



Conference Abstract

# GroundCare - Invertebrates as indicators for untreated water and intrusion of surface water in water supply systems

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## Abstract

Functioning, healthy groundwater ecosystems are essential for high quality drinking water, and they minimize costs of processing groundwater for drinking purposes.

GroundCare is a multidisciplinary project, which is led by the Helmholtz Institute in Munich, Germany and funded by the BMBF (German federal Ministry of education and Research). The aim is to parametrize and to quantify groundwater ecosystem services as a basis for sustainable water management and water pollution control by biomonitoring. In other words: the development of biological assessment techniques.

Multiple parameters are evaluated (physico-chemical parameters, microbial and fauna community composition, ecotoxicological effects). Invertebrate fauna is investigated at five sites all across Germany. During the project, molecular identification through DNA Barcoding and Metabarcoding of groundwater invertebrates is being implemented and compared to traditional morphological bio-assessment. The subterranean fauna can be used as bio-indicators to validate groundwater conditions, in particular surface water intrusion. For the water suppliers, surface water intrusion means an increased risk of

contamination. The discrimination of epigeal from stygobiotic fauna is the simple and basic idea of this approach.

A very specific kind of water treatment is used by the water works in Würzburg (Bavaria), one of the five study sites, which is located directly along the Main river bank. Uncommonly, they use part time river bank filtration if land-side groundwater levels are low. Another possibility is the extraction of Main River water by near-bank wells, followed by intensive water treatment and then the water is infiltrated again.

The question asked was, whether the fauna indicates this specific situation or not. In the area, three types of subsurface waters can be distinguished, which are land-side groundwater, riverbank water and artificially infiltrated Main river water. Representative bores were sampled four times over one year for invertebrates. First results clearly show that the faunal patterns reflect these different hydrological situations.

## **Keywords**

Groundwater, Risk assessment, Fauna, Bioindication, Waterworks

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