

DIPARTIMENTO DI PIANIFICAZIONE DESIGN
TECNOLOGIA DELL'ARCHITETTURA



SAPIENZA
UNIVERSITÀ DI ROMA



54th SISV Congress

*Twenty years in the third millennium
with Vegetation Science*

September 28th-29th 2021

Abstract book

SISV 2021 is organised with the Scientific Support of the following Authorities



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Institute of Botany and Botanical Garden „Jevremovac“
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Master di II livello

The 54th Congress of the Italian Society for vegetation Science was set to be hold in June 2020 at the Faculty of Architecture of the University of Rome. The explosion of the COVID-19 pandemic in the spring of last year led first to move the congress to October 2020 and then definitively to 2021. However, the persistence of the serious situation of COVID-19 infections in Europe during these first months of 2021 and the uncertainty about the results of the current vaccination campaign does not allow us to plan a “face to face” congress as we had planned it.

The SISV 2021 congress will therefore be carried out as a **virtual conference**.



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INFLUENCE OF NATURAL AND ANTHROPOGENIC FACTORS ON PLANT DIVERSITY IN MEDITERRANEAN COASTAL LANDSCAPES: THE CASE OF TUSCANY

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Coastal dunes provide fundamental ecosystem services for our well-being, including shore defence, water storage and purification, nutrient recycling and climate regulation. The maintenance of these services depends on the integrity of coastal plant communities, which play a key role in dune formation and stabilization. Understanding the drivers of dune plant diversity is thus essential for preserving coastal ecosystem functioning and services.

In the last decades, Mediterranean coastal landscapes have undergone strong urbanization with the consequent habitat and biodiversity loss. In this context, a multi-factorial analysis becomes crucial to identify the factors having the strongest impact on plant diversity.

By combining field-collected vegetation data (336 random plots) and remote sensing imagery, we analysed the influence of natural and anthropogenic factors on the coastal dune vegetation along the Tyrrhenian coasts (Tuscany, Italy). First, we used 20 cm resolution orthophotos to map natural and artificial land-cover classes across a 300 m wide coastal belt. Thus, we obtained a high-resolution land-cover map (1:2000) that comprised 1,575 spatial polygons belonging to 8 macro-categories: artificial, agricultural and afforestation (the latter category further divided into pine forests and mixed forests), woody habitats, semi-natural vegetation, herbaceous coastal habitat, coastal and inland wetland and, inland and marine waters. Then, we applied a rectangular buffer (100×300 m) on the land-cover map and extracted a set of landscape variables around each vegetation plot: raw number of land-cover classes, diversity of classes (Shannon), number of polygons and relative area for each land-cover class.

We used linear and generalized linear regression to model plant diversity (i.e. native species richness, Shannon and Simpson diversity of dune communities) as a function of the landscape variables. Also, we included the distance between each vegetation plot and the closest bathhouse in the models as a proxy of tourism intensity.

The most frequent land-cover classes were herbaceous coastal habitat (327 polygons) and maquis (241). Other frequent classes were pine forests (184 polygons), artificial areas (127) and wetlands (105).

Our preliminary results evidence that bathhouse negatively affected species richness. Similarly, plant diversity significantly decreases as the number of polygons of artificial increases, pointing to the negative effect of anthropogenic activities on dune vegetation. On the contrary, plant richness and diversity were positively affected by the relative area of herbaceous coastal habitat polygons, in particular by the upper beach vegetation, indicating that dune vegetation benefits from well-preserved coastal zonation. These first results indicate tourism industry and urbanization as the main drivers of habitat degradation in the analysed coastal environments.