

Biotic and abiotic interactions in temporary summer pools of southern Portugal

(Poster presentation)

Critical dry-season conditions and ecological response

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Abstract

In the south of Portugal, the summer season is characterized by reduced precipitation and high air temperatures, which causes the disruption of surface flow and subsequent formation of disconnect pools that may dry out entirely. During this dry period, there is a natural decrease of water quality standards due to the lack of water, leaving temporary rivers very vulnerable. Nevertheless, the remaining pools and surroundings become important in the survival of biological communities.

Aquatic macroinvertebrates were sampled in several pools during the summer period (in the beginning and before the ending), in temporary tributaries of the Degebe River (Guadiana catchment), to quantify the response of macroinvertebrates communities to seasonal desiccation and habitat fragmentation. We collected thousands individuals, representing 27 families of macroinvertebrates. Changes in the composition and abundance were affected by temporal variability in pool volume and location in the watershed. Smaller, upstream pools showed less diversity and abundance than downstream pools. Higher biological interactions and higher level of relationships with terrestrial ecosystems were perceptible for smaller summer pools. Pools were typically dominated by tolerant taxa such as midge larvae (Chironomidae), lesser boatman (Corixidae) and Oligochaeta, resulting in low diversity of communities over time.

The results indicated the importance and impact of changes in habitat quality, size and connectivity in aquatic macroinvertebrates communities. They also revealed the importance of preservation and conservation of temporary ecosystems, particularly during the dry season, when the anthropogenic interference in ecosystems is more evident and can jeopardize the biodiversity maintenance of these systems.

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