



Ecosystem services of soil biota: In what context is a focus on soil biota meaningful?

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Over the last few years, the topic of the ecosystem services of soils has attracted considerable attention, in particular among researchers working on soil biota. A direct link is established explicitly in numerous articles between soil biota and specific ecosystem services, or between soil biodiversity and ecosystem services. A careful review of the literature indicates however that these links are, more often than not, strictly axiomatic, rather than based on actual observations. In fact, there are still at the moment virtually no measurements of ecosystem services of soils at any scale, measurements that would be required to establish such links. Furthermore, at a conceptual level, it is not clear to what extent the effect of soil biota in the delivery of ecosystem services can be separated from the contribution of other components of soil systems. Soil microorganisms, in particular, proliferate and are metabolically active in a pore space whose characteristics and dynamics could in principle have a profound effect on their activity. So also could the composition and spatial distribution of soil organic matter, or the spatial pattern of plant root propagation. By emphasizing the role of soil biota, at the exclusion of other aspects of soil systems, there is a risk that important features of the provision of ecosystem services by soils will be missed. In this talk (based in part on a workshop organized recently in France, and of a follow-up review article), an analysis of this general problem will be presented, as well as suggestions of how to avoid it by promoting truly interdisciplinary research involving not only soil ecologists but also physicists, hydrologists, and chemists.