Vegetation ecology of Kalodiki Fen (NW Greece)

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Abstract: Freshwater wetlands around the Mediterranean Sea have decreased considerably in number and quality. Greece has lost two thirds of its wetlands during the last seventy-five years; however, many wetlands with considerable conservation value remained. Kalodiki Fen is an inland, freshwater wetland belonging to the western chain of Greek wetlands. This paper describes the plant communities of Kalodiki Fen and their synecology. To determine the relationship between vegetation and environmental parameters, the vegetation of Kalodiki Fen is described and analysed in terms of parameters determining the observed distribution pattern. Eighteen vegetation types, of which nine are ranked as associations and nine as frame communities, are described and are presented in a synoptic table. They belong to the *Phragmition communis, Magnocaricion elatae, Nymphaeion albae, Parvopotamion, Ranunculion aquatilis, Lolio-Potentillion anserinae, Nerion oleandri,* and *Bidention tripartitae.* Through ordination, soil moisture and water depth, and to a lesser extent nitrogen, were identified as underlying environmental factors determining the composition of these plant communities. Community differentiation follows an edaphic-water depth pattern. The floristic and vegetation value of the wetland is discussed as a basis for the application of conservation management measures.

Key words: aquatic vegetation, classification, ordination, community ecology, hydrology, nature conservation.

Introduction

Seventy-five years ago, Greece had three times as many wetlands as it has today. Many of these wetlands were drained as they were considered sources of malaria in the past, and the surface area of most of the remaining lakes has decreased. After 1920, a rapid increase in wetland loss was observed. Yet complete drainage is not the only threat; unwise and unsustainable use of the wetlands also causes much damage (Gerakis, 1992). In spite of past heavy losses, Greece still has many wetlands of national and international importance. The remaining wetlands presently cover over 200,000 ha and number about 400, including fifty-six lakes covering a total of 59,767 ha (Gerakis & Koutrakis, 1996). Ecological data on many Greek wetlands are still very limited, especially data on their vegetation ecology.

Kalodiki is an inland freshwater fen selected as one of the 236 proposed Sites of Community Interest (pSCI), for incorporation into the Natura 2000 network of Greece. Taking into consideration also the Special Protection Areas of Greece (SPA), the total number of the Natura 2000 sites is 359 at present, since 31 sites are simultaneously pSCI and SPAs (Dafis et al., 1996, unpubl. data). It is one of the thirty-nine Greek wetland sites assigned to the wetland type "freshwater marshes and meadows" which covers a total area of 45,745 ha (Verhoeven, 1992b). Moreover, Kalodiki with an area of 1650 ha, is one of the 196 Greek Important Bird Areas (IBA's), covering a total 34,332 km^2, ca 26% of the surface area of Greece (Heath et al., 2000). Kalodiki Fen meets the criteria documenting the international importance of the site for *Aythya myroca* (ferruginous duck) at a European level. Exploitation of underground water for consumption and irrigation purposes, surface water pumping, cultivation of the surrounding area are the present threats of primary relevance affecting the flora and vegetation of Kalodiki Fen.

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