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Soil macrofauna webmasters of ecosystem

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The role of plant roots and microflora in shaping many ecosystem processes is generally appreciated in the contrary rho role of soil mcrofauna in this context is assumed to be negligible and rather anecdotic. But more than half of the litter fall is consumed by soil fauna and soil fauna can also consume and or translocation substantial amount of soil. Here we demonstrate on example of post mining chronosequences how site colonization by soil fauna affect composition of whole soil biota community, plant succession and soil formation. Filed and laboratory experiments show that decomposition of fauna feces may be sped up compare to litter at the very beginning but in long term fauna feces decompose slower than litter. This is also supported by micro morphological observation which shows that fauna feces form substantial part of soil. Fauna feces also induce lover or even negative priming effect when introduced in soil in comparison with litter that triggers positive priming effect. Laboratory experiment show that fauna effect is context sensitive and is more pronounced in systems already affected by soil fauna. Soil mixing by soil fauna consequently affect environmental conditions in soils such as water holding capacity or nutrient availability, it also affect composition of decomposer food web including microbial community (fungal bacterial ratio) which feed back in alternation of plant community composition during succession
This fauna activity is not constant everywhere the higher effect of fauna activity on litter layer was observed in temperate soils of deciduous forests and with litter having CN between 20-30.
In conclusion soil fauna use directly only small proportion of energy in the litter but can substantially affect soil carbon turnover, soil formation, decomposer food web and plant community.