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Conference Abstract

Biotic distribution within groundwater- is it really unpredictable?

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Abstract

Distribution of biota within groundwater is often patchy, and attributed to the heterogeneity of the aquifer environment. Geology and hydrological connectivity are often the factors that most influence water chemistry and habitat availability thus biota, however phreatophytic trees, other sources of carbon and nutrients may also influence biotic distribution. Critically, limited knowledge on the relative importance of such factors on the distribution of groundwater biota makes it difficult to distinguish natural variation from human impacts on groundwater ecosystems, thus inpact our ability to undertake biomonitoring of ecosystem health.

This study uses complementary field surveys and laboratory studies to unravel the relative influence of water quality, climate, and sediment size on biotic communities. Field surveys combined traditional pumping and net collections with eDNA community profiling (metabarcoding) of 16S rDNA to characterise groundwater microbes in shallow alluvial aquifers within the Murray-Darling Basin, Australia. Laboratory studies examined the influence of sediment size on stygobiotic amphipods, syncarids and copepods.

For stygofauna, sediment size, and thus size of interstitial voids, is a key limiting factor. For microbes, water chemistry influences microbial activity and functional processes, which may in turn influence biogeochemical cycling and ecosystem services provided by groundwater ecosystems.

Keywords

Stygofauna eDNA groundwater biomonitoring

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