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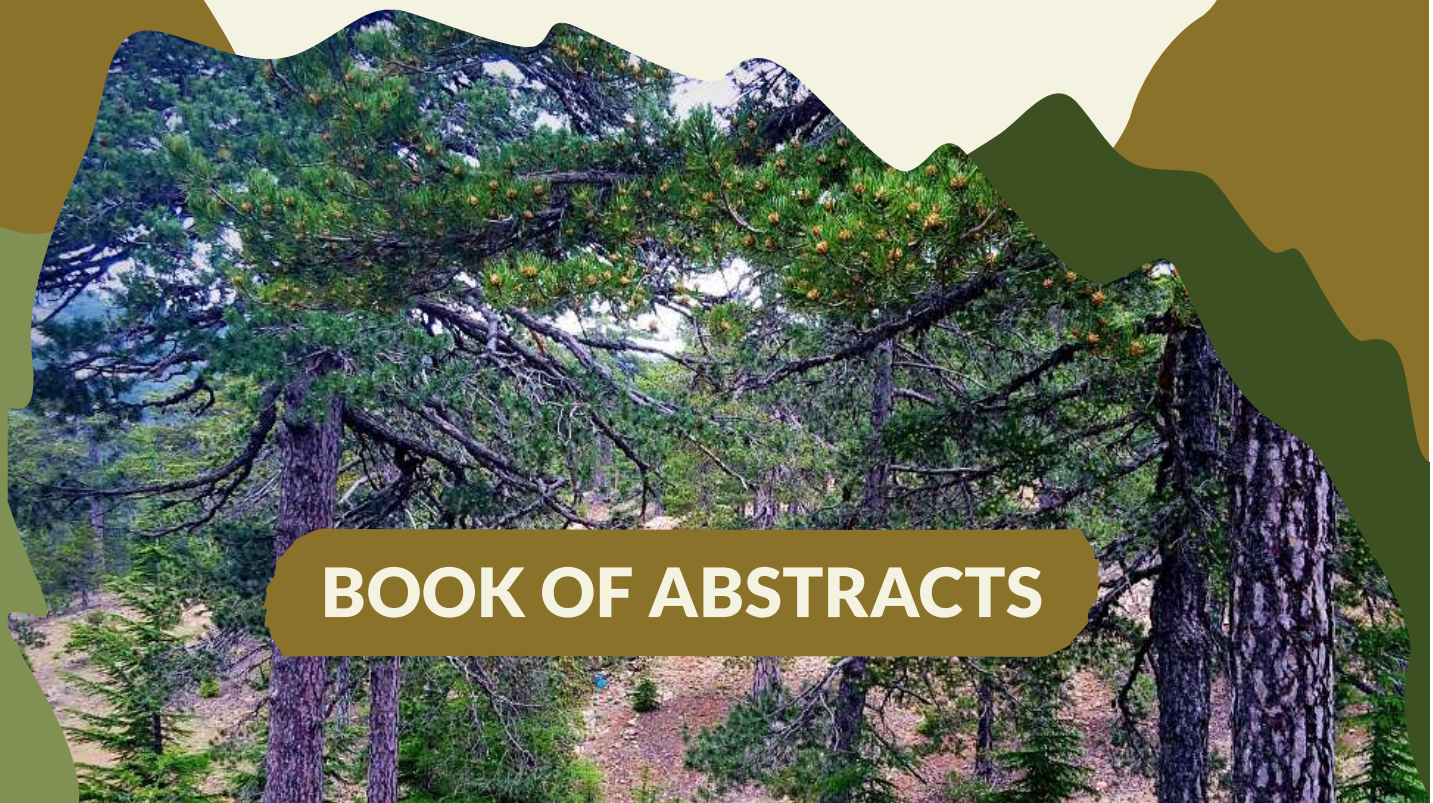

BOOK OF ABSTRACTS

Effects of anthropogenic drivers of change on the taxonomic and functional diversity of local plant communities in chestnut groves on the island of Elba, Tuscan Archipelago, Italy

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Chestnut groves have a long history in Europe. They have been cultivated and managed for centuries for their suitability for wood and fruit production, as well as for their landscape and natural value. In Italy, chestnut grove products have been the mainstay of the diet of many local populations, especially in the mountains. Initially, many chestnut groves were planted well outside the climatic optimum for the species but were managed and cultivated in such a way that they thrived for a long time. However, the socio-cultural changes of the last century have led to a gradual decline in chestnut cultivation and the abandonment of chestnut groves. In Tuscany, there are 32 thousand hectares of chestnut groves, more than half of which have been abandoned. In addition, the depopulation of the mountains and the outbreak of aggressive phytopathologies such as American cortical cancer and Chinese gall are the most frequent reasons for abandonment.

This study examines the consequences of the stresses potentially caused by the abandonment of chestnut groves on the island of Elba, in the Tuscan Archipelago. The presence of chestnut trees on the island is of anthropic origin and is mainly located on the northern slopes of Monte Capanne. Despite their often-compromised health status, chestnut groves have an important ecological and naturalistic value. Understanding how anthropogenic and climatic stresses, as well as abandonment or current management, can influence the development of these environments will help to preserve their naturalistic value and understorey biodiversity. To these ends, we combined remote sensing analysis correlated with floristic and functional characterisation of abandoned areas through ground surveys to assess the conservation status of Elba's chestnut groves.

By correlating the calculation of the Enhanced Vegetation Index (EVI) with the vegetation map of the island, it was possible to delineate the chestnut groves on the northern and eastern sides of Monte Capanne and to assess their cumulative vegetative stress. We then surveyed the chestnut groves on the island using a probabilistic sampling design to represent the different levels of stress identified in the areas analysed. 10 x 10m plots were sampled to estimate the presence and relative cover of species in the understorey layers. An assessment of plot stress was also carried out, with stressors including damage caused by Chinese gall and/or cortical cancer, management status of the area (abandoned or not), and damage to vegetation and topsoil caused by ungulates. Results indicate that the level of species richness varies with the degree of site disturbance and that the phytosanitary value is significantly correlated with taxonomic and functional diversity from a numerical perspective. From an ecological perspective, managed plots show a slight trend towards more competitive species, while abandoned plots are more heterogeneous. From a remote sensing perspective, the EVI index is lower when the phytosanitary index is higher.

This suggests that taxonomic and functional diversity may be related to the health status of the chestnut grove, but not to its management on the island of Elba.

Keywords: remote sensing, land abandonment, plant ecology, Mediterranean chestnut groves