

European Primeval Beech Forests as a Reference for Management and Biodiversity Conservation

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The conference “Primeval Beech Forests - Reference Systems for the Management and Conservation of Biodiversity, Forest Resources and Ecosystem Services” (2-5 June 2013, L'viv, Ukraine) was aimed at building a common multidisciplinary scientific platform to share achievements on the structure, dynamics and biodiversity of European beech primeval forests from the perspective of global change and in relation to sustainable forest management and conservation strategies.

Natural forest patterns and processes from primeval beech forests remnants

The conference, organized by the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), the Ukrainian National Forestry University and the Carpathian Biosphere Reserve, hosted more than 150 people from European countries but also USA and Japan.



A view of the primeval beech forest of Uholka (Carpathian Biosphere Reserve) from the treeline (Photo by Alfredo Di Filippo).

Researchers with different backgrounds learned from each other and discussed possible joint research approaches through 75 oral presentations and 43 posters (http://www.wsl.ch/dienstleistungen/veranstaltungen/veranstaltungskalender/beechn_forests/index_EN).

Case studies from different countries showed how tree community structure and dynamics vary in primeval/old-growth beech forests from different biogeographical regions. Large scale comparisons can provide new insights into the biological/ecological potential of primeval remnants e.g. on the maximum tree longevity in different environments or the carbon sequestration of natural forests.

New biodiversity features associated with the old-growth status emerging with new microhabitats and substrates supporting micro- to macroscopic organisms, offer fascinating insights into the secret life of primeval forests. Speakers unveiled a wonderful, unique web of life made up of rare fungi, bryophytes, lichens, peculiar vegetation assemblages, and saproxylic beetles, ground invertebrates up to birds and small/large mammals.

Eco-regional sets of indicators of degree of forest naturalness

We still are lacking a set of indicators to quantify the degree of naturalness in unmanaged forests, linking forest structural development with changes in biodiversity and the occurrence of rare species. Dendroecological approaches and population genetics still need to be completely incorporated into classical descriptors to reach a sound understanding on how old-growth/biodiversity features interact with past forest management, time after abandonment, and landscape history. Only a shared, large scale biogeographical approach could reveal how the main environmental factors, through biogeoclimate, control the rise and expression of old-growth attributes within the eco-geographical regions of European beech forests.

Building a platform for European beech forests research

A basis of shared indicators could be a starting point to test new indices for beech forest conservation value, an important contribution to the ongoing process of selecting the best remaining European primeval/ancient beech forests for the UNESCO World Heritage. Gathering common scientific knowledge is also crucial for conservation ecology strategies, providing quantitative information for managing strict forest reserves, and assessing the impacts of fragmentation and primeval beech forests loss. Understanding how naturalness indicators develop after the abandonment of forest activities will help to design silvicultural and restoration techniques for sustainable forest management, ecoservices development and biodiversity conservation.

The conference was accompanied by a satellite workshop to identify additional research needs and draft an international, interdisciplinary research program on primeval beech forests. In addition to establishing a network for future cooperation, workshop participants are planning other shared events such as summer schools and research training networks to encourage the construction of a shared scientific platform.