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THE PLANTS OF MEDITERRANEAN TEMPORARY POOLS: DO WE KNOW ENOUGH FOR THEIR CONSERVATION?

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Mediterranean wetlands combine high conservation value and intense pressure from human activities and climate change. Temporary pools, which are important habitats for biodiversity in the Mediterranean region, are particularly exposed to destruction following their small size and depth. They show high species richness including many rare and specialized species, as well as high beta and gamma diversity resulting from the range of environmental conditions they encompass. While they have recently received increasing attention, efforts in research must target key issues for their conservation. In this perspective and on the basis of a review of literature, we discuss what we know from the distribution and ecology of temporary pools in the Mediterranean region, the threats they are facing, the current gaps in research, and actions that would best contribute to their conservation and restoration.

Mediterranean temporary pools are well identified in the Western but poorly known in the Eastern Mediterranean. The main plant conservation issue concerns “Pool specialist” while the vegetation can also include “wetland generalists” and “opportunistic” species. Often stunted and with irregular appearance, the abundance and distribution of pool specialist species remains insufficiently known. The main selected traits for adapting to these environmental factors are a short life span (dominance of annuals), stunted growth forms, permanent seed/spore stocks, secondary dormancy of seeds/spores, flexibility in the life cycle, and plasticity of growth form. The traits related to the spores and seeds stocks are of paramount importance in the plant ecology. Pool specialist populations are resilient to a number of environmental pressures such as grazing or mechanical disturbance. In contrast, specialist species can be sensitive to many environmental factors which modify the hydrology and connectivity of pools.

The conservation of the vegetation of Mediterranean temporary pools requires a better understanding of the species dynamics within a given pool to adapt to ecological change. Long-term studies are needed to assess the impact of infrequent events and long-term processes. Little is known on plant dispersal and its importance in maintaining metapopulations and colonization of new sites. In this perspective, more research is needed at the regional level to understand the importance of the surrounding habitats on the ecology of the pool. Conservation strategies need to take into account the scattered distribution of temporary pools in the landscape, many of which are located on private lands and integrate their uses and the various stakeholders.