

TU084 The impact of single metals and mixtures in nature: a microcosm experiment M. Van Ginneken, University of Antwerp, Dept. Biology / Biology (SPHERE); R. Blust, L. Bervoets, University of Antwerp / Department of Biology (SPHERE Research Group).

Evaluating ecological risks of metal-contaminated systems remains an important challenge. While laboratory experiments with metal mixture exposure are receiving more attention in the literature, little research has examined the interaction of natural stressors with metal mixtures. In the lab, we already performed experiments on *Asellus aquaticus*, exposing this freshwater isopod to a combination of metal mixtures and temperature stress. This way we could study effects on the individual level and relate metal accumulation to relevant sublethal endpoints (e.g., growth rate, feeding rate). The present study, a microcosm experiment in a greenhouse, was designed to gain more insight into the effects of these metals on populations and communities. Small ecosystems with several species of macroinvertebrates were exposed to Cd, Cu, Pb and a mixture of these three metals under semi-natural conditions. In each bucket, we placed *Asellus aquaticus*, *Daphnia magna*, *Chironomus riparius* (midge larvae), *Physa* sp. (Mollusca), *Elodea nuttallii* (macrophytes) and *Raphidocelis subcapitata* (algae). The theoretical metal concentrations were 1.5 µg/L Cd, 70 µg/L Cu, and 72 µg/L Pb. Half of the medium was renewed weekly. The effects of the metal mixtures and natural stressors were examined after 4 and 8 weeks, on the individual level (total metal accumulation, survival, shoot and root length), the population level (species densities, biomass) and the community structure (diversity, evenness). Preliminary results show a high variability between replicates. We observed no significant differences in species densities between the metal treatments after 4 or 8 weeks. After 4 weeks, we found that Cu and the tertiary mixture negatively affected shoot and root length of *E. nuttallii* compared to the control treatment. However, after 8 weeks, we did not find these significant differences. As we could not find any significant effects of the metals at the end of the experiment, further research focused on sublethal factors or with a longer exposure duration is needed.