

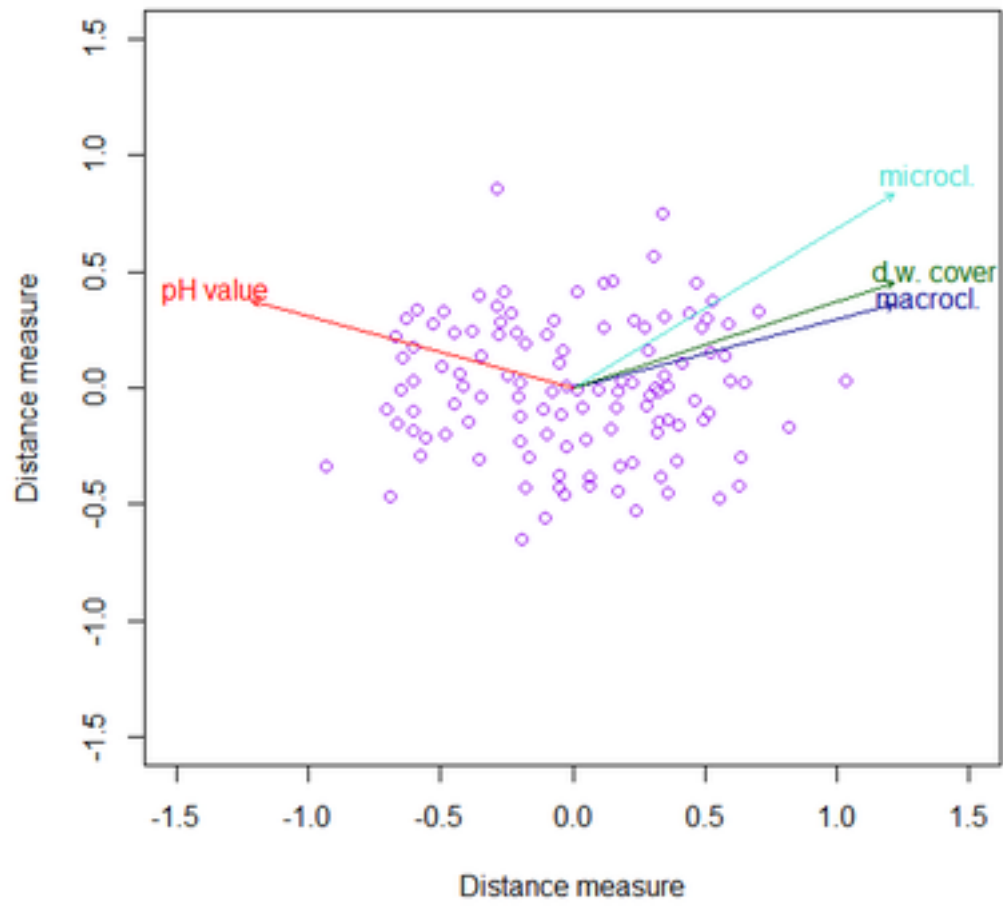
Bryophyte communities along gradients of forest structure and climate

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Abstract

Bryophytes fulfil a number of important functions in many ecosystems. They capture water and nutrients from precipitation and fog whilst being important primary producers. However in various environments their diversity might be under threat by climate change. Here the effects of variables from macroclimate, microclimate, dead wood and soil characteristics on the species richness and community composition of dead wood and soil bryophytes in a mountain temperate forest were analysed. Principal component analysis was used, to build the predictors for macroclimate and microclimate, whilst single variables were taken as proxies for dead wood and soil characteristics. The effects of these predictors on the species richness of the two bryophyte guilds were analysed using a negative binomial regression. To reveal their relationships with the community composition of dead wood and soil bryophytes, non-metric multidimensional scaling was applied with the Bray-Curtis dissimilarity as distance measure and a fit of the predictors onto the ordination results. Macroclimate and microclimate were both important predictors for the species richness and community composition of dead wood bryophytes and in parts also the dead wood and soil characteristics contributed to their diversity. For soil bryophytes the results were less clear and microclimate, dead wood and soil characteristics were only important for either their species richness or community composition. The results support the existing conclusion by a previous study, that forest management should increase the amount of dead wood in forest stands with a closed canopy to protect the diversity of dead wood bryophytes and counteract negative impacts of climate change. At the same time, also stands with an open canopy should be provided, to preserve the diversity of soil bryophytes as well.

NMDS for dead wood bryophytes (2016)



NMDS for soil bryophytes (2016)

