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Small scale plant distribution in Mediterranean temporary ponds: implications for conservation

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The research was undertaken with the aims to improve the knowledge of small scale distribution of plant communities in Mediterranean temporary habitats and to evaluate their diversity and conservation relevance in order to provide a sound basis for the prioritization of conservation efforts according to the Habitats Directive. Vegetation and water depth were monitored in 9 temporary ponds 1,000-10,000 m² in size over a three years period in Sardinia (Italy). A small-scale zonation, based on water depth and inundation period, was recognized within each pond and three belts were identified: central (CB), intermediate (IB) and peripheral (PB). Plant abundance was assessed along transects located in each belt using a 30x30 cm quadrat, monthly from March to May. nMDS ordination and ANOSIM (global $R = 0.888$; $p = 0.1\%$) distinguished 3 significantly different groups of plant assemblages: group 1 including the assemblages of the CBs, group 2 including the assemblages of the IBs and group 3 including those of the PBs. SIMPER analysis identified the species that contribute more to the similarity within each group: *Callitriche stagnalis*, *Glyceria spicata* and *Apium crassipes*, group 1; *Lotus uliginosus*, *Isoetes tiguliana* and *Lythrum borysthenicum*, group 2; *Trifolium subterraneum*, *Agrostis salmatica* and *Isoetes histrix*, group 3. Diversity and conservation relevance were evaluated for each group of assemblages on the basis of richness (number of species/group), evenness, and species rarity index (SRI). On the basis of the Habitats Directive, the habitats of community interest present in the study area and their spatial distribution were finally identified. The mosaic of different assemblages and their time-variability determined the presence of several types of habitats of community interest according to the Habitats Directive. The wide heterogeneity should be taken into account to ensure that all types of temporary wet habitats are considered in conservation programs.

Key words: *flooding period, Habitats Directive, richness, Sardinia, vegetation belts, water depth.*