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# Spontaneous recovery of functional diversity and rarity of ground-living spiders shed light on the conservation importance of recent woodlands

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## Abstract

Secondary forests, whose development is favoured by massive farmland abandonment, are increasingly seen as promising habitats that limit losses of biodiversity and ecosystem processes. The importance of temporal forest continuity (i.e. the duration of an uninterrupted forest state) for conservation of the forest fauna has been demonstrated for several taxa, but its influence on functional diversity and conservation importance of communities remains unclear. We studied how temporal continuity can shape taxonomic and functional composition and structure of forest-ground spider communities at a regional scale. According to broad-scale ecological site characteristics – among which forest continuity ranks uppermost –, species composition substantially diverges between ancient and recent forests. Yet, we did not evidence any significant differences for functional composition as well as for community structure and conservation importance of the two forest categories, except for functional originality (which quantifies the average functional uniqueness of species within an assemblage). Thus, in a conservation perspective, our study provides evidence that (i) as each forest harbours unique species combinations, each of them is irreplaceable, (ii) this is mainly true for ancient forests, which are functionally more original, but (iii) secondary woodlands have likewise a high potential to spontaneously recover typical forest fauna communities with very similar structural and functional profiles to those of ancient forests.

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