

PST09 - Hydroperiod length drives macrophyte diversity patterns and community structure of ponds along the Castilla Channel

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We examined the influence of the hydroperiod length and local environmental variables on macrophyte species richness (α , β and γ) and community structure in 26 ponds associated with the Channel of Castilla, in the north of Spain. Eleven of them are temporary ponds and the fifteen remaining are permanent ponds, although they experience a severe reduction in water volume during the summer. Non-metric multidimensional scaling (NMDS) of macrophyte species by site provided an ordination in two dimensions with a stress value of 0.23, and analysis of similarities (ANOSIM) revealed that community structure was significantly different among two hydroperiod groups (Global $R=0.301$, $p=0.001$). SIMPER showed a high taxonomical dissimilarity (57.9%) between the two types of ponds. The species contributing most to this dissimilarity were *Phragmites australis* and *Typha domingensis*, which were most abundant in permanent ponds; and *Drepanocladus aduncus* which reached a greater abundance in ponds with short-hydroperiod. Permanent ponds hosted more similar macrophyte communities than temporary ponds.

A total of sixty-two species (γ diversity) were recorded among all ponds, fifty-eight of them corresponded to permanent systems and thirty-six to temporary ponds. There was a significant difference between α diversities of ponds according to the hydroperiod length. Temporary ponds with an average of 18.7 taxa supported lower richness than permanent ponds with 11.7 taxa in average.

Multiple stepwise regression showed that the most important local drivers influencing species richness in both types of ponds were total phosphorus concentration (negatively correlated) and pond area (positively correlated). These two variables explained 64.28% and 87.94% of the variation in species richness among permanent and temporary ponds respectively.

Non-significant differences were found between the two pond types in β -diversity, measured as Whittaker's index and as the average dissimilarity (Bray-Curtis index) from each pond to their group centroid in multivariate space. In β -diversity partitioning, species turnover drove the high dissimilarity among macrophyte communities, regardless of hydroperiod length, while the contribution of nestedness was negligible. This result suggests that management strategies applied in order to maintain regional macrophyte diversity require conservation and protection of many ponds as possible.