
Origin and congruence of taxonomic, phylogenetic, functional and paleoecological diversity patterns: the model of European-Mediterranean woody plant biodiversity

Juan Arroyo^{*1}, Aggeliki Doxa², Agathe Leriche^{†2}, and Working Group Wooddiv³

¹Universidad de Sevilla [Seville] – C/ S. Fernando, 4, C.P. 41004-Sevilla, Spain

²Institut méditerranéen de biodiversité et d'écologie marine et continentale (IMBE) – INEE, Université d'Avignon et des Pays de Vaucluse, Institut de recherche pour le développement [IRD] : UMR237, Aix Marseille Université, CNRS : UMR7263, INSB, INSU – Aix Marseille Université, Campus Etoile, Faculté St-Jérôme case 421 Av. . escadrille Normandie-Niemen 13397 MARSEILLE CEDEX 20, France

³Centre de Synthèse et d'Analyse sur la Biodiversité (CESAB) – CESAB – Technopôle de l'Environnement Arbois-Méditerranée Avenue Louis Philibert 15100 Aix-en-Provence cedex 3, France

Abstract

Taxonomic diversity is the most widely used indicator for biodiversity conservation although genetic and functional diversity are major drivers of biodiversity spatial and temporal structure. Within the fast-growing field of ecophylogenetics, we propose to test the congruence between taxonomic, phylogenetic, functional and paleoecological diversity of the tree species in the European Mediterranean region, in order to identify the factors underlying their spatial patterns. Our results will help prioritize biodiversity conservation measures using the poorly explored functional and evolutionary components of biodiversity. Ecophylogenetic and palaeoecological data for all native woody species of the study area will be collected. Spatial and meta-analyses and numerical modeling tools will be used to identify trends in patterns and level of congruence of three components of biodiversity. and to identify underlying driving factors. Our particular approach aims at combining contemporary explanatory variables with (i) paleoecological data, providing a proxy for past diversity and human influences, as well as (ii) data from phylogeography of tree species and community phylogenetic. This work will permit to evaluate current practices and develop recommendations for efficient conservation strategies.

Keywords: trees, diversity facets, spatial patterns, drivers, conservation prioritization, Mediterranean

*Speaker

†Corresponding author: agathe.leriche@imbe.fr