

PST04 - Characterizing the hydrology and hydrochemistry of Mediterranean temporary ponds in SW Portugal

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Mediterranean Temporary Ponds (MTP) are classified as priority habitats in Annex I of the Habitat Directive (Council Directive 92/43/CEE). Despite this conservation status, in Portugal, this habitat has suffered continuous degradation and is disappearing rapidly. They are subject to strong anthropogenic pressures, such as alterations in hydrological functioning (drainage, over-exploitation of groundwater resources, deep soil turning, flattening the surface topography or transformation into permanent reservoirs for irrigation), water pollution (increase of nutrients, pesticides or heavy metals levels), excessive grazing, among others.

The ongoing project LIFE Charcos: Temporary Ponds Conservation along the southwest coast of Portugal aims to halt habitat loss through conservation and demonstration of management actions. In Portugal, existing studies have been focused on their bio-ecology, and available information is still insufficient to understand the differences that occur between ponds. However the current knowledge has been sufficient to allow the understanding that the evolution of the hydroperiod (inundation period), is extremely important in the control of diversity and maintenance of plant and animal communities within these habitats.

Under the LIFE Charcos project we aim to understand the influence of groundwater in the pond's water budget and hydrochemistry, and consequentially on ponds biodiversity. Continuous monitoring of pond water and piezometric levels has been carried out, along with hydrological modelling of the water budget, which has allowed the degree of groundwater dependence to be quantified. Concurrently periodic sampling of pond and groundwater has been carried in order to compare the hydrochemistry of each water body, and how these vary over time. Results have shown the existence of two main MTP types, with the dependence on groundwater associated to the hydrogeological context in which they are found. This increased understanding of the hydraulic functioning of the MTPs will allow mitigation measures to be tailored to the specific requirements of each, thus improving their effectiveness.