

## Publication

### Functional diversity and habitat preferences of native grassland plants and ground-dwelling invertebrates in private gardens along an urbanization gradient

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Urbanization is occurring around the globe, changing environmental conditions and influencing biodiversity and ecosystem functions. Urban domestic gardens represent a small-grained mosaic of diverse habitats for numerous species. The challenging conditions in urban gardens support species possessing certain traits, and exclude other species. Functional diversity is therefore often altered in urban gardens. By using a multi-taxa approach focused on native grassland plants and ground-dwelling invertebrates with overall low mobility (snails, slugs, spiders, millipedes, woodlice, ants, rove beetles), we examined the effects of urbanization (distance to city center, percentage of sealed area) and garden characteristics on functional dispersion, functional evenness, habitat preferences and body size. We conducted a field survey in 35 domestic gardens along a rural-urban gradient in Basel, Switzerland. The various groups showed different responses to urbanization. Functional dispersion of native grassland plants decreased with increasing distance to the city center, while functional dispersion of ants decreased with increasing percentage of sealed area. Functional evenness of ants increased with increasing distance to the city center and that of rove beetles decreased with increasing percentage of sealed area. Contrary to our expectation, in rove beetles, the proportion of generalists decreased with increasing percentage of sealed area in the surroundings, and the proportion of species preferring dry conditions increased with increasing distance to the city center. Body size of species increased with distance to city center for slugs, spiders, millipedes, ants, and rove beetles. Local garden characteristics had few effects on functional diversity and habitat preferences of the groups examined. Our study supports the importance of using multi-taxa approaches when examining effects of environmental change on biodiversity. Considering only a single group may result in misleading findings for overall biodiversity. The ground-dwelling invertebrates investigated may be affected in different ways from the more often-studied flying pollinators or birds.

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