

## Tree phylogenetic diversity structures multitrophic communities

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Ecosystems with more plant species usually harbour more species of other organisms such as insects. However, counting species is just one of many ways to describe the diversity of ecosystems. Many other possibilities exist, among which the present study focuses on 'phylogenetic diversity' (PD), a statistical measure that takes account of evolutionary relatedness. In other words, if two ecosystems have the same number of species, the one where the species are more distantly related has the higher PD.

Using a large dataset from subtropical Chinese forests, we tested whether the number of tree species present in a forest stand or the PD of those trees is the better predictor of the diversity and species composition of the associated insects, herbaceous plants and microscopic fungi. Following our expectations, we found that tree PD but not the number of tree species relates to the composition of the associated organisms. Also, there were more species of predatory but fewer species of herbivorous insects in forests with higher PD.

While our study was necessarily limited in scale and scope, the results point to the important role of plant PD in maintaining biologically diverse species assemblages. As during global change often the evolutionary most distinct (plant) species disappear first, the consequent reduction in PD will likely have far-reaching consequences for entire ecological communities.

