

**Italian Society of Vegetation Science 56th Congress**  
**Next Challenges in Vegetation Science: Facing the Anthropocene**  
**Siena, 13-14 July 2023**



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**FIRST RESULTS OF A VEGETATION SURVEY ON THE FUCECCHIO MARSH, AN AREA SHOWING A DEEPLY TRANSFORMED PLANT LANDSCAPE COMPARED TO THE PAST**

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Extending in central Tuscany between the provinces of Florence and Pistoia and covering about 2,000 hectares, the “Padule di Fucecchio” area is one of the largest inland marshes in Italy. It is one of the wetlands of international importance listed in the Ramsar Convention and encompasses several protected natural areas, either of European or local interest, due to their naturalistic richness and hydrogeological and landscape peculiarities. The studies on its flora, even if rather dated, are numerous and several specimens are deposited in the Tuscan herbariums [1; 2]. Moreover, more recent floristic reports are contained in Wikiplantbase#Toscana. On the contrary, studies on plant communities of Fucecchio Marsh are surprisingly very scarce and out of date. In the last two years, we carried out a vegetation survey concerning aquatic and marshy vegetation; using the phytosociological approach, we collected more than 140 relevés in the area. As it could be predicted, the preliminary data analysis showed that, with respect to past vegetational and floristic data, a large part of the aquatic and marsh plants of relevant conservation value have disappeared or have greatly reduced their diffusion, in favour of alien species, which have also become an important or predominant component in plant communities. Hydrophytic coenoses are rather scarce and distributed in very peculiar habitats such as the small puddles along the paths of the nearby forests or in the few ponds and streams with less turbid or polluted water. Only communities with *Callitriche sp. pl.*, *Persicaria amphibia*, *Myriophyllum spicatum* and *Ranunculus trichophyllus* have been detected. On the contrary, helophytic communities are more abundant and distributed along the entire study area, in particular *Phragmitetum australis* and other coenoses such as *Schoenoplectetum lacustris*, *Caricetum ripariae* or *Phalaridetum arundinaceae*. In addition, communities dominated by different species of the genus *Bolboschoenus* have been detected and are being defined through comparison with updated data from taxonomic and vegetation points of view [3; 4]. Communities of ephemeral environments dominated by native and alien species (e.g., *Cyperus sp. pl.*, *Amaranthus blitum*, *Lindernia dubia*, *Crypsis schoenoides*) resulted to be widely present in the study area and their syntaxonomic definition is underway.

Generally speaking, the great upheavals of the Fucecchio Marsh first began with post-war agricultural changes, and tragically intensified starting in the late 1990s, when the Louisiana crayfish (*Procambarus clarkii*) and nutria (*Myocastor coypus*) have accidentally spread to the area. From an avifaunistic point of view, the crayfish has represented a valuable resource for many marsh birds of conservation interest, but the increasingly massive presence of these invasive alien species led first to the rarefaction and then to the complete destruction of numerous aquatic and marshy plant communities, which are no longer present today (e.g., *Hydrocharis morsus-ranae* or *Nymphaea alba* or *Oenanthe aquatica* dominated communities) and, consequently, to a profound transformation of the plant landscape of Fucecchio Marsh.

- 1) Garbari, F. (1980) Indagine floristica e vegetazionale sul padule di Fucecchio. In: AA.VV., Progetto pilota per la salvaguardia e la valorizzazione del padule di Fucecchio. pp. 217–263. Min. Agr. For., Dir. Gen. Econ. Mont. For. - Cons. Bon. Pad. Fucecchio.
- 2) Tomei, P.E., Guazzi, E. & Kügler, P.C. (2001) Le zone umide della Toscana: indagine sulle componenti floristiche e vegetazionali. Ed. Regione Toscana, 167 pp.
- 3) Hroudová, Z., Hrivnák, R. & Chytrý, M. (2009) Classification of inland *Bolboschoenus*-dominated vegetation in Central Europe. Phytocoenologia, 39 (2), 205–215.
- 4) Di Natale S., Lastrucci L., Hroudová Z., Viciani D. 2022. A review of *Bolboschoenus* species (Cyperaceae) in Italy based on herbarium data. Plant Biosystems 156 (1): 261-270.