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Effect of tree species mixture on earthworm communities on a continental scale

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The belowground food web represents a major part of associated biodiversity in forest ecosystems, and plays a significant role in the ecosystem processes of litter decomposition and nutrient turnover. Past research has demonstrated overwhelming evidence of strong tree species identity effects on earthworm communities. It has been proposed that increased plant community diversity would be beneficial to the abundance and diversity of the belowground food web, but effects of tree species diversity on earthworm communities have seldom been reported, and are inconclusive.

In this study at continental scale we evaluated whether tree species diversity positively affects earthworm biomass and diversity. For this purpose the FunDivEUROPE Exploratory Platform was used with 209 plots in 6 regions well spread over Europe with a low within-region site variability, but a within-region tree species diversity gradient from monocultures to 3 or 4 species plots. In every plot earthworms were sampled using a combined method of mustard extraction and hand sorting of litter and a soil monolith. Data are being analysed with multivariate tools and mixed effects models.

First results suggest only limited influence of tree diversity on the biomass of earthworm communities at continental scale. Tree diversity effects are weak, context specific and interacting with tree identity. In nutrient poor soils we found a negative tree diversity effect on earthworm biomass when deciduous monocultures are enriched with coniferous species, while in rich soils we found a positive tree diversity effect which could be related with the food security this provides to the earthworm community.

[GSBI2014, 'First Global Soil Biodiversity Conference - Assessing soil biodiversity and its role for ecosystem services', Dijon \(F\) - 2-5 décembre 2014 \(http://gsbiconference.elsevier.com\)](http://gsbiconference.elsevier.com)