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Conference Abstract

Diachronic analysis of Mediterranean vegetation: Assessing species richness and compositional shifts following invasive species control

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Abstract

Diachronic vegetation analysis is based on the systematic comparison of data acquired across distinct temporal windows, enabling the quantification of landscape evolutionary dynamics. Vegetation dynamics are often intrinsically slow, and the temporal scales relevant to biodiversity management frequently span several decades. Long-term vegetation dynamics are best studied through monitoring via permanent plots. In recent years, the resurveying of historical vegetation study sites has become increasingly prevalent, as it offers a unique opportunity to estimate vegetational and environmental changes over recent decades. Within the framework of the Project LIFE+ 12/NAT/IT/000416 – Life *Puffinus* Tavolara — "Protection of the world's largest population of *Puffinus yelkouan* and control of invasive alien species", co-funded by the European Union and coordinated by the Municipality of Olbia in partnership with the “Tavolara-Punta Coda Cavallo” Marine Protected Area (Olbia, Sardinia, Italy), a key action involved the management of invasive alien species such as feral goat populations and *Carpobrotus* spp (hereafter IAS). This intervention became necessary to mitigate their negative impact on the local flora. Monitoring of this action was conducted through diachronic vegetation analysis using permanent fenced plots (with dedicated goat

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exclusion gates). The present study adopts a diachronic approach to compare data collected in 2014, 2016 with data from 2025, at the Tavolara Island, facilitated by the resurvey of permanent fenced plots. The specific objective is to understand how the vegetation has evolved over a period of nearly ten years, spanning the pre- and post-containment phases of the IAS. Furthermore, the study assesses whether significant differences exist regarding: species richness and diversity, floristic composition and plant community structure. Diachronic analysis was performed on two 10 x 10 m permanent plots. In each plot, a census of present taxa was conducted, with each taxon assigned a percentage cover value.

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Conflicts of interest

The authors have declared that no competing interests exist.