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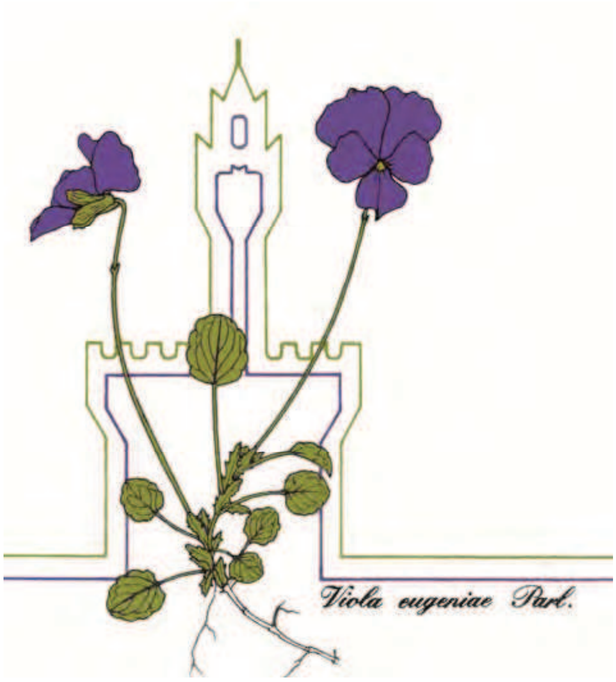

ABSTRACTS

KEYNOTE LECTURES, COMMUNICATIONS, POSTERS

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POSTERS

1.5 = CHANGES IN SPECIES ASSEMBLAGES IN THE TRANSITION GRASSLANDS - SHRUBLANDS: DOES PHYLOGENY MATCH THE DIFFERENT CONDITIONS IN TERM OF ECOLOGICAL FACTORS?

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Secondary semi-natural grasslands are important components of European cultural landscapes and resulted from millennia of traditional land use, mainly linked to the grazing by livestock (pastures) or hay-making (meadows) (1, 2). In Europe, these habitats have recently been experiencing a huge loss in surface area due to important changes in the traditional land uses. Indeed secondary grasslands and meadows, no longer maintained under grazing and farming activities, displayed a global tendency to evolve in shrublands and woodlands through natural secondary successions (3, 2), undergoing vegetation dynamics leading to the gradual transition from grasslands to shrublands. While this transition is well documented as to the changing of vegetation structure and floristic assemblages involved, less is known regarding the changes occurring in the communities focusing on phylogenetic and/or functional diversity. Such changes in species composition and co-occurrence may represent a precious chance to test and verify the modern theories in term of species assemblage evolution and development. Within this work, we aimed to study how the ecological differences involved in the natural succession of dry grasslands and hay meadow may drive the processes of species assemblage during the dynamic evolution of such habitats. Particularly, we aimed to: i) verify whether the two habitats are characterized by different trends in species loss and species turnover during their dynamic evolution; ii) verify the links among changes in species richness, composition and phylogenetic diversity and different ecological conditions. Toward these aims, we sampled dry grassland and hay meadow plant communities in the Eastern Tuscan Apennines. In order to reconstruct their dynamic changes, we adopted a chrono-sequential approach. The two habitats showed different features in the species compositional changes during their dynamic evolution. Dry grasslands displayed a trend in species turnover mainly dominated by Nestedness; this indicates that, accordingly with the loss in species richness characterizing the habitat dynamic evolution, poorer sites host a subset of richer ones. On the other hand, the higher values of Richness Difference in hay meadows indicate that in the natural dynamics of these habitats the species turnover yield to a process of higher species replacement. In these habitats, indeed, the loss of species is accompanied by a substitution of species in the more dynamically advanced stages. Following these trends in species turnover during the vegetation dynamics, the indexes of phylogenetic diversity showed valuable differences among the two lines of evolution. A sensible overdispersion of plant composition was detected in the evolution of dry grasslands, while a random process of differentiation characterized hay meadows. Our results appear consistent with the predicted community phylogenetic structure in fig. 1 (according to 4). In dry grasslands the dynamic evolution, constrained by a strong habitat filtering, led to the overdispersion of the community phylogenetic structure since the plant traits are dispersed among the species characterizing the community. On the contrary, hay meadows, probably less stress dominated and not so much subjected to habitat filtering but more to competitive exclusion, are subjected to a random process of differentiation in the community phylogenetic structure.

	Functional traits	
	Conserved	Converged
Dominant ecological force		
Habitat filtering	Clustered	Overdispersed
Competitive exclusion	Overdispersed	Random

Fig. 1
Predicted phylogenetic structure within a community under differing scenarios of functional trait evolution and alternative ecological determinants (Adapted from 4).

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