The Effect of Environmental Factors on Tardigrade Communities

Kemmerich, Stefan (School: Erzbischofliches St.-Angela Gymnasium)

Water bears (phylum Tardigrada) are small metazoan animals which live in different environments, for example mosses or soils. Tardigrades have evolved many special adaptations to these special habitats, most notably cryptobiosis. However, despite their abundance in many environments, their ecology remains poorly understood. In this project I wanted to study the influence of humidity, illumination, moss species and substrate on the diversity and population density of terrestrial tardigrade communities in a field study. By sampling different mosses, identifying the inhabiting tardigrade species and studying their tardigrade species compositions and abundances, I wanted to find out whether environmental variables affect tardigrade populations. I found that tardigrade densities stay constant under the influence of light and humidity, while tardigrade diversity correlates significantly with these factors. The species composition of tardigrade populations of different bryophytes shows that mosses with a similar ecological niche are inhabited by similarly composed tardigrade communities. Therefore, I conclude that environmental factors control tardigrade species composition and thereby shape tardigrade communities.

Awards Won: