

The performance of microannelid communities at SoilMan sites

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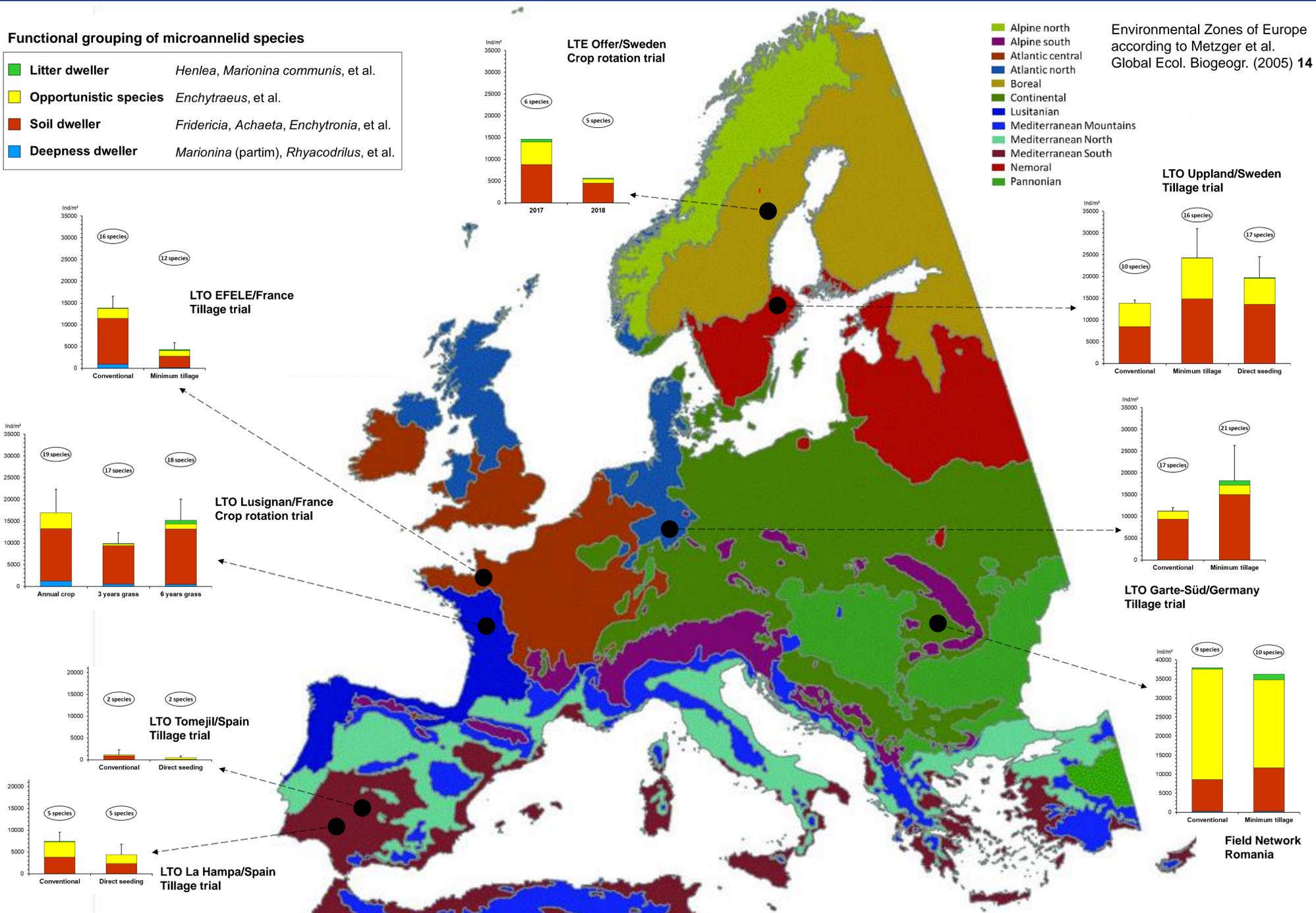
Preface

Microannelids are small relatives of earthworms and members of the soil mesobiome. Like earthworms, they contribute to the decomposition of organic matter and the formation of soil aggregates. Taxonomically, most soil dwelling microannelids belong to the Enchytraeidae, very few to other families. We give an overview of total abundances, functional groups and species numbers of microannelid communities present at the SoilMan observation sites in contrasting juxtaposition of different agricultural management practices.

Environmental Background

Functional grouping of microannelid species

- **Litter dweller** *Henlea, Marionina communis, et al.*
- **Opportunistic species** *Enchytraeus, et al.*
- **Soil dweller** *Fridericia, Achaeta, Enchytronia, et al.*
- **Deepness dweller** *Marionina (partim), Rhyacodrilus, et al.*



Agricultural Impact

A total of 91 microannelid species were identified, of which 39 % are new to science still waiting to be described. The communities show strong similarities at all sites with respect to species and trait composition, dominated by the genera *Fridericia* and *Enchytraeus*. This structure is typical of agricultural land underlying man-made turbation referred to as “ploughing”. Other reasons for the resemblance of the communities result from stabilizing the pH values by fertilisation and the restriction of the study to loamy soils.

The tillage trials show heterogeneous results. In 47 % of the studied cases no tillage and reduced tillage caused an increase in species diversity compared to conventional ploughing, while in 33 % a decrease and in 20 % no change occurred. The rotation trials, furthermore, show the sound resilience of the soil biota system as to the different treatments.

In summary, none of the studied management practices is a threat to soil biodiversity and its depending ecosystem services, but rather is a prerequisite of its performance. However, there is evidence that climate change and loss of landscape diversity have serious consequences for the sustainability of the soil biota.