

BOOK OF ABSTRACTS



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The International Symposium on Mediterranean Temporary Ponds will offer an opportunity to researchers with different cultural background, students, practitioners, policy makers, and other stakeholders for exchanging experiences and information on the ecology, the biodiversity and the management of this type of habitat, with the aim of promoting its effective conservation and improving public awareness.

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THE ROLE OF SPATIAL AND ENVIRONMENTAL FACTORS AS DETERMINANTS OF LARGE BRANCHIOPOD DISTRIBUTION IN TUNISIAN TEMPORARY PONDS

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The relative influence and combined effects of spatial and environmental factors in explaining variation in the composition and distribution of large brachiopod assemblages at different spatial scales is still poorly explored.

We analyzed the distributional patterns of 14 species found in 107 temporary ponds out of a set of 300 temporary water bodies sampled in winter and early spring in Tunisia and in its main islands (Kerkennah and Djerba). Species were identified on a morphological basis according to existing literature, complemented by sequencing a fragment of the 12S and 16S rDNA genes. Local physico-chemical and morphological data were measured in the field, while climatic data (annual actual evapotranspiration, maximum annual air temperature, and mean monthly precipitation as surrogates of productive energy, ambient energy, and water availability, respectively) were obtained from on-line databases. Spatial structures were described using distance-based Moran's Eigenvector Maps (dbMEMs); moreover, a Mantel's autocorrelogram of the species distribution similarity matrix was examined. The relationship between large brachiopod distribution and the measured environmental and spatial variables was examined using distance-based Redundancy Analysis (dbRDA). Variance partitioning was performed on partial dbRDAs to identify the relative importance of environmental and spatial explanatory variables.

The analysis clearly distinguished five different ecoregions and their characteristic species. The multivariate model explained around one half (48.4%) of total variation. The pure contribution of significant environmental factors (electrical conductivity, basin size, water turbidity, and macrophyte cover at a local scale, and the three climatic variables at a regional scale) was about 15%, while the pure contribution of the five significant dbMEMs (three large-scale and two local-scale factors) was 13%. Finally, the main contribution derived by the joint effects of spatial and environmental factors was 21%. The strong influence of spatial factors (explaining around one third of total variation, i.e. 34%) is related to the large ecoclimatic gradient from Mediterranean to inner steppic and desertic areas; turbidity, macrophyte cover and pond morphology finely tune species distribution, while the strong influence of salinity is independent from any spatial scale. Finally, Mantel's autocorrelogram demonstrated that species composition was spatially autocorrelated at distances shorter than 110 kms; this limit is determined by species dispersal ability in the area. These results suggest that both dispersal limitation and species response to spatially structured environmental gradients and a small set of local limiting factors are involved in determining large brachiopod distribution in Tunisia.

OSTRACODS OF MEDITERRANEAN TEMPORARY INLAND WATERS (GREECE, SOUTHERN ITALY, AND MALTA)

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In the frame of a wider survey aimed at investigating the temporary inland water crustaceans of the Mediterranean area, a case study concerning non-marine ostracod fauna collected in Mediterranean temporary inland waters is here presented. A total of 351 ostracod samples were collected from 274 sites (44 of them located in Apulia, 198 in Sicily, 5 in the Maltese islands, and 27 in Greece) between 2002 and 2014. Sites were selected to encompass the most widespread types of temporary freshwater aquatic habitats (i.e., pools, ponds, flooded fields, etc.). For most of the sites water temperature, conductivity and pH were also measured.

The analysis of samples from the new surveys yielded a total of 41 ostracod species and 17 taxa identified to supraspecific level, belonging to 7 families (Candonidae, Cyprididae, Darwinulidae, Hemicytheridae, Ilyocyprididae, Limnocytheridae, and Notodromadidae).

The most frequently-encountered taxa were the *Eucypris virens* species complex (131 sites) and *Heterocypris incongruens* (78 sites), followed by *Plesiocypridopsis newtoni* (27 sites). Seventeen taxa have been found only in a single site each.

Of particular interest is the occurrence of *Ilyocypris getica*, a species new to the Italian ostracod fauna and currently exclusively recorded from a single pool on Ustica island. In addition, we found one putative new species, (*Eucypris* sp.1), which may be endemic to Sicily and is currently under study.

The obtained results show the presence of a high diversified ostracod fauna in Mediterranean temporary inland waters. The analysis of data revealed that the most influential environmental factors in determining species distribution in the study area are conductivity and altitude, although no clear biogeographical and ecological patterns have been found. This may depend on the fact that sampled species are generally characterised by broad ecological tolerance, and because of the high frequency of few taxa. However, notwithstanding a large overlap, a significant difference in species composition was observed between mainland Sicily and its surrounding islands and Apulia.