PRIMARY FORESTS (UNLOGGED) FORESTS AND LARGE, OLD TREES PROVIDE HIGH BIODIVERSITY AND CARBON VALUE BENEFITS

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Summary: Primary (unlogged) forests and large old, trees (live and dead) provide multiple benefits that forestall biodiversity and climate emergencies. They have high conservation value if allowed to achieve their ecological potential to support superior biodiversity, carbon storage and ecosystem benefits.

BENEFITS OF PRIMARY AND OLDER FORESTS

- Protection of intact forests of older and middle-aged trees that have the potential to become older forests, host a wider range of biological diversity from plants and animals to ferns, fungi, lichens, bacteria and habitat for diverse wildlife. They also store more carbon than do logged forests (*1*, *2*) providing over one-third of cost-effective CO_2 mitigation required to avoid a climate catastrophe (*3*).
- The replacement of older diverse forests with younger less diverse production forests has significantly reduced European biodiversity. These forests provide more ecosystem services than managed forests including productive soils, nutrient cycling, pollination, pollution mitigation, water purification, oxygen production, climate regulation, recreation, and hunting/fishing,
- Primary forests store 30-60% more carbon than logged forests and up to half of the carbon stored in an older multiage forest is represented by the largest (oldest) 1% of trees (*4, 5*).

BENEFITS OF LARGE, OLD TREES

- Size and age of a tree increase over time accumulating unique features that provide habitats such as large internal cavities and canopy structures that differ from younger trees.
- Large old trees are among the most massive organisms on Earth. They are keystone and bio-cultural elements of our natural inheritance, and are declining worldwide due to deforestation and forest degradation (*6*).
- Large, old trees provide nutrients and increased soil carbon; are associated with more plant varieties; play critical roles in hydrological cycles, and are "blueprints" for restoration (*5,6*).
- Large, old trees store a disproportionate amount of carbon over centuries with larger leaf surface area for CO_2 absorption, and massive carbon storing tree trunks and roots (*4,7*).
- Large trees provide stable microclimates; less soil desiccation and lower temperatures (*8*).
- Large trees are nature's "water towers" and the planets "lungs" (*4,5,6*)
- Mycorrhiza soil fungal networks become more connected and carbon rich as forests mature.

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https://doi.org/10.1111/conl.12120