



Conference Abstract

Meta-analysis of metal accumulation in ground beetles

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Abstract

Survival of living organisms in polluted habitats is a key factor regarding their long-term existence population persistence. Based on this, analysing and assessing the accumulation of pollutants in species is of major importance. To avoid harmful physiological effects of pollutants' accumulation in organisms, decontamination and excretion could be effective mechanisms. Ground beetles (Coleoptera: Carabidae) are widely used and reliable indicators of environmental contamination. Published results, however, are inconsistent, as some studies showed effective decontamination and excretion of pollutants, while others demonstrated severe toxic symptoms due to extreme accumulation. Using ground beetle species, as model organisms, we tested our pollution intensity-dependent disposal hypothesis in the cases of five potential pollutants (Cd, Cu, Mn, Pb and Zn) by four soil pollution intensity levels (low, moderate, high, and extreme) by categorical meta-analysis on published data. According to our hypothesis, we presumed that decontamination and excretion of pollutants in ground beetles will be effective in lowly or moderately polluted habitats, while in highly or extremely polluted habitats disposal will be restricted, contributing to intense accumulation of pollutants in ground beetles. In accordance with our hypothesis, we found that in extremely polluted habitats the accumulation of Cd, Pb, and Zn in ground beetles was significantly higher, than in lowly polluted ones. These results may suggest the potential of ground beetles to remediate extremely polluted environments. However, further species and factors need to be

addressed in order to assess metal accumulation potential of ground beetles more thoroughly.

Keywords

pollution, decontamination, carabids, pollution intensity-dependent disposal hypothesis, metals, remediation

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