



Functional plasticity of ground beetles can presume the changes in their community composition by forestry treatments

(Oral)

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Although the functional trait approach can facilitate the understanding of mechanisms that underline both community responses to habitat alternation and ecosystem functioning, only few studies are available exploring the effects of forest management comparing the response of taxonomic approach focusing on the composition, diversity and the response of the functional traits (morphological, phenological and behavioral). We studied the short-term effects (2014-2016) of forestry treatments including preparation cutting, clear-cutting, retention tree group and gap-cutting in a temperate managed forest on the selected community structure descriptors and functional traits responses of ground beetles.

Based on the community descriptors, only the species composition was slightly influenced by treatments; control, retention tree group and preparation cutting formed relatively homogeneous groups separated from each other, while other treatments scattered randomly in an ordination biplot. The species richness decreased in clear-cutting and gap-cutting between years, while the retention tree group was the most influential treatment type with the significantly highest number of species between treatments. Although there was an overall decline in the abundance of ground beetles between years, the treatment effect was not revealed. Based on the functional trait analysis, we proved that the increase of the species richness in the retention tree can be explained by the dominance of small-sized winged ground beetles. Analyses of habitat affinity types well characterized the variation in the species pool of the carabid assemblages in the different treatments, suggesting the dominance of forest species in control plots, while the high association of open-habitat species with the retention tree group. Individual species response analysis revealed that the *Abax ater* was associated with the control plots, while the *Carabus scheidleri* was associated with the clear-cutting and gap-cutting. The rapid mark-recapture survey of *C. scheidleri* proved that the individuals still remained in the plot where they were marked first, but they could take some high distances occasionally which were sex and time independent. Our results showed that ignoring functional features of carabids assemblages can mask or partly explain the changes in the assemblages by various forestry treatments; however the inclusion of functional -including behavioral- aspects might bring direct evidence for conservation actions in managed forests.

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