

THE ROLE OF THE HYDROGEOLOGICAL AND ANTHROPOGENIC FACTORS ON THE ENVIRONMENTAL EQUILIBRIUM OF THE UGENTO WETLAND (SOUTHERN ITALY)

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The Ugento Wetland, recognized as a Site of Community Importance (SCI, European Directive 92/43/CEE) from 2005, is a “Regional natural littoral Park” from 2007, located along the Ionian coast, in south-eastern part of Salento (Apulia region). The environmental peculiarities of the Ugento Wetland are due to a complex hydrogeological pattern, the high contribution of groundwater outflow, and to a peculiar dynamic equilibrium with sea, also due to the role of the wide coastal aquifer of Salento.

The main objectives of the present research are the definition of the hydrogeological conceptualisation to create a basic knowledge of the physical environment, to be used as a basis for the design of effective management policies of water resources to safeguard the ecological and environmental equilibria, considering the relevant impact of anthropogenic activities.

In this area, the human pressure on water resources was detected in terms of surface water pollution, probably due to illegal dumps and the use of fertilizers and nitrogen compound for agricultural purposes, which is the origin of an exponential growth of the floating macro-algae mass in basins. As a consequence, some event of eutrophication triggers the algal growth, the effect of which is the sharp reduction, almost to zero, of the surface water velocity, up to, in some cases, to a widespread fish mortality. Apart from water pollution effects, during the dry season, due to the increase of groundwater discharge, the sharp piezometric decline improves the effects of seawater intrusion on groundwater.

A geological and hydrogeological survey and study were realised and merged with the characterisation of the land use modifications back to the fifties.

The attention was focused on the analysis of the complex hydrogeological characteristics, which is due to the overlapped effects of shallow and deep aquifers and of their outflow along the coastal area. The focal role of the shallow aquifer, which is predominant and extremely importance for the hydrological balance and so for the ecological equilibria, a specific monitoring groundwater network of quantitative and qualitative parameters was implemented. The merging of hydrogeological factors and anthropogenic modifications was discussed using indicators.

Two main macro-indicators, water and soil, were selected. The critical issues related to the management of human activities potentially dangerous for the wetland environment, was considered with the definition of guidelines for their mitigation, based on the discussion of the indicators.

