

Forests for Sustainable Development
The Role of Research

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Abstracts

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Effect of forestry treatments on microclimate, regeneration and biodiversity. An experimental study

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The more frequently used forestry systems providing continuous forest cover (tree selection, group selection) beside the traditional forestry systems (shelterwood, clear-cutting) diversified the useable forestry practices in Central Europe. Investigating the effect of these management types on forest site, tree regeneration and biodiversity is important both for ecological and management purposes.

The effect of five forestry treatments (preparation cutting, gap creation, clear-cutting, retention tree group and control) was studied in a mature temperate sessile oak – hornbeam forest in Hungary on microclimate, soil, regeneration and biodiversity of plants, ground beetles, spiders and enchytraeid worms. The experiment was carried out in 2014, this presentation summarize the preliminary short-term responses.

Air and soil temperature were highest in the clear-cuts, but retention tree groups had very similar thermal pattern. The increase of soil water content in connection with tree-removal was the highest in the gaps, while it is also detectable in the clear-cuts. The abundance of enchytraeid worms significantly decreased in clear-cuts and retention tree groups and their composition also changed. A similar significant compositional alteration was observed for ground beetles and spiders. An implanted epixylic bryophyte species (*Lophocolea heterophylla*) showed the highest survival rate in control plots, conversely in clear-cuts, the extinction was very fast. For plants, the processes were relatively slow, their dominance relations did not change considerably after two years of the treatment. Based on this short observation period we can conclude that fine scaled timber production like gap creation or irregular thinning had only moderate effect on forest site, and could maintain the forest biodiversity adapted to shaded conditions.

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Short-term manipulations of rainfall and nitrogen had minor effects on activity density and species diversity of carabid beetles within a temperate forest

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Global changes in precipitation and regional increases in atmospheric nitrogen (N) deposition are predicted to alter soil and vegetation systems, which in turn may affect the abundance and diversity of insects. The present study (started in July 2009) simulated increasing (+33%) and decreasing (-33%) rainfall as well as ambient and increased N (+ 50 kg N ha⁻¹ yr⁻¹) scenarios in an old-growth, temperate forest. We examined how these environmental manipulations affected the