

Association between aquatic vegetation and landscape indicators of human pressure



"Preserving biodiversity implies the development of indicators to evaluate management practices and to identify critical thresholds and dynamics that modify ecosystems. This study was conducted in the Camargue Delta (South of France). Mediterranean wetlands represent great potential for biodiversity, and their natural dynamics are strongly influenced by water control. We hypothesized that human influence can be estimated by taking into account spatial patterns of human artifacts. We defined two types of landscape indicators of human pressure: the spatial density and the connectivity of the hydrologic network. Co-inertia analysis was used to explore the correlation between these indicators and aquatic macrophyte communities sampled in marshes. Results suggested that human action may strongly influence marsh aquatic macrophyte communities and affect ecological dynamics. Particularly, alteration of wetland integrity by water control may promote the replacement of specialized species by generalist and exotic species. The canal network seems to facilitate dispersion of *Ludwigia peploides* between marshes. This result confirmed the negative role of corridors in facilitating dispersion of exotic species from one patch to another. We found positive correlations between landscape indicators and macrophyte composition, which is consistent with the tested hypothesis. The density of hydraulic structure was revealed to be a relevant landscape predictor of marsh biological state."

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