

ANALYSIS OF PLANT INVASIONS IN SAND DUNES OF THE VENETIAN COASTAL LINE (NE ITALY)

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In the last decades the high biodiversity and originality of North-Adriatic coastal vegetation has been seriously threatened by the increasing pressure of beach and yachting tourism: all those coastal ecosystems that were considered very close to natural conditions until middle XX Century are nowadays affected by rapid habitat fragmentation and invaded by alien species. Being one of the main elements of ecosystem alteration and trivialization, biological invasions are universally recognized as one of the biggest threats to biodiversity, functionality and economic value of ecosystems.

Extending from Karst (Trieste) to Conero Promontory (Ancona), N-Adriatic coasts represents the longest sandy coastal line in Italy. The high degree of its phytocoenotic originality is widely recognized as a result both of the present physical characters and of the past climatic events, which determined wide floristic movements in Northern Italy that greatly enriched the floristic richness of this area, helping to define plant communities and systems not found elsewhere (Buffa *et al.*, 2007; Gamper *et al.*, 2008, Sburlino *et al.*, 2008). According to a hierarchical landscape classification approach (Blasi *et al.*, 2000), coastal landscape is set up by three systems, showing a structural gradient ranging from the pioneer annual communities on the beach to the woods in sheltered zones.

The research followed two directions: 1. identification of coastal plant communities more susceptible to penetration of alien species, designing a sample of pairwise plots located within the main plant communities of foredunes (1th system) and greydunes (2nd system – edaphoxerophilous series); 2. analysis of those functional traits, deeply connected to the life strategies of sand dunes species, that could provide a high success and a tendency towards invasivity to native and alien species, focusing the study on 17 of the most common entities of Venetian coastal line.

Pairwise comparison of species composition, Shannon index (H), Pielou's index (J) and biological/corological spectra for disturbed and undisturbed plots were calculated for each plant communities. Human disturbance deeply influences the horizontal structure and ecological functions in white and grey dunes habitats, while plant communities of shifting dunes, because of the extreme natural stressors, mainly suffer alteration in floristic composition.

The Correspondence Analysis of the matrix 17 species x 7 traits pointed out that lifespan, clonality and pollen vector are the most important characters, while the leaf traits studied seem not to be key traits for the invasivity attitude of a certain entity.

Deciding which characters are relevant and measurable for a given species is the biggest challenge in applying functional traits and a detailed analysis on individual traits is still needed to evaluate the functional role of species, both invasive and non-invasive, in coastal ecosystems.

As the most invasive species do not establish alien communities on sandy dunes, once human disturbance will have been drastically reduced through sustainable management programmes, a strong decrease of their local populations is expected on the long term.

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