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Tulipa kosovarica

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Poster presentations



Tulipa kosovarica

Variation of functional diversity of the herbaceous layer of beech woods along the Apennine ridge (Italy)

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Functional diversity (FD) of a plant community is expressed by different indices, such as functional richness (*FRic*), functional evenness (*FEve*), functional divergence (*FDiv*), functional dispersion (*FDis*) and Rao's quadratic entropy (*Rao's Q*). Each index provides specific information on the distribution-coexistence of species and defines changes in assembly processes along ecological gradients. We focused on the herbaceous layer of *Fagus sylvatica*-dominated woods along the calcareous Apennine ridge (central and southern Italy), since very little is known about their functional structure at biogeographical scale throughout the Italian peninsula. These woods are managed as high-forest or old coppiced woods, unmanaged since 30-40 years and evolving to high-forest type communities.

Our aim was to understand how biogeographical and elevation gradients interact in determining variations of the FD indices. In 164 plots (20 x 20 m) we recorded: plant species cover-abundance values, altitude, aspect and slope angle. For each species, we evaluated some categorical traits (occurrence and type of storage organ and vegetative propagation, leaf phenology, type of pollen/spore transfer); then we calculated FD indices for each trait in each plot. Principal Components Analysis (PCA) was run on the plots-by-species matrix and FD values were regressed on PCA object scores (axes 1 and 2).

Results highlighted that both biogeographical and elevation gradients affected the herbaceous layer species composition, mirroring some significant FD trends. *Rao's Q* and *FDis* showed a positive trend along the biogeographical gradient for leaf phenology and pollination and a negative one for vegetative propagation (as well as *FRic*). About storage organs, *FEve* was negatively related to the biogeographical gradient, instead *FDiv* showed a positive trend. Significant relations were found also between elevation and *FEve*, *Rao's Q*, *FDis* (decreasing with increase in altitude) concerning pollination. *Rao's Q* and *FDis* of storage organs were negatively related, while *FDiv* was positively related, to elevation gradient.

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