



Role of soil macrofauna in soil formation in post mining sites along climatic and litter quality gradients

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Soil macrofauna can play important role in soil formation. Here we used thin soil sections to study this process in two environmental gradients, climatic gradient, and litter quality gradient. Climatic gradient consist from four chronosequences of post mining sites in the USA, covering hardwood forest (TN, IN), tallgrass prairie (IL), or shortgrass prairie (WY). Earthworms and other saprophages were absent in such shortgrass sites but were present in the wetter, eastern sites. Absence of saprophagous groups, and especially earthworms, resulted in the absence of bioturbation in shortgrass prairie sites while worm casts and other biogenic structures formed an important part of the soil profile in other chronosequences, in short grass prairie in turn physical processes, such as erosion may play important role in soil mixing.

Litter quality gradient consists from set of 28 sites planted with six kind of tree stand (pine, larch, spruce, oak, lime and alder) and unreclaimed sites (covered by willow, birch, aspen dominated forest) on one large heap in Czech Republic. Earthworm density on these sites negatively correlate with CN ratio, the same relationships was shown for proportion of earthworm cast in soil volume. In sites with high earthworm density Oe layer was absent and A layer formed by worm casts was well developed, in the contrary when earthworm were absent Oe layer was thick and A layer absent. Development of A layer correlate with soil carbon storage.