



Paying attention to the isolated pools phase in temporary rivers. A challenge to the ecological quality assessment of temporary rivers.

Núria Bonada¹, **Francesc Gallart**², Narcís Prat¹, Gisela Bertran², Miguel Cañedo-Argüelles¹, Núria Cid³, Pau Fortuño¹, Joan Gomà¹, Cayetano Gutiérrez-Cánovas¹, Jérôme Latron², Pilar Llorens², Cesc Múrria¹, Maria Soria¹, Iraima Verkaik¹, and Dolors Viñoles¹

¹University of Barcelona, Department of Evolutionary Biology, Ecology and Environmental Sciences, Barcelona, Catalonia, Spain

²IDAEA - CSIC, Geosciences, Barcelona, Catalonia, Spain

³INRAE, Lyon-Villeurbanne, France

Temporary rivers are characterized by shifting habitats between flowing, non-flowing and dry phases. Despite the fact that they are currently receiving significant attention by researchers and managers, the non-flowing (standing pools) phase has been largely disregarded. However, isolated pools in temporary rivers are transitional habitats of major ecological relevance as they can act as refuges for maintaining local and regional freshwater biodiversity. Factors such as pool duration and size, local physicochemical conditions, time since disconnection, distance to other freshwater habitats or presence of predators are crucial for a comprehensive understanding of the ecology of these habitats, and compromise to work towards adequate ecological quality assessments and conservation practices in temporary rivers.

Research is ongoing focused on the development of a method for assessing the ecological status of disconnected pools, based on the relationship between the time elapsed after the pool disconnection and the characteristics of the biological communities taking into account the above-mentioned factors. The prevalence of the pool phase is assessed using the TREHS software tool through interviews with citizens as well as aerial and surface photographs examination. The time since disconnection is assessed with the help of low-cost sensors and water stable isotopes, whereas the local environmental characteristics are assessed using regular metrics. Finally, biological communities of the pools are characterized using both taxonomic and functional metrics, with the support of metabarcoding techniques, applied to diatoms, macrophytes, macroinvertebrates and fishes. This method aims to be used by water managers to improve the monitoring of the ecological status of temporary rivers, which are common around the world, harbor unique biodiversity and provide key ecosystem services.