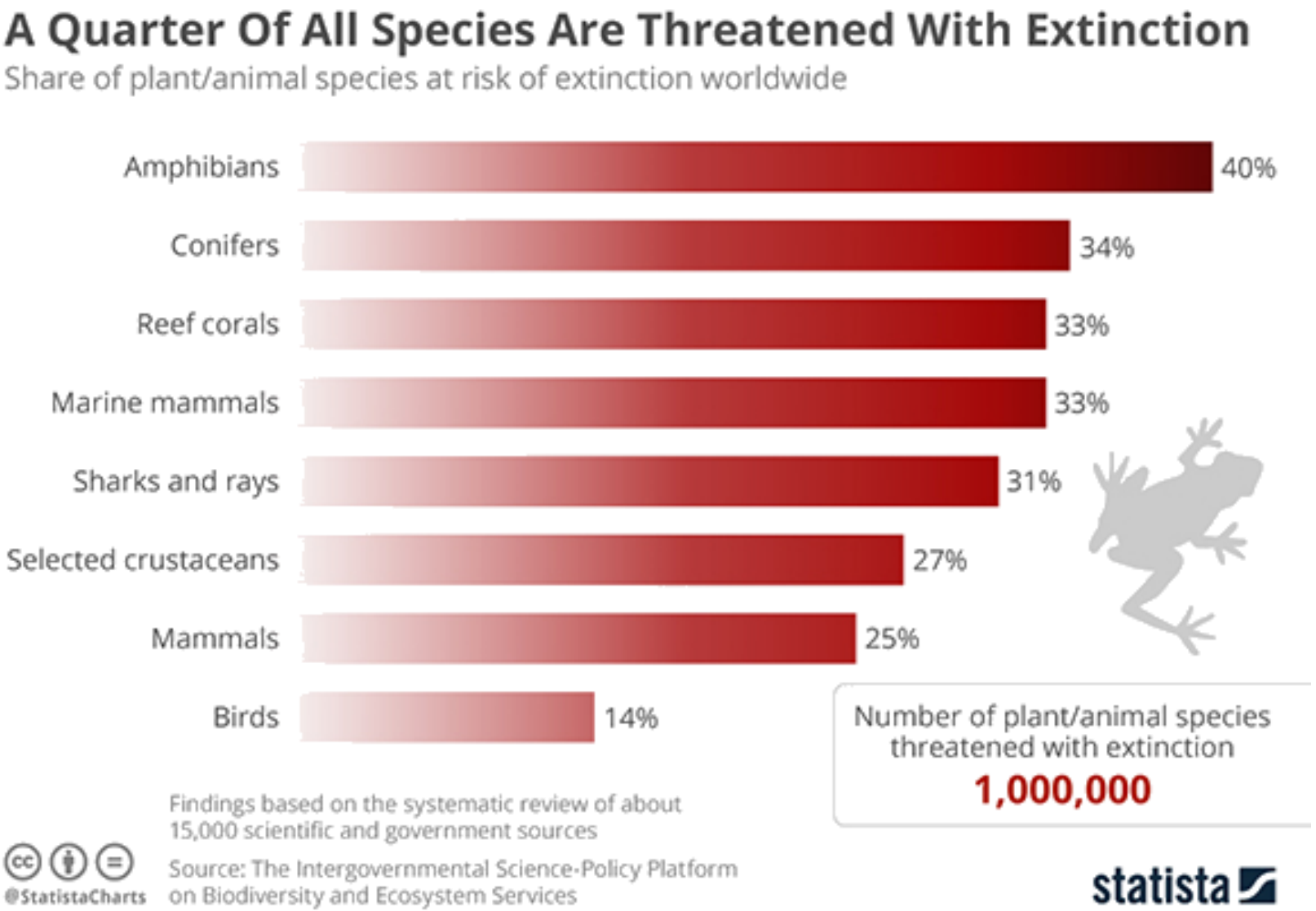
Biodiversity as a human support system



Biodiverse ecosystems are more resilient (*insurance hypothesis*)



Adapted from: Cleland, E. E. (2011) Biodiversity and Ecosystem Stability. *Nature Education Knowledge* 3(10):14.


A Quarter Of All Species Are Threatened With Extinction
Share of plant/animal species at risk of extinction worldwide
Amphibians 40%
Conifers 34%
Reef corals 33%
Marine mammals 33%
Sharks and rays 31%
Selected crustaceans 27%
Mammals 25%
Birds 14%
Number of plant/animal species threatened with extinction
1,000,000
Findings based on the systematic review of about 15,000 scientific and government sources
Source: The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
@StatistaCharts
statista

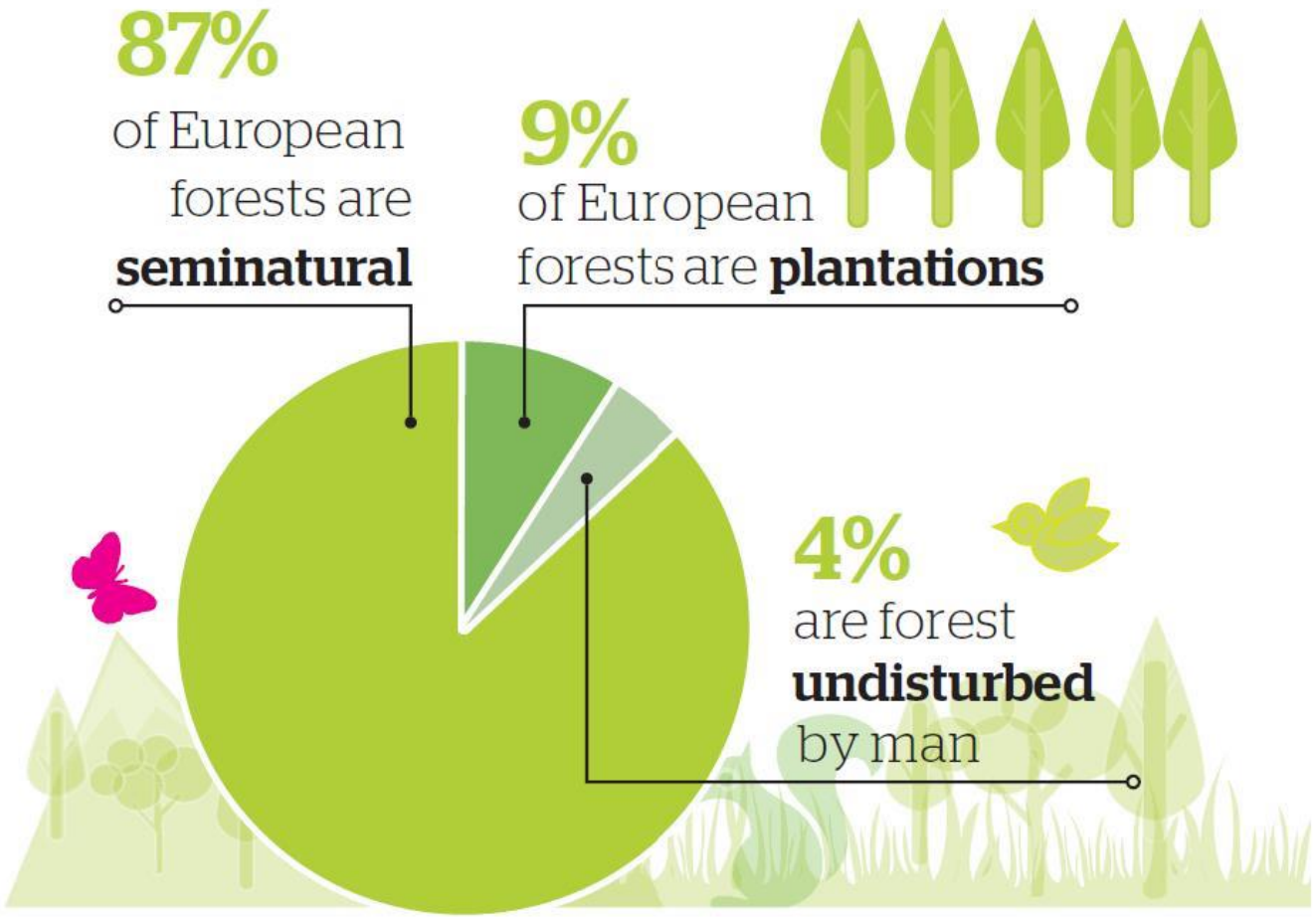
Reasons for biodiversity loss: habitat change

Reasons for biodiversity loss: fragmentation

Reasons for biodiversity loss: climate change

Reasons for biodiversity loss: land use change

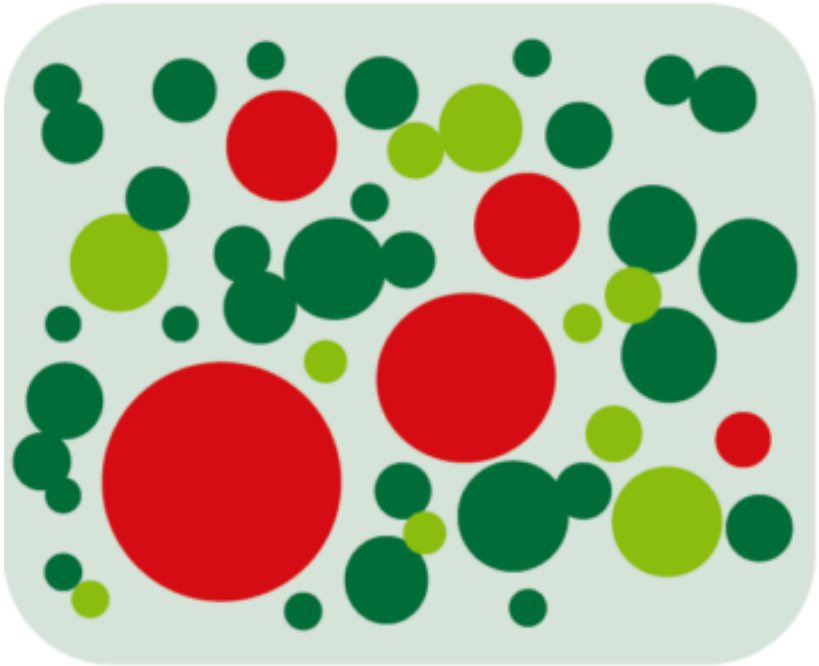
Human impact on European forests



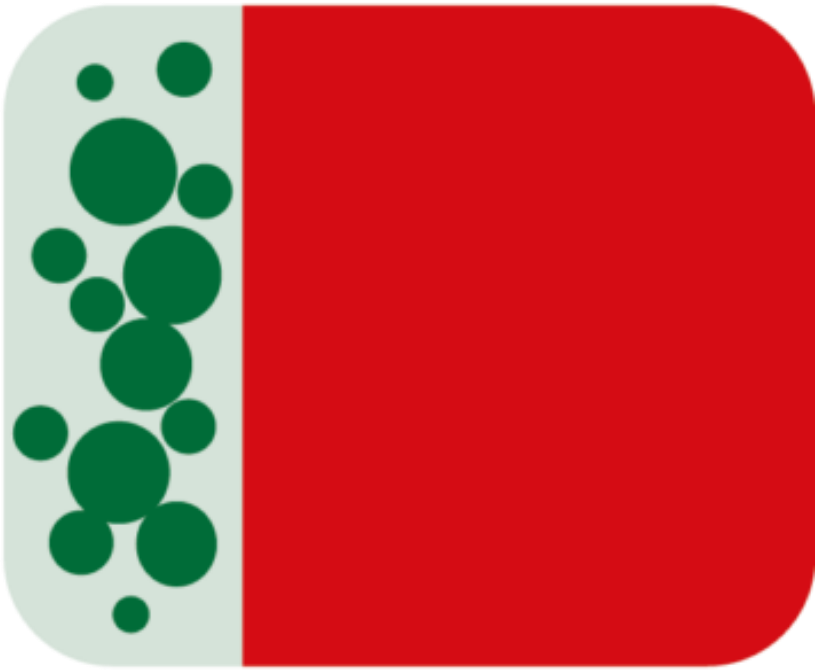
State of EU Forests 2020

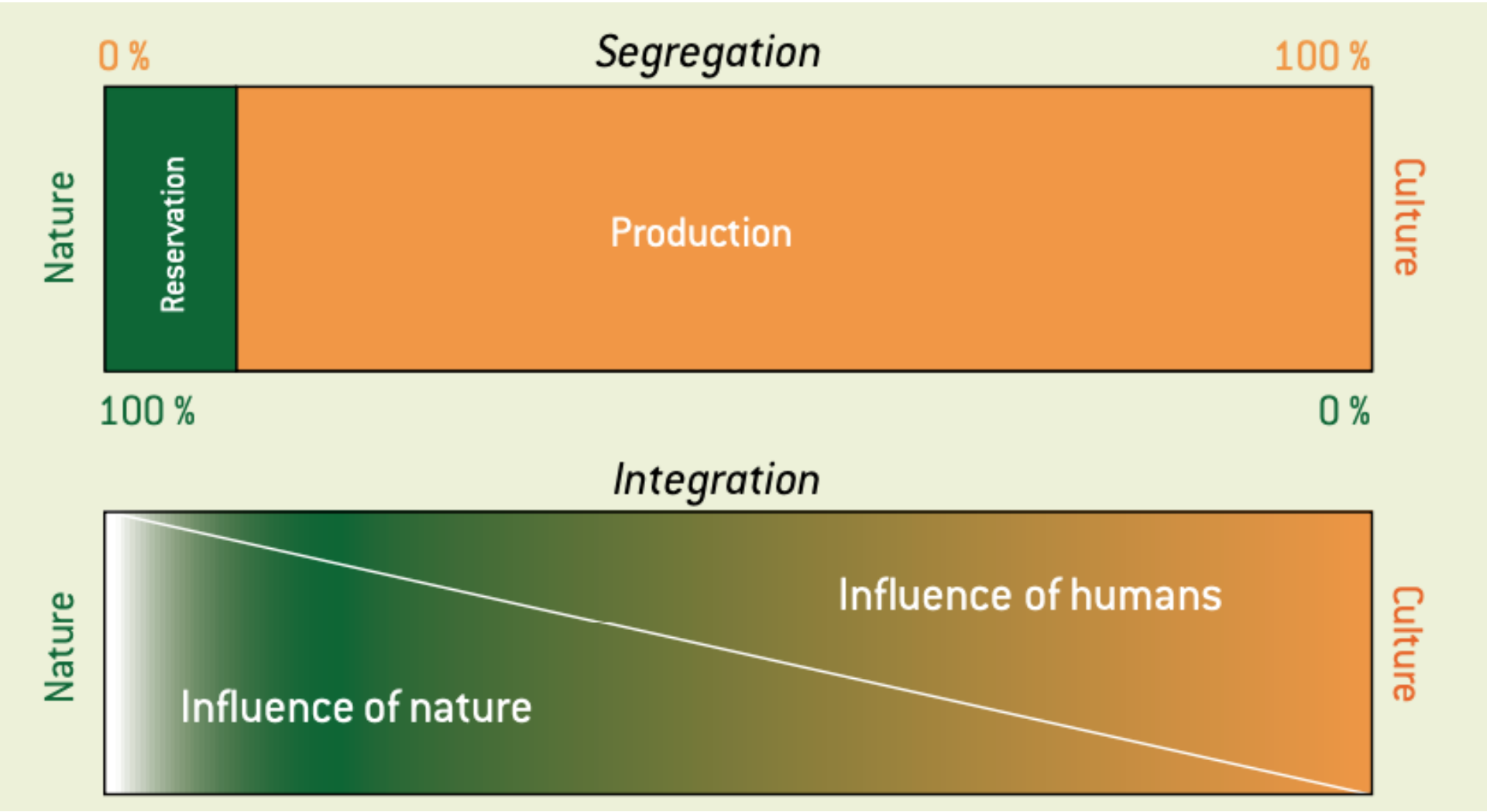
Two «competing» solutions

LAND SHARING



LAND SPARING





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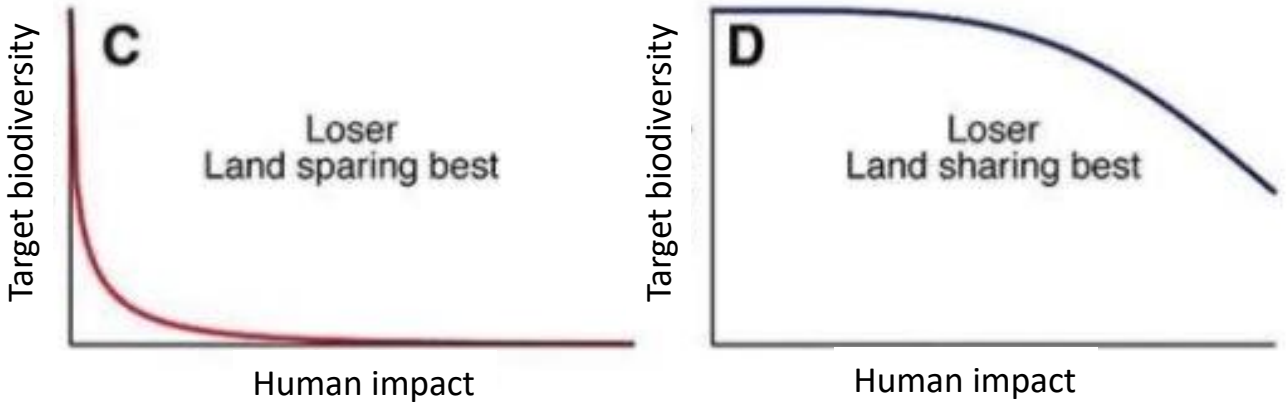
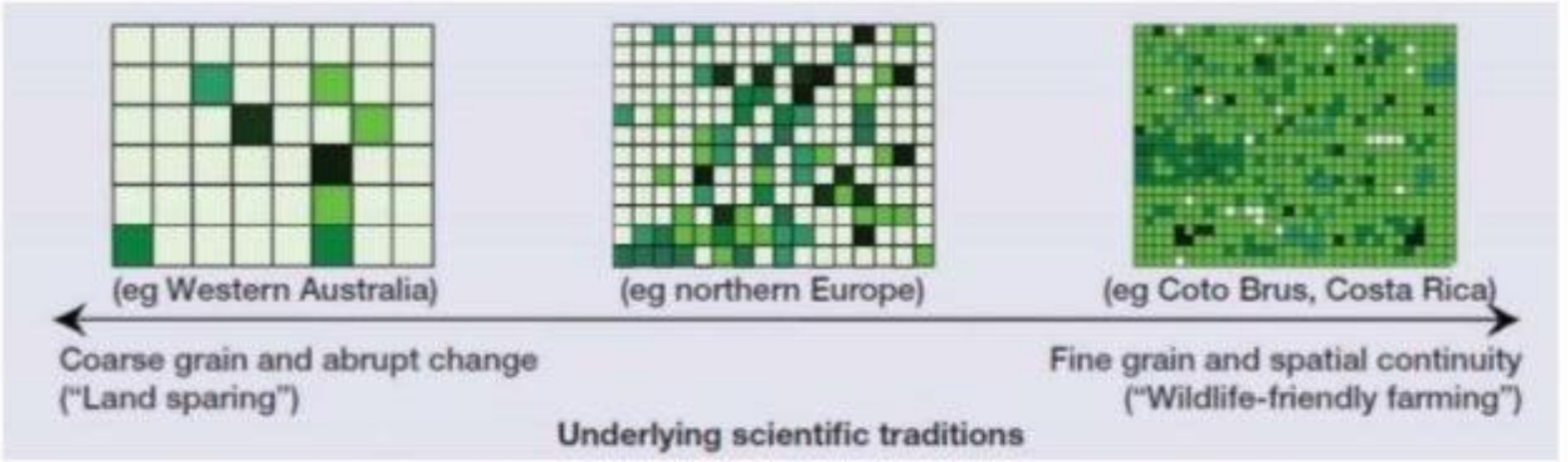
What should we choose?





Phalan et al. 2011, Science; Fischer et al. 2008, Frontiers in Ecol. Env.

Segregating biodiversity: the rewilding choice

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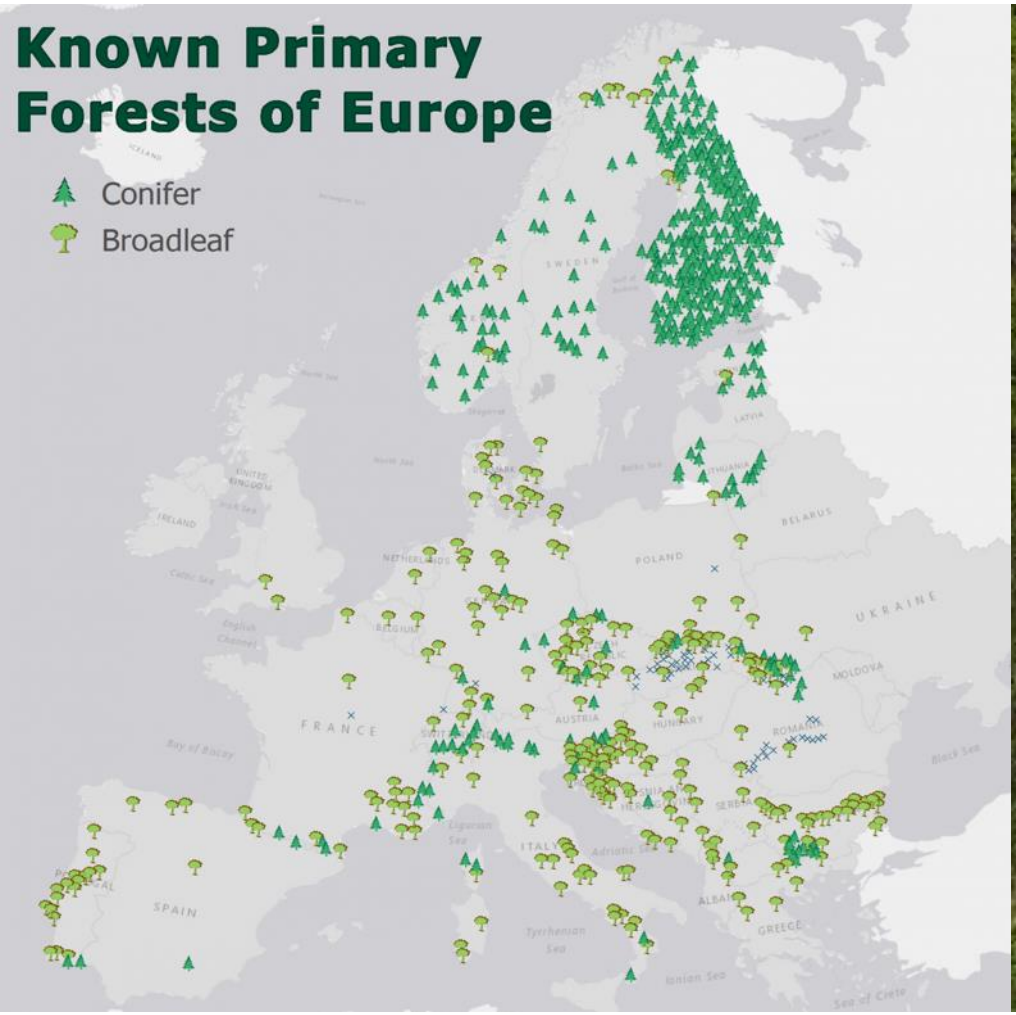
Strict protection of old-growth forests



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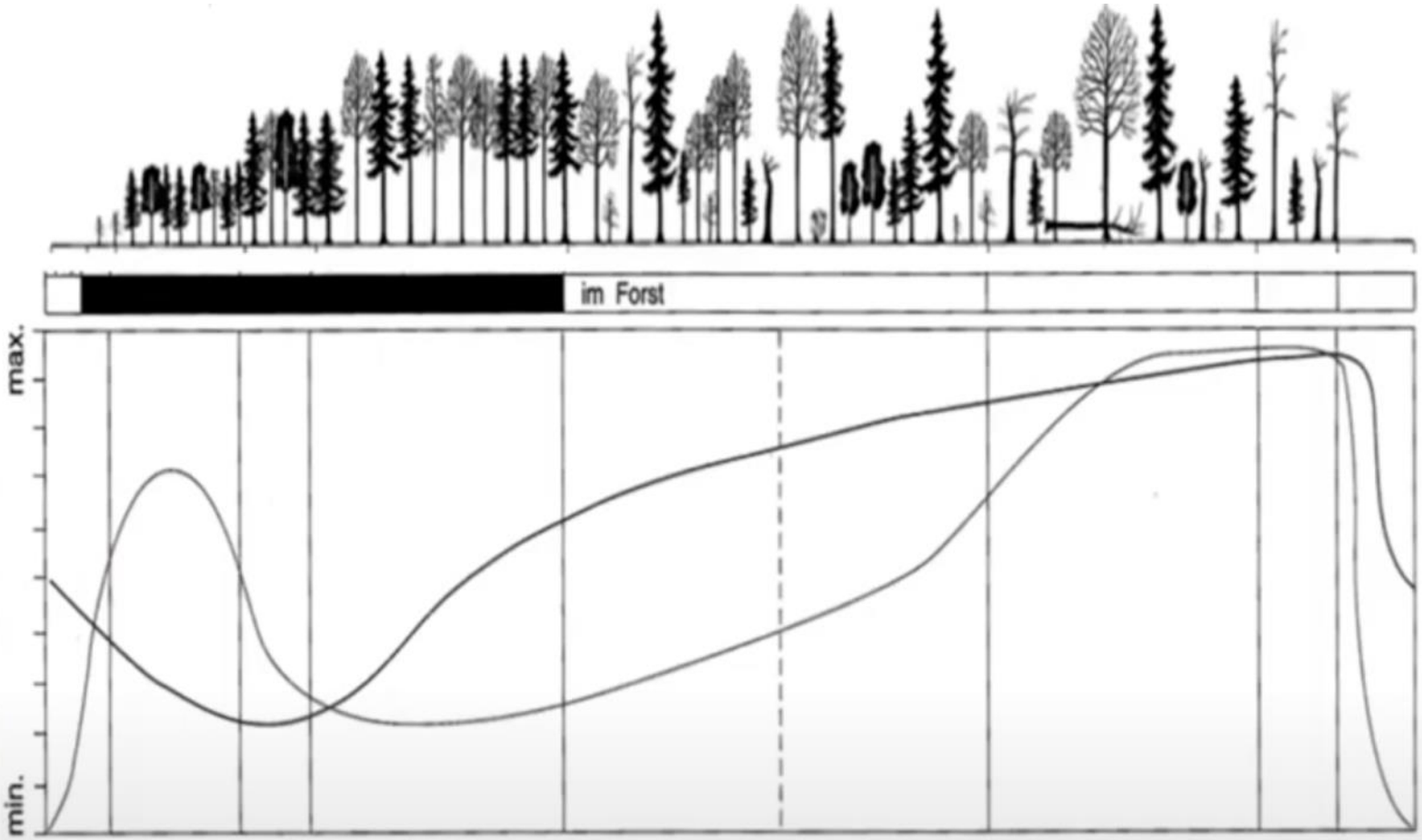
doi: 10.1111/ddi.12778

Old growth elements (large trees, deadwood…)

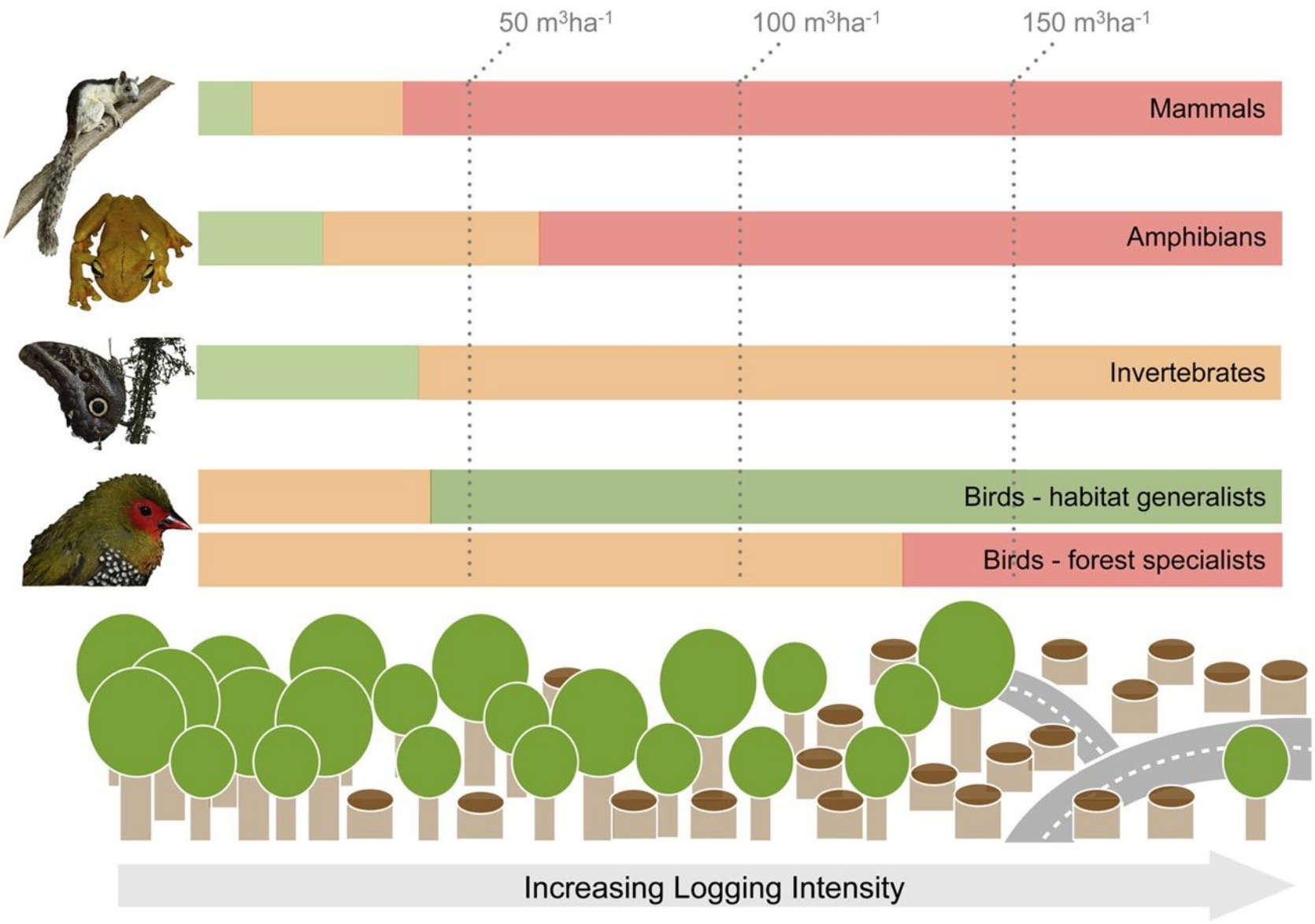
Management to speed up «old growthness»

Set aside areas can only go this far

What about initial and disturbed stages?



Scherzinger 1996, Naturschutz im Wald.



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species richness maintained at or above primary forest site

species richness at least 50% of primary forest site

species richness below 50% of primary forest site

Ecosystems are more than just trees

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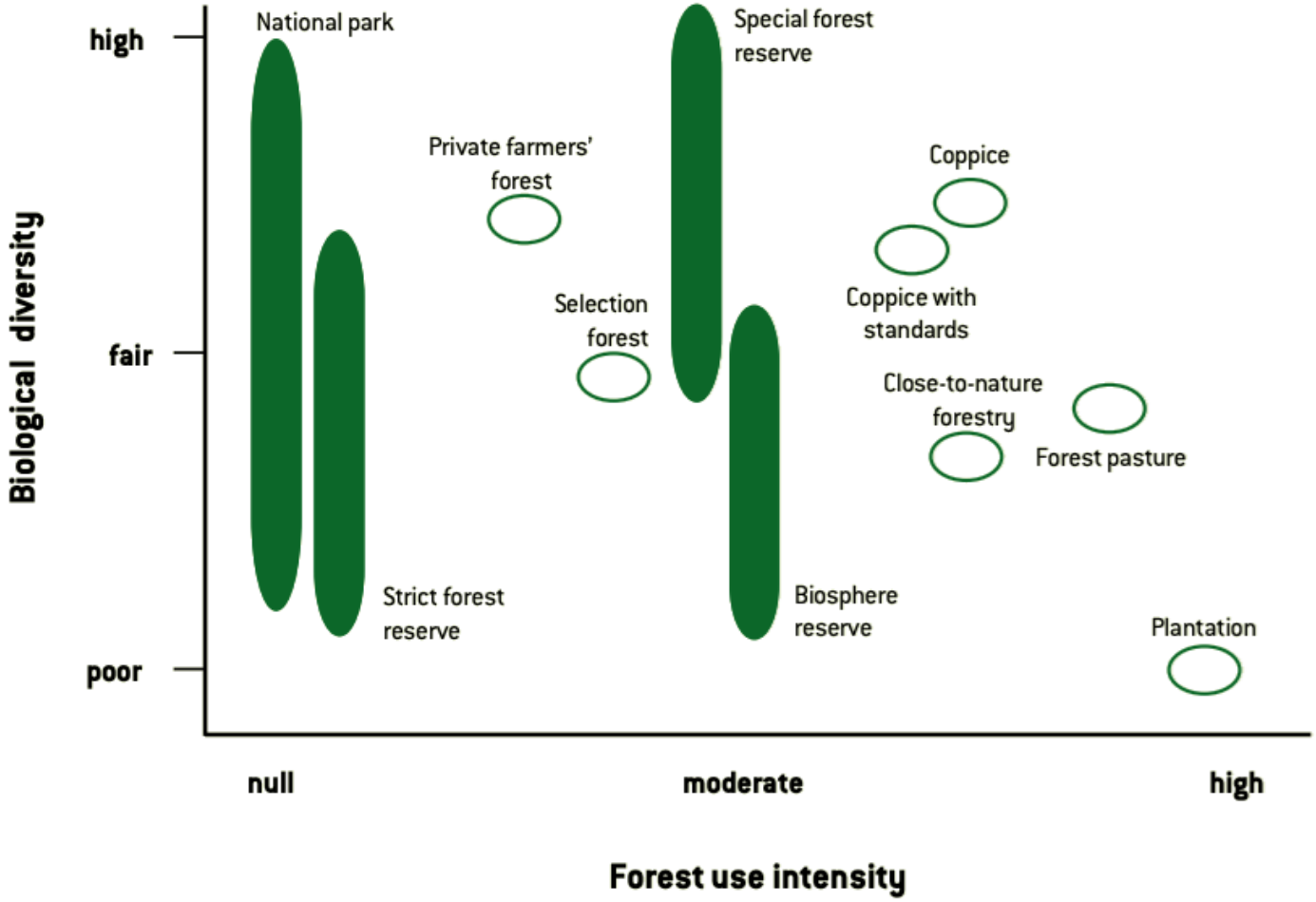
doi: 10.3832/ifor0548-003

Management can be compatible with conservation



Schulze et al. 2007

Tree microhabitats in managed forests

Exposed sapwood (IN11) and perennial polypores (EP12)

CV25 Semi-open trunk cavity

CV25 Semi-open trunk cavity

CV41 Dendrotelms and water-filled holes

CV32 - branch holes (ø ≥ 10 cm),

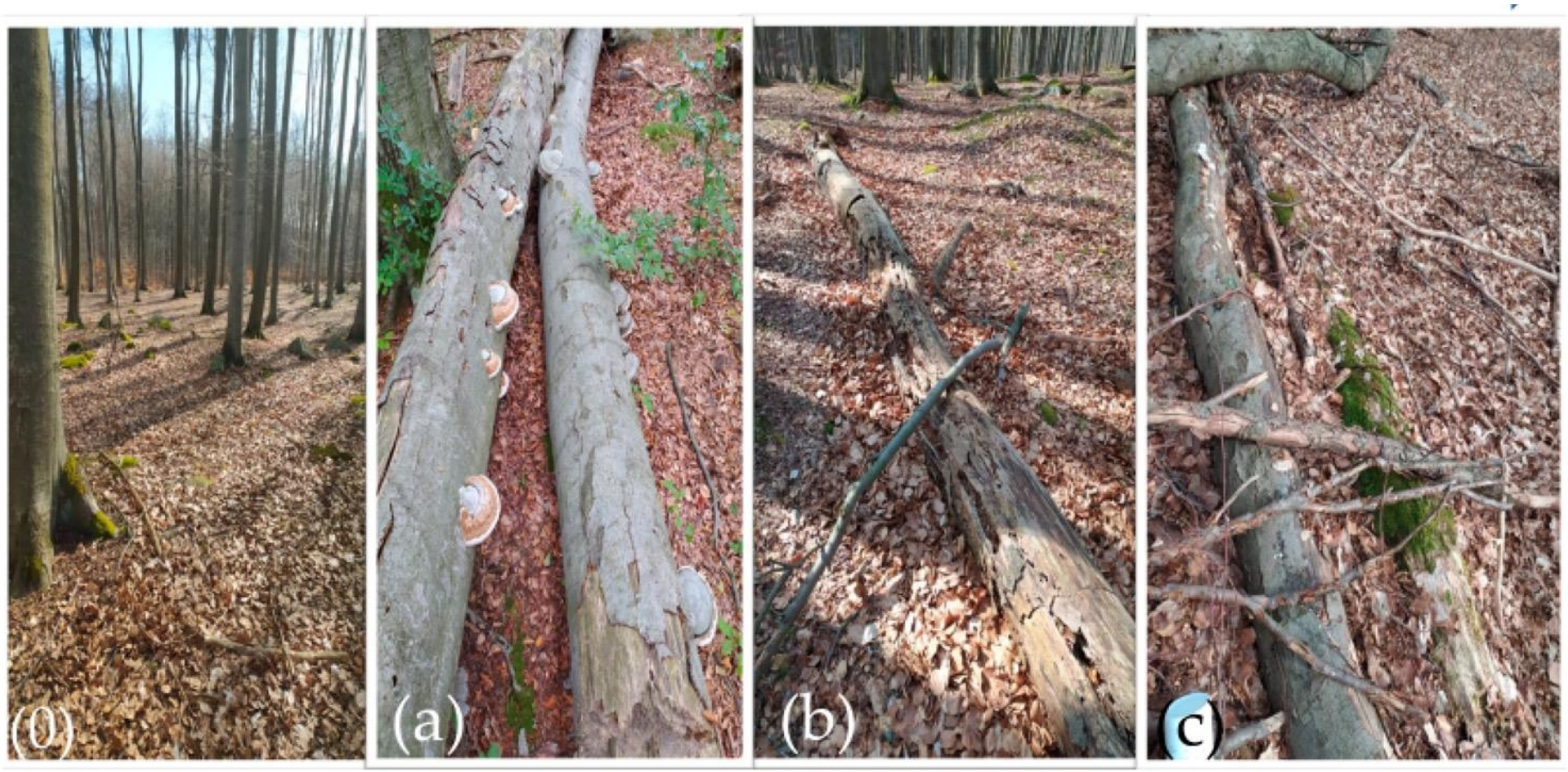
Crown microsoil (OT21)

DE14 Broken limb - ø > 20 cm, ≥ 50 cm, not sun exposed

A branch hole and a broken limb

Group reserves in coppices or shelterwood

Releasing deadwood and harvest residuals



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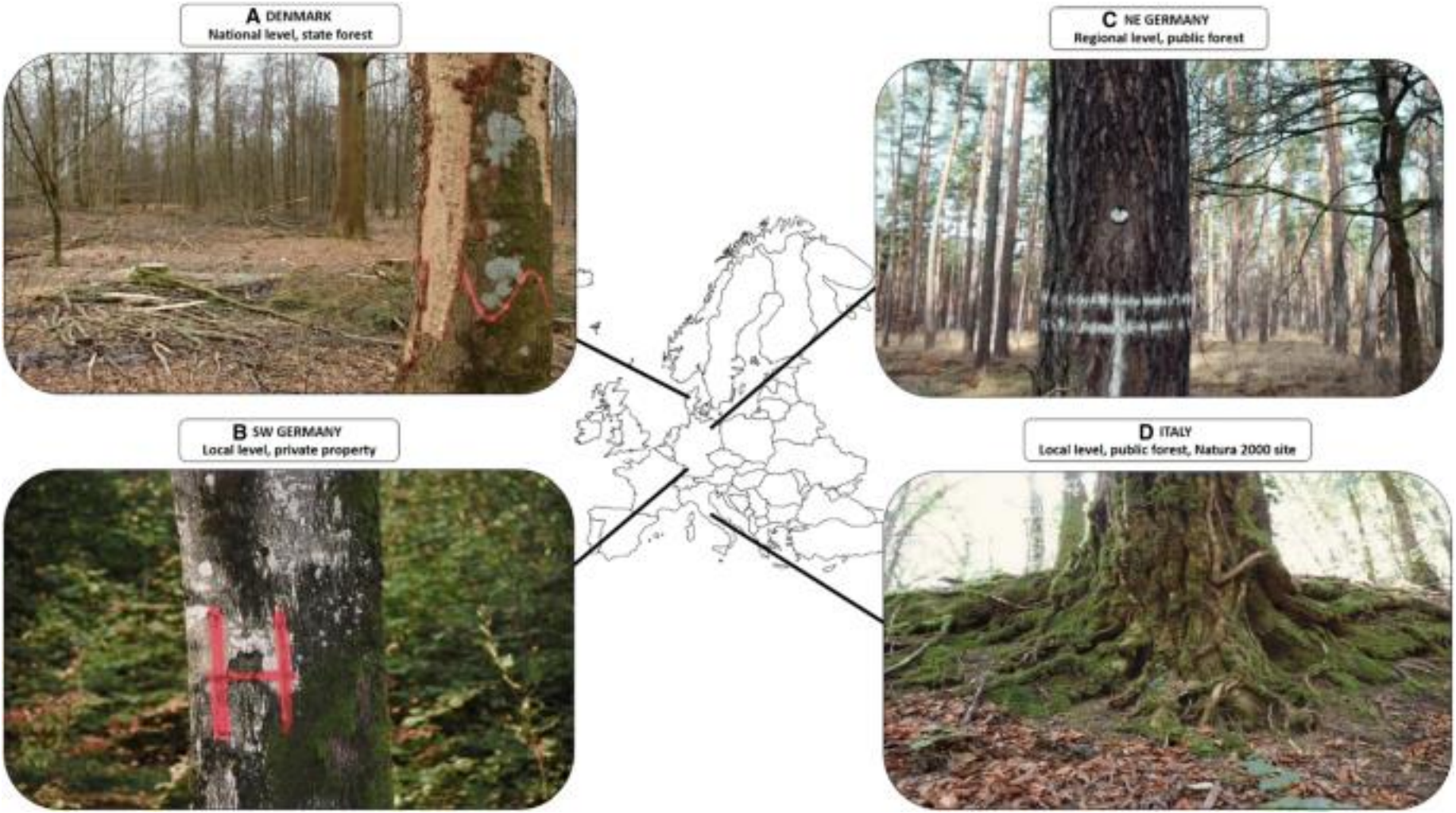
doi: 10.3390/f12060814

Retention forestry



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doi: 10.1007/s13280-019-01190-1

«Green islands» and variable retention harvest

Preserve and release sporadic species

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Structural heterogeneity, continuous cover

Single tree silviculture

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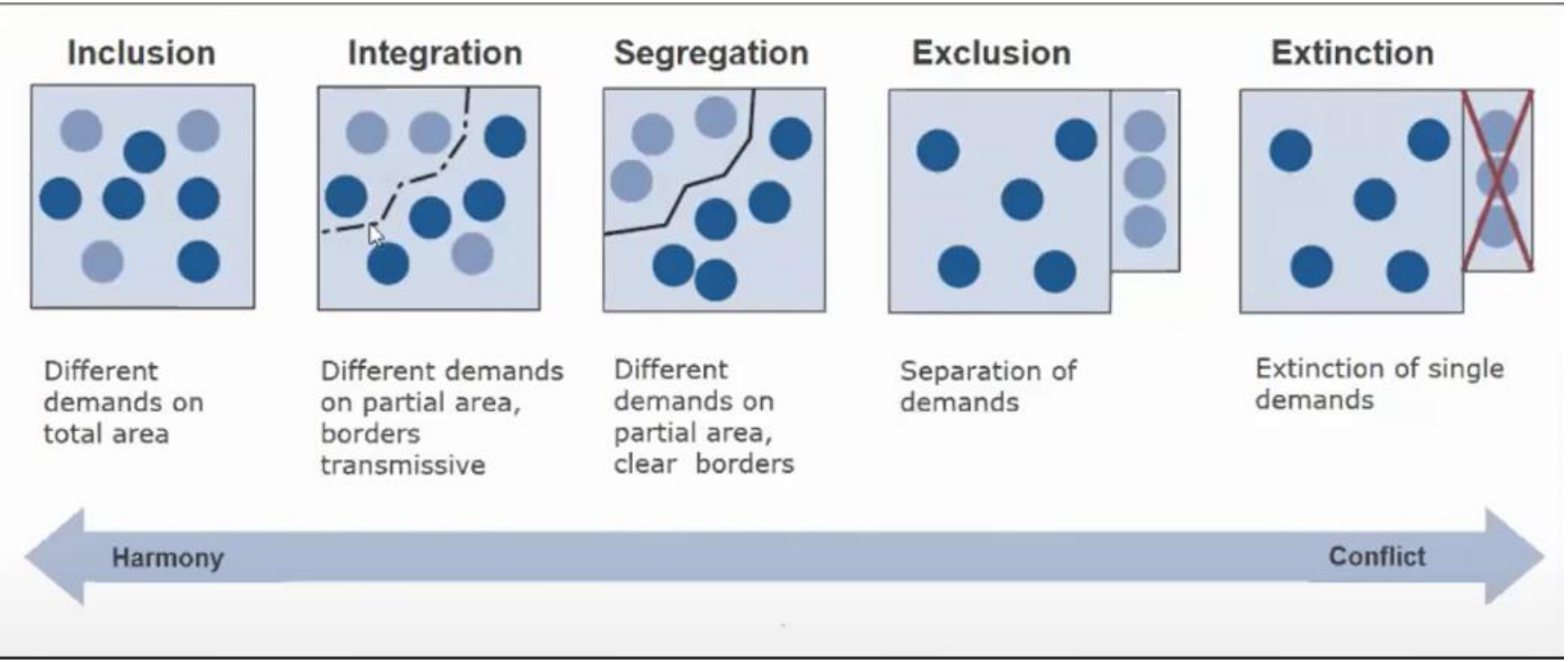
doi: 10.1002/ece3.6003

Not a binary choice!



Large scale forest planning

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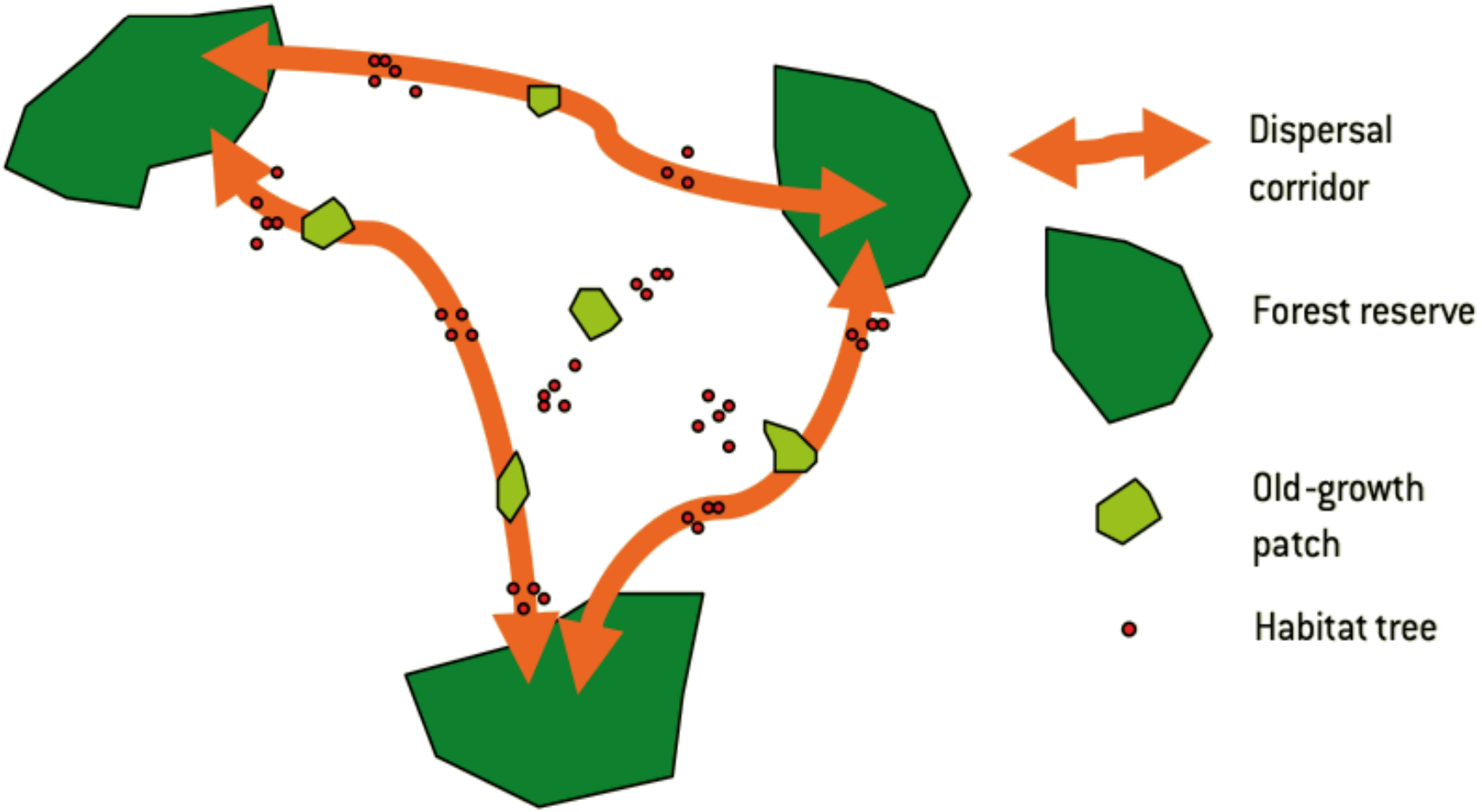
Landscape ecology



An example: the Sonian forest (Belgium)

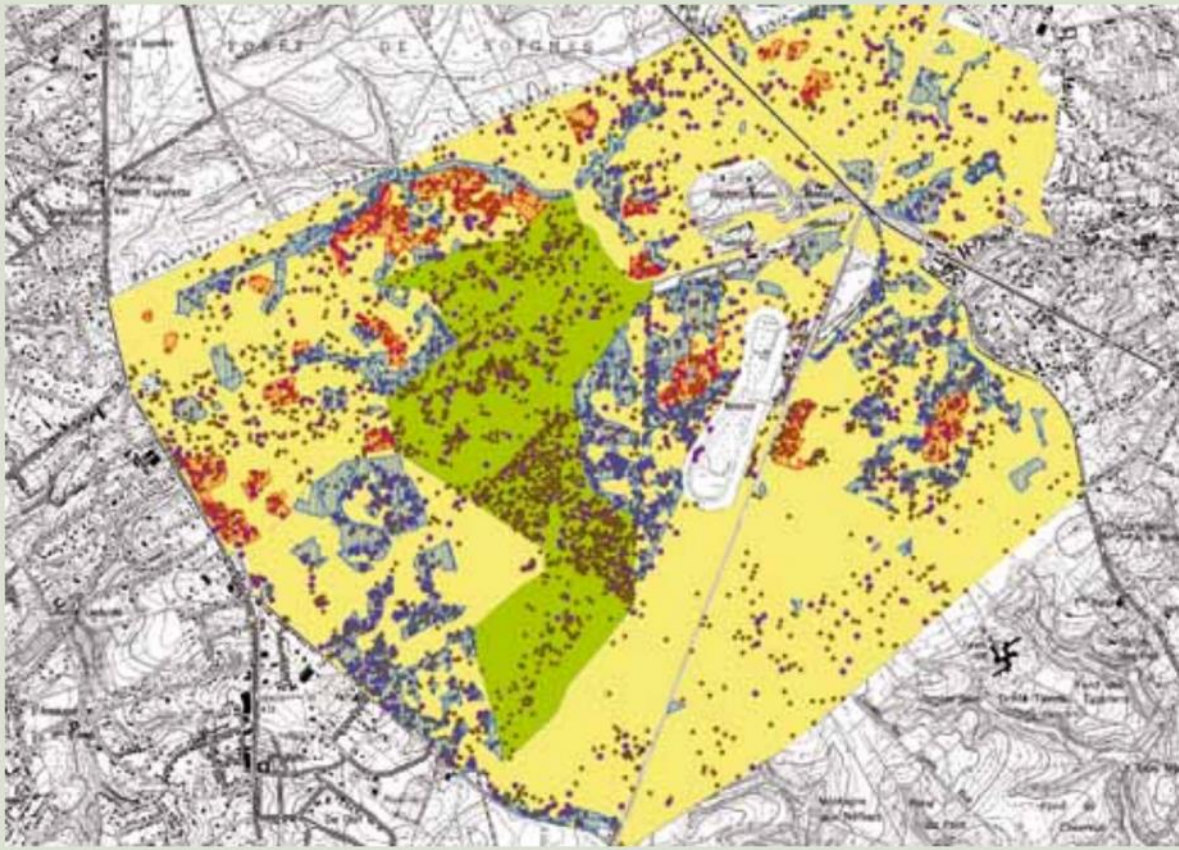
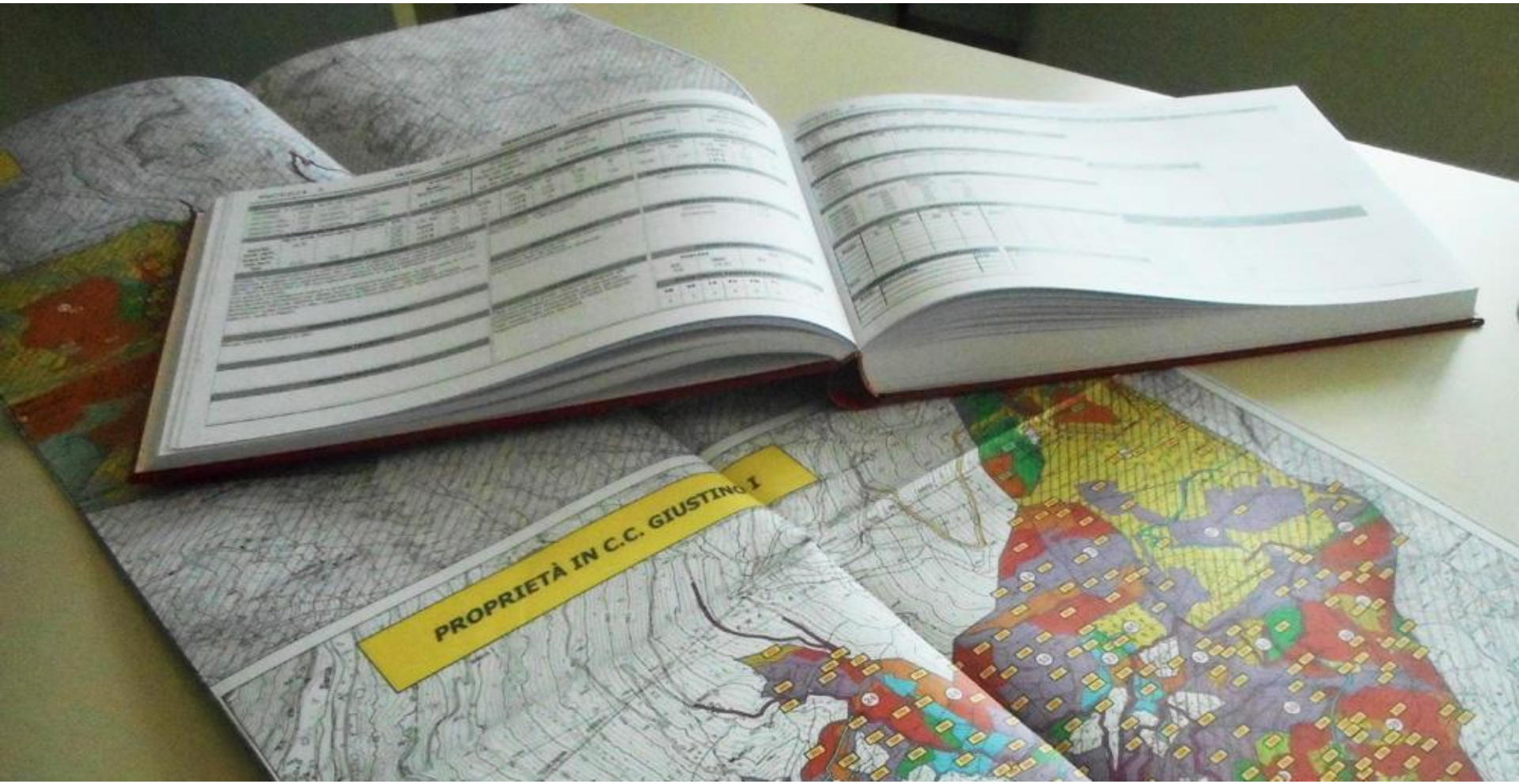


Figure 31. Part of the Sonian forest, showing the strict forest reserve (green), set aside areas (red), senesc
islands (blue), and position of very large trees >3 m (brown) and > 3.50 m girth (purple).

Forest planning and modeling



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Thank you.

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