

2.5 = Distribution and ecological role of selected shrubby species in the Mediterranean basin

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In many natural and semi-natural habitats trees and shrubs represent two major growth forms (1). In particular shrublands, which can be considered a mixture of several sclerophyllous shrubs and tree species, represent a Mediterranean type of vegetation rarely found in other ecosystems. The distribution of shrubs in an ecosystem is connected to complex ecological processes. Indeed, shrubs provide substrate, food and shelter for organisms, play an important role in the nutrient cycle providing organic matter input to soils and they protect watersheds from erosion. Moreover shrubs are very important for many associated species such as mammals, birds, invertebrates, other plants (that favour thanks to their role of nurse plants), and their distribution also influences the variety and abundance of mycorrhizal fungi, fundamentals in ecological terms and nutritional relationships (2). This study represents a review on the ecological role of some selected Mediterranean shrubby species. In particular the attention is focused on the following species: *Amelanchier ovalis* Medik, *Astragalus nebrodensis* (Guss.) Strobl., *Crataegus laciniata* Ucria, *Lycium intricatum* Boiss., *Prunus spinosa* L., and *Viburnum tinus* L. These species have been selected because they are representative of different Mediterranean vegetation types, distributed in relation to the bioclimate type and the altitude. In fact, various habitats have been considered in relation to these species, for example coastal and sub-coastal environments for *Lycium intricatum*, sclerophyllous woodlands for *Viburnum tinus*, mantle vegetation and pre-forest structures for *Amelanchier ovalis*, *Prunus spinosa* and *Crataegus laciniata*, orophilous thorny-cushions vegetation for the Sicilian endemic *Astragalus nebrodensis*. For each species the geographical distribution in the Mediterranean Basin has been investigated, considering its borders according to the limits of Mediterranean climate (3), and the definition of terrestrial ecoregions of the world (4). The species distribution as well as their taxonomy (especially in relation to the presence of subspecies in the Italian territory) have been analyzed thanks to a number of scientific publications and web-based sources (e.g. Euro + Med PlantBase, The International Plant Names Index, ILDIS- International Legume Database & Information Service, PAN-European Species directories Infrastructure, Portale della Flora d'Italia, Flora of Greece Web, Anthos, African Plant Database, Silene-Flore database, etc.) at regional, national and international scale. Moreover for each species distribution maps have been prepared geo-referencing the species location data obtained from the labels of digital herbaria samples of the Muséum National d'Histoire Naturelle, MNHN – Paris, P; Naturhistorisches Museum Wien, W; Herbarium Mediterraneum Panormitanum, PAL; Herbarium Plant Biology Section, CAT; Botanischer Garten und Botanisches Museum Berlin-Dahlem, Zentraleinrichtung der Freien Universität Berlin, B, and from the data portal Global Biodiversity Information Facility- GBIF (always in relation to herbarium samples), also in order to obtain historical distribution data. The ecological role of species in every ecosystem, but also of their successional dynamics and their response to global changes and disturbances was investigated making an analysis of the literature data and also in relation to some botanical aspects and functional traits, available for some of the studied species, from TRY Plant Trait Database (<https://www.try-db.org>) and from BROT 2.0 database, for example: Growth form, Leaf phenology, Spinescence, Flower color, Dispersal mode, Fruit type, Nutritional relationships (the analysis of these data is in progress especially with regard to mycorrhizal symbioses). This has allowed to clarify why shrubs are successful in many habitats and to evaluate the critical role that they play in Mediterranean ecosystems.

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2) Kerns B.K., Ohmann J.L. (2004). *Ecological Indicators* 4, 83–98

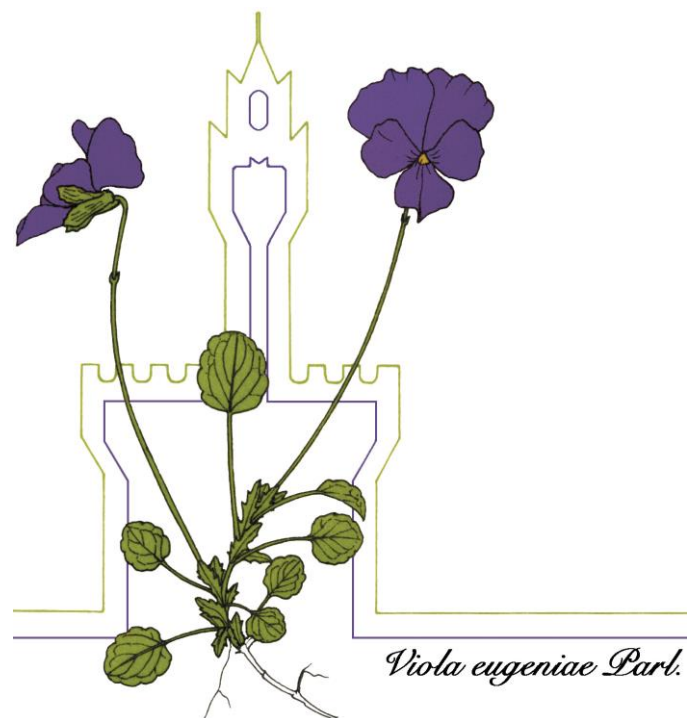
3) Quézel & Médail (2003). *Ecologie et biogéographie des forêts du bassin méditerranéen*. Elsevier, Paris

4) Olson *et al.* (2001). *BioScience* 51:933–938

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ABSTRACTS

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