



Conference Abstract

What happens to groundwater ecosystems when you take out the groundwater?

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Abstract

The removal of groundwater results in the lowering of water tables, which, for groundwater organisms, translates to reduced habitat availability and changed environmental conditions in the habitat that remains. While changes in groundwater levels may be well modelled and predicted, the impacts on groundwater ecosystems remain poorly known.

There are three key processes associated with groundwater drawdown in shallow alluvial aquifers that may threaten groundwater ecosystems. These processes are 1. the physical decline of water levels, from which fauna can be stranded in isolated or unsaturated sediments; 2. the loss of or change to habitat, particularly as water levels move through different geological strata and 3. changes in hydrological connectivity, that may influence water quality as a result of increasing distance or disconnection from the surface and other water sources.

Results from laboratory studies show the variable capacity for stygobiotic invertebrates to move with declining water tables, dependent on both drawdown rate and sediment attributes. Once isolated in unsaturated habitats, our tests show that survival of fauna is limited beyond 48 h. Invertebrates are constrained by sediment size and unable to use those with relatively small pore spaces and may not be able to use all available saturated habitats.

This talk will present a framework that identifies the key threats of groundwater drawdown to groundwater ecosystems and will highlight the current state of knowledge of each of these threatening processes. We present the results of empirical studies on the response of stygobiotic invertebrates to specific elements of the framework.

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