BOOK OF
ABSTRACTS

FORESTS & SOCIETY TOWARDS 2050

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Impact of active coppice management on microclimate and understorey vegetation in a Mediterranean oak forest

T3.28 Opportunities to promote biodiversity recovery and protection through innovative forest management approaches

Ilaria Santi[1]
Elisa Carrari[1], Pieter De Frenne[2], Mercedes Valerio Galán[1, 3], Cristina Gasperini[1, 4], Marco Cabrucci[1], Federico Selvi[1, 4]
[1] Department of Agriculture, Food, Environment and Forestry (DAGRI)
[2] Forest and Nature Lab, Ghent University, BE-9090 Gontrode-Melle, Belgium
[3] University of South Bohemia in České Budějovice Branišovská 1645/31a370 05 České Budějovice
[4] National Forest Biodiversity Centre

Abstract: Understorey diversity contributes to forest functionality and services. Thermophilization processes caused by global warming have been detected especially in regions with warm macroclimates, such as the Mediterranean one. Coppice-with-standards is still one of the most common types of management in this region, aimed at the production of renewable energy (firewood). The modification of forest structure caused by coppicing could limit the capacity of forest canopy to offer microclimatic refuges for the herb communities. Hence, it is crucial to assess the sustainability of this traditional management under the current climatic stressors. We contributed to this topic by analyzing shifts in temperature, understorey diversity (taxonomic, phylogenetic, functional), and productivity in an ancient forest of central Italy with *Quercus cerris* and *Q. petraea*. Here coppice-with-standards and high forest are next to each other under homogeneous site conditions for long time. To this purpose, in 2021 we installed air and soil temperature dataloggers in three high forest and three coppice-with-standards sites. Following a nested sampling design, forest structural variables, light availability, and soil pH were determined before surveying understory vegetation in four 5 x 5 m randomly selected quadrats in each of the six sites. Understory aboveground productivity was determined in two 0.5 x 0.5 m subplots per quadrat. Functional traits associated with the acquisition and conservation of resources (vegetative traits) and reproductive efficiency were collected from the TRY database. Regarding microclimate, the mean offset values between forest and open areas in daily maximum temperatures were significantly larger in the high forest than in coppice stands during all seasons. Our results supported that coppicing promotes understorey species richness, although this is due to the presence of mostly generalist species. Interestingly, coppicing led to clustering in phylogenetic structure and differed significantly from high forest in functional diversity for some traits, highlighting the presence of ongoing acclimation processes. In light of these results, we emphasize the need to take into account different facets of plant diversity, to reach a more holistic understanding of the effects of coppicing on deciduous oak woodlands of the Mediterranean region, on plant diversity, and temperature buffering capacity of the forest.