Project partners:

Universitat de Barcelona

F.E.M. Freshwater Ecology and Management Research Group

CSIC Consejo Superior de Investigaciones Científicas

idaea

Agència Catalana de l'Aigua

Generalitat de Catalunya
Departament de Territori i Sostenibilitat

Gobierno de España · Ministerio de Agricultura, Alimentación y Medio Ambiente · Confederación Hidrográfica del Júcar

F.E.M. Research group, Departament d'Ecologia, Facultat de Biologia, UB
Diagonal, 643 08028 Barcelona- +34 93 403 11 88 - lifetrivers@ub.edu

With support from the LIFE+ programme of the European Union

Duració: 06/2014 – 06/2018

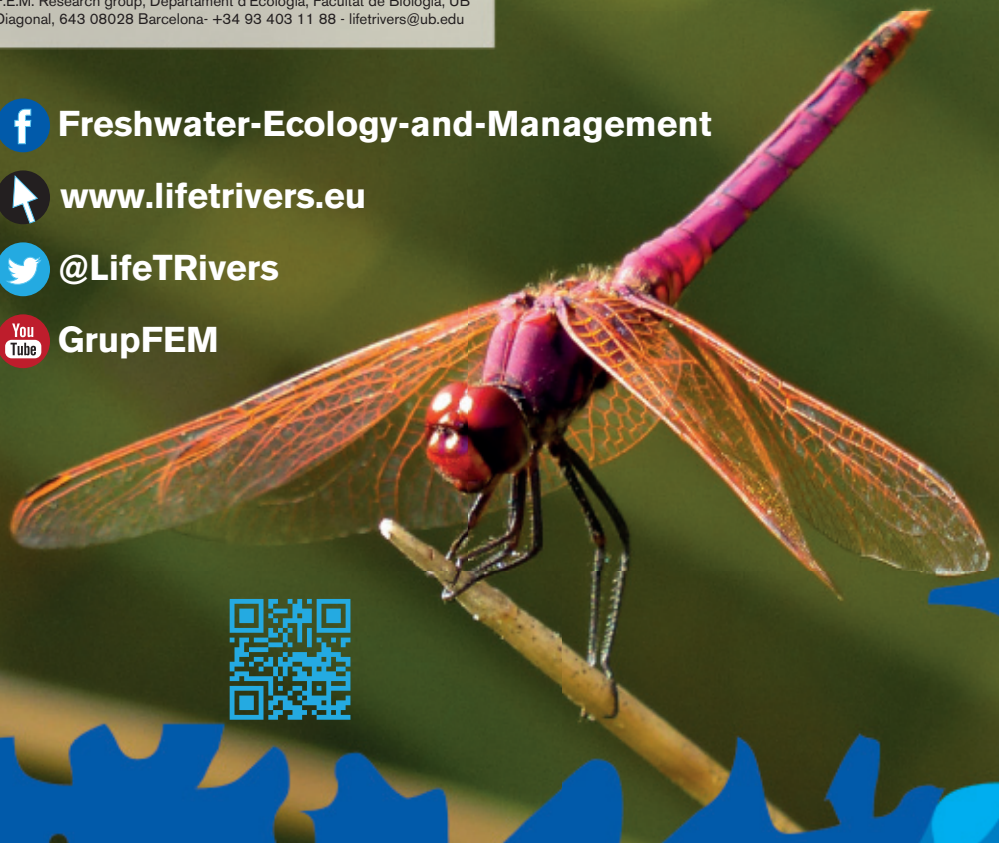
Implementing the Water Framework Directive to temporary rivers: tools for the assessment of their ecological status
LIFE13 ENV/ES/000341

Freshwater-Ecology-and-Management

www.lifetrivers.eu

@LifeTRivers

GrupFEM



Photography by Núria Bonada

www.lifetrivers.eu

gdd@gddisseny.com

Implementing the Water Framework Directive to temporary rivers:

tools for the assessment of their ecological status

LIFE13 ENV/ES/000341

Figure 1. The different hydrological conditions of an intermittent stream from flood state (hyperrheic state) to the complete absence of surface and subsurface water (edaphic state).

What are temporary rivers?

Temporary rivers are waterways that stop flowing on a regular basis or even completely dry up. Many streams in the Mediterranean Basin naturally dry up in the summer and are refilled after autumn storms (Figure 1), but they may remain dry for several years due to the variability in flow intensity from year to year.

Unique and highly threatened freshwater ecosystems

Temporary rivers are ecologically unique, they support key ecosystem functions and processes and they are extremely important in terms of biodiversity (Figures 2 and 4). At the same time they suffer from a wide range of human-induced impacts, including alterations in the natural flow regime, modifications to riverbanks and channels, excess nutrients and invasive species (Figure 3). Climate change predictions indicate that the Mediterranean region will face severe streamflow deficits, increasing the vulnerability of temporary rivers and causing permanent ones to become temporary.

The challenge posed by assessing the ecological status of temporary rivers

Although temporary rivers are very common in many regions of the world, there has been a general failure to understand, protect and manage this type of freshwater ecosystem. In Europe, the implementation of the Water Framework Directive has been unable to provide a solution to determine the ecological status of temporary waters. One of the main reasons for this is that assessment tools using biological indicators have been developed primarily for perennial streams and therefore are inadequate for rivers with complex hydrological regimes such as temporary rivers.

Towards an adequate management of rivers in the Mediterranean Basin

The LIFE Trivers project will provide European river basin authorities and relevant stakeholders with an operationally tested software tool (TREHS, Temporary Rivers' Ecological and Hydrological Status) which is designed to adequately implement the Water Framework Directive in this kind of water bodies. Based on a predictive model of the evolution of a river's characteristics over time, the tool is expected to help managers select appropriate sampling dates and use the right methods to determine ecological status. The results will contribute significantly to improving the management of temporary rivers and to increasing their recognition in society and in policies related to water and biodiversity.

TREHS

Figure 2. With the onset of drought, disconnected pools in temporary rivers can be an important refuge for endemic Mediterranean fish species.

Figure 3. Water abstraction is one of the major impacts on temporary streams in the Mediterranean region.

Figure 4. Aquatic communities inhabiting temporary rivers present a wide range of adaptations to cope with the extreme hydrological conditions of droughts and floods.