Pine plantation verges are important for small and poor disperser Orthotptera species in a fragmented landscape

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Landscape modification caused by the increasing human activities lead to biodiversity degradation because of landscape homogenization and habitat fragmentation. Linear landscape elements (LLEs) are artificial landscape structures established for a special function such as transportation by roads and drainage by ditches, but they have a part covered by strip-like vegetation, which is not directly used for original function. LLEs could serve as potential microhabitats where a significant portion of the original flora and fauna can survive. Furthermore, these types of secondary habitats have a potential to serve as a corridor, thereby increase connectivity amongst the habitat fragments in a highly modified landscape.

In the Kiskunság region in Hungary, one of the main cause of landscape homogenization and habitat fragmentation is the intensive tree plantations. In addition to native deciduous forest plantations, exotic species like black locust (Robinia pseudoacacia) and scots pine (Pinus sylvestris) were also introduced. However, original open vegetation could remain at the edges of plantations that may provide various sources and/or function as corridors for arthropods.

Our study focused on Orthoptera assemblages of pine plantation verges as LLEs, and forest steppe patches and pastures as habitat remnants embedded into forest plantation matrix. There were 30 sampling sites in total, 10 sites for every habitat type. Our analyses showed no significant differences in the species richness and abundance of orthopterans amongst the three habitat types; only the species composition of plantation verges differed from the other two habitat types. The community structure shifted toward the smaller and less mobile species in the remnant vegetation of plantation verges. Based on our results, we can highlight the importance of plantation verges for orthopterans, particularly for small and poor dispereser species. Presumably, more agile species do not stand in need of plantation verges to disperse or survive.