ARPHA Conference Abstracts 5: e87190
doi: 10.3897/aca.5.e87190

Conference Abstract

Groundwater invertebrates and droughts: resistance in stygobiont isopods and planarians

Stefano Lapadula‡, Benedetta Barzaghi‡, Roberto Della Toffola§, Raoul Manenti‡

‡ Dipartimento di Scienze e Politiche ambientali, Università degli Studi di Milano, Via Celoria, 10 20133, Milano, Italy
§ Società Svizzera di Speleologia, Sezione Ticino, Villa Costanza, Via Pedemonte, 6962, Viganello, Switzerland

Corresponding author: Stefano Lapadula (stefano.lapadula.1999@gmail.com)

Received: 31 May 2022 | Published: 14 Jul 2022

Citation: Lapadula S, Barzaghi B, Della Toffola R, Manenti R (2022) Groundwater invertebrates and droughts: resistance in stygobiont isopods and planarians. ARPHA Conference Abstracts 5: e87190. https://doi.org/10.3897/aca.5.e87190

Abstract

In surface freshwater habitats water level can be strongly variable and benthic invertebrates are usually adapted to cope with hydrological variability. Groundwater habitats are usually more stable, even if in sites at the interface with the vadose zone, in epikarst streams and dripping pools hydroperiod may vary. Adaptations to survive droughts are thus likely to have been developed also by groundwater-dwelling animals. However very few studies have been performed to assess stygobiont resistance to dryness. They involve mainly the amphipods of the genus *Niphargus* and *Stygobromus*; one case is reported for a triclad of the genus *Atrioplanaria*.

Here we describe cases of resistance to drying in stygobiont planarians of the genus *Dendrocoelum* and the in the isopod *Monolistra pavani*.

Since 2016 we performed multiple surveys in 53 caves in Italy and Switzerland, sampling different stable and unstable groundwater environments. Stygobionts were searched visually and by distressing the substrate. When we detected stygobionts in dry sectors of a cave, we observed their features and behaviours, we pictured them, and we tried to rinse them. We rinsed *M. pavani* individuals in small plastic tanks and recorded the time of reactivation.

During the surveys we recorded a *Dendrocoelum* planarian encapsulated in a thick mucus layer on the substrate of a dry subterranean stream. When placed in water the planarian started gliding slowly and reached a length of 18 mm. During the drought of January-April 2022, we detected individuals of *M. pavani* in dry areas of two different caves. 72% of the individuals were able to reactivate. Time to reactivate ranged between 0 s to 30 s. We recorded living *M. pavani* individuals that were able to reactivate themselves even after 39 days of drought.

Our observations provide new insights into the natural history of groundwater-dwelling invertebrate taxa which global climatic changes increase the risk of drought occurrence in subterranean environments.

Keywords

Groundwater; cave; dry; desiccation, freshwater; benthos.

Presenting author

Stefano Lapadula

Presented at

25th International Conference on Subterranean Biology (Cluj-Napoca, 18-22 July 2022)