Mixed species forests
risks, resilience and management

Program and book of abstracts

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Mixed Species Forests: Risks, Resilience and Management

25-27 March 2020, Lund, Sweden

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SUMFOREST ERA-Net research project Mixed species forest management: Lowering risk, increasing resilience
IUFRO research groups 1.09.00 Ecology and silviculture of mixed forests and 7.03.00 Entomology
IUFRO working parties 1.01.06 Ecology and silviculture of oak, 1.01.10 Ecology and silviculture of pine and 8.02.01 Key factors and ecological functions for forest biodiversity

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Is multifunctionality greater in mixed than in pure forests? A metaanalysis of a latitudinal network of European forest triplets

Charlotte Poeydebat[1], Quentin Ponette[2], Felipe Bravo[3, 4], Anna Barbati[5], Admir Avdagic[6], Ignacio Barbeito[7, 8], Kamil Bielak[9], Gediminas Brazaitis[10], Jakub Černy[11], Lluís Coll[12, 13, 14], Catherine Collet[15], Miren del Río[16], Aksel Granhus[17], Michael Heym[18], Līga Jansone[19], Āris Jansons[19], Nicola La Porta[20, 21], Magnus Löf[8], Marek Mestlaid[22], Renzo Motta[23], Arne Nothdurft[24], Cristóbal Ordoñez[25, 26], Maciej Pach[27], Marta Pardos[28], Ricardo Ruiz-Peinado[29, 30], Hans Pretzsch[18], Roman Sitko[31], Miroslav Svodoba[32], Mary Kate Ugrekhelidze[33], Tzvetan Zlatanov[34], Hervé Jactel[1]

[1] French National Institute for Agricultural Research (INRA), UMR Biogeco, 33612 Cestas, France
[2] Université catholique de Louvain, 1348, Louvain-la-Neuve, Belgium
[3] Escuela Técnica Superior de Ingenierías Agrarias, Universidad de Valladolid, Palencia, Spain
[4] Sustainable Forest Research Institute UVa-INIA, Palencia, Spain
[5] University of Tuscia, 01100 Viterbo, Italy
[6] University of Sarajevo, Faculty Forestry, Zagrebačka 20, 71000 Sarajevo, Bosnia & Herzegovina
[7] AgroParisTech, INRA, SilvaUniversité de Lorraine, Nancy, France
[8] Swedish University of Agricultural Science, 23053 Alnarp, Sweden
[9] Department of Silviculture, Warsaw University of Life Sciences, 02-878 Warsaw, Poland
[10] Faculty of Forest Science and Ecology, Vytautas Magnus University, Akademija, Kauno r., Lithuania
[11] The Forestry and Game Management Research Institute, Opočno, Czech Republic
[12] Department of Agriculture and Forest Engineering, University of Lleida, 25198Lleida, Spain
[13] Forest Sciences Centre of Catalonia (CTFC), Solsona 25280, Spain
[14] CREAF, Autonomous University of Barcelona, Spain
[15] LERFoB, UMR 1092, INRA-AgroParisTech, 54280 Champenoux, France
[16] Department of Silviculture and Forest Management, INIA-CIFOR, Madrid, and iuFOR, University of Valladolid, Valladolid, Spain
[17] Norwegian Institute of Bioeconomy Research, P.O. Box 115, NO-1431 Ås, Norway
[18] Chair for Forest Growth and Yield Science, Technische Universität München, München, Germany
[19] Latvian State Forest Research Institute "Silava", Rīgas str. 111, Salaspils, Latvia, LV2169
[20] IASMA Research and Innovation Centre, Fondazione Edmund Mach, 38010 Trento, Italy
[21] MOUNTFOR Project Centre, European Forest Institute, 38010 Trento, Italy
[22] Institute of Forestry and Rural Engineering, Estonian University of Life Sciences, 51014 Tartu, Estonia
[23] Department of Agricultural, Forest and Food Sciences (DISAFA), University of Torino, Italy
[24] Institute of Forest GrowthUniversity of Natural Resources and Life Sciences (BOKU), Vienna, Austria
[25] E.T.S. de Ingenierías Agrarias, Universidad de Valladolid, Palencia, Spain
[26] Sustainable Forest Management Research Institute Universidad de Valladolid-INIA, Palencia, Spain
[27] Department of Silviculture, University of Agriculture in Krakow, 31-425 Krakow, Poland
[28] Department of Forest Dynamics and Management, INIA-CIFOR, Madrid 28040, Spain
[29] Forest Research Centre, INIA, Madrid, Spain
[30] iuFOR, Sustainable Forest Management Research Institute University of Valladolid & INIA, Spain
[31] Faculty of ForestryTechnical University in Zvolen, Zvolen, Slovakia
[32] Faculty of Forestry and Wood Sciences, Czech University of Life Sciences, Prague, Czech Republic
[33] School of Natural Sciences and Medecine, Ilia State University, Tbilisi, Georgia
[34] Forest Research Institute, 1756 Sofia, Bulgaria

The biological simplification of managed ecosystems often leads to reduced functionality and greater vulnerability to biotic and abiotic disturbances. By contrast, some mixed forests have proven to be more productive and resistant than monospecific forests. However, different compositions of mixed forests can have contrasting effects on multiple ecosystem services (provisioning, supporting, regulating and cultural), making it difficult to find the best compromise. In the meantime, climate change is likely to affect the ability of forests to provide ecosystem services in a sustainable manner. It is therefore important to better understand how mixed forests can improve multifunctionality under a wide range of climatic conditions. We set up a network of more than fifty forest triplets (monoculture of species A, monoculture of species B and mixture of A+B) from Spain to Scandinavia. To characterize forest functionality, we measured tree productivity, stem quality and resistance to defoliation, as well as tree-related microhabitats as indicators of the capacity to support biodiversity. We produced a quantitative index of multifunctionality and applied a meta-analytical approach to analyse the data synthetically. Overall, multifunctionality tended to be similar in pure and mixed stands. However, the effect of species mixing on multifunctionality varied greatly depending on the composition of the mixed stands. There were trade-offs between functions, in particular between wood production (in quantity and quality) and habitat provision. Finally, we found that climate was also an important driver of the multifunctionality of forests in Europe.