

VITERBO DECLARATION

On safeguarding functional beech forest ecosystems

Agreed by the participants of the

**11th International Beech Symposium of the IUFRO Group 1.01.07 “Ecology and Silviculture of Beech”
to “Natural and Managed Beech Forests as Reference Ecosystems for the Sustainable Management of
Forest Resources and the Conservation of Biodiversity”**

held in University of Tuscia in Viterbo (Italy), September 18th-21st, 2018

80 scientists from European Union, Switzerland, Turkey, Iran, Japan, Canada and USA presented the findings of their recent research broadly on the following topics: Beech Biology, Beech Response to Environmental Factors, Beech Forest Structure and Dynamics, Beech Forest Management, Biodiversity and its Conservation in Beech Forest.

Main Conclusions

1) *State of research*

After more than a century of research beech forests belong to the most intensively studied ecosystems of the World. The widespread presence of *Fagus* forests across the nemoral deciduous forest regions of the Northern Hemisphere makes them ideal references for studying forest dynamics and developing new models of sustainable management. There exists a body of good knowledge on the complex structure and dynamics of beech forest ecosystems. Paleo-ecological studies and scientific monitoring have revealed evidence of ongoing changes emerging in the face of natural and human-induced disturbances and corresponding uncertainties about the resistance and resilience of beech forests. The impacts of climate change and human activities are being assessed in various contexts.

2) *Importance of old-growth beech forests*

Because the scientific knowledge of forest ecosystem complexity and dynamics is an essential baseline reference for promoting effective forest management, the ecological integrity and functional attributes of old-growth beech forests are essential learning platforms for understanding managed forests. It is broadly acknowledged that the irreplaceability of old-growth beech forests is contingent in their complexity and historical integrity. The restoration of old-growth ecosystems across the landscape is also required to permit monitoring of recovery processes and thereby enable the development of management approaches that emulate natural dynamics.

3) *Situation of old-growth beech forests in Europe*

The fragmentation of the European forest landscape and the ongoing degradation/destruction of the remaining old-growth forests is a pressing issue across Europe, including within the European Union. Deficits in ecological planning and sustainable management as well as the lack of existing European Union legislation to protect old-growth forests are reasons for the destruction of this valuable and irreplaceable natural heritage of Europe. There is an urgent need for a Europe-wide cessation of logging in old-growth forests, and for legislative powers to safeguard all remaining areas of old-growth ecosystems, and restore them across the landscapes.

4) NATURA 2000 beech forests

Beech forests are an important part of the NATURA 2000 network in the EU. And yet, in its current form NATURA 2000 is failing to safeguard the natural integrity of beech forests. Lack of coherence and appropriate measures to conserve and promote functionality in managed forests are central to the problem.

5) UNESCO World Natural Heritage

The UNESCO World Natural Heritage Property “*Ancient and Primeval Beech Forests of the Carpathians and other Regions of Europe*” (2007, 2011, 2017) encompassing 78 component parts in 12 countries is an effective step towards safeguarding the integrity of beech forests and for building a robust response to the multiple challenges facing this globally unique ecosystem. This serial transnational World Heritage Site is one of the most complex of its kind, and its ongoing development is a unique example for ecosystem-based transnational cooperation, which continues to encourage future growth. Outside Europe, Japan hosts since 1993 the “*Shirakami-Sanchi*” Site to protect remnants of pristine *Fagus* forests. Other important old-growth *Fagus* forests, such those in the Colchic and Hyrcanian areas in Western Asia, deserve adequate protection status to conserve their unique biodiversity.

Recommendations

- 1) Because sustainable management should reflect the current and most relevant scientific knowledge, more applied research is needed for the effective transfer of knowledge between science and practice, which requires long term and large scale research programs. Considering the global importance of *Fagus*-dominated forests, it is strongly advised the development of joint monitoring networks to understand forest response to climate change across the Northern Hemisphere (North America to Europe and Asia).
- 2) The conservation and restoration of old-growth forests should always be an integral part of sustainable forest planning and management. All remaining old-growth beech forests should be strictly protected. In managed beech forests, a portion of the forest area should be abandoned or managed toward the development of old-growth characteristics.
- 3) World Heritage Sites should receive the necessary political and economic support to sustain their current function as the cornerstone of the conservation of old-growth beech forests.
- 4) Current deterministic models of forest management must undergo a baseline shift to capture the contemporary scientific understanding of the complexity dynamic and in-deterministic systems under environmental change.
- 5) Future proofing beech forests requires a large scale approach to planning and management that includes principles of conserving and restoring connectivity as well as effective buffer zones. The concept “making space for nature” is an appropriate long term strategy for the development of existing, and establishment of new beech forests.

Ismael Aranda	Forest Research Center INIA-CIFOR, Spain
Davide Ascoli	University of Napoli "Federico II", Italy
Michele Baliva	University of Tuscia, Italy
Mahmoud Bayat	Research Institute of Forests & Rangelands (RIFR), Iran
Peter Brang	Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland
Giandiego Campetella	University of Camerino, Italy
Roberto Canullo	University of Camerino, Italy
Said Dağdaş	General Directorate of Forestry, Turkey
Ettore D'Andrea	CNR IBAF, Italy
Alfredo Di Filippo	University of Tuscia, Italy
Luca Di Fiore	University of Tuscia, Italy
Els Diedht	Ghent University, Belgium
Goffredo Filibeck	University of Tuscia, Italy
Estela Covre Foltran	Georg-August Universität Göttingen, Germany
Tsukasa Fukushima	Tokyo University of Agriculture and Technology, Japan
Carmelo Gentile	Abruzzo, Lazio and Molise National Park, Italy
Mihail Hanzu	Romanian national institute for research and development in silviculture "Marin Drăcea", Romania
Peter Hobson	Writtle University College, United Kingdom
Pierre Ibisch	Hochschule für nachhaltige Entwicklung Eberswalde, Germany
David Janík	Silva Tarouca Research Institute, Czech Republic
Birgit Kersten	Thünen Institute of Forest Genetics, Germany
Hans Kirchmeir	E.C.O. Institut für Ökologie, Austria
Keiko Kitamura	Forestry and Forest Products Research Institute, Japan
Hans Knapp	European Beech Forest Network e.V., Germany
Daniel Kozák	Czech University of Life Sciences, Czech Republic
Kamil Král	Silva Tarouca Research Institute, Czech Republic
Chiara Lelli	University of Bologna, Italy
Dario Martin Benito	Forest Research Center INIA-CIFOR, Spain
Tetsuya Matsui	Forest Research and Management Organization, Japan
Rezaie Negar	CNR IBAF, Italy
Shino Nishizaka	Yokohama National University, Japan
Jordan Palli	University of Tuscia, Italy
Momchil Panayotov	University of Forestry, Bulgaria
Neil Pederson	Harvard University, USA
Gianluca Piovesan	University of Tuscia, Italy
Emanuele Presutti Saba	University of Tuscia, Italy
Naimeh Rahimizadeh	Islamic Azad University, Iran
Dušan Roženberger	University of Ljubljana, Slovenia
Giovanni Russo	Consorzio di Bonifica del Gargano, Italy
Khosro Sagheb-Talebi	Research Institute of Forests & Rangelands (RIFR), Iran
Jeroen Schreel	Ghent University, Belgium
Tibor Standovár	Eötvös Loránd University, Hungary
Carmela Strizzi	Gargano National Park, Italy
Cinzia Sulli	Abruzzo, Lazio and Molise National Park, Italy
Miroslav Svoboda	Czech University of Life Sciences, Czech Republic
Nobuhiro Tomaru	Graduate School of Bioagricultural Sciences, Nagoya University, Japan
Giorgio Vacchiano	University of Milano, Italy
Kris Vandekerkhove	Research Institute for Nature and Forest, Belgium

Albert Vilà-Cabrera
Jonas Von Der Crone
Eric Zenner
László Zoltán

Biological and Environmental Sciences University of Stirling, United Kingdom
Ghent University, Belgium
The Pennsylvania State University, USA
Eötvös Loránd University, Hungary