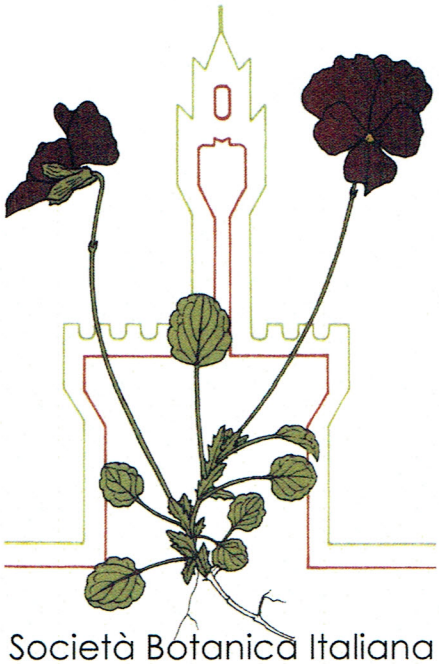

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BOOK OF ABSTRACT

KEYNOTE LECTURES, COMMUNICATIONS, POSTERS

Università di Roma Tor Vergata

ORTO BOTANICO

1.8. = SAVING THE LAST ITALIAN POPULATION OF *CISTUS LAURIFOLIUS* L. SUBSP. *LAURIFOLIUS*: PLANT FUNCTIONAL TRAITS AND REPRODUCTIVE STRATEGIES UNDER THE LIGHT OF A CONSERVATION PERSPECTIVE

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One of the most interesting Italian woody taxa from a conservation point of view is the laurel-leaved rockrose (*Cistus laurifolius* L. subsp. *laurifolius*). This taxon is a heliophilous shrub with large white flowers, whose range scatters across Morocco, Portugal, Spain, S France, Italy, towards the Black Sea region, Turkey (1). Currently, in Italy this species occurs only in Tuscany, where it is distributed in a single population (with five subpopulations) near Florence. According to the IUCN protocol, it has been recently assessed as vulnerable (VU) at national level (2). Our aim was to estimate its population size, density and demographic structure in Italy, and to study the reproductive success for different densities and for each subpopulation. Furthermore, we investigated plant functional traits in two contrasted habitats: garrigue vs. underbrush. According to methodological approaches exposed in (3), the following parameters were measured for both ecological contexts: leaf area, wet and dry leaf weight, height of individuals and seed mass. In addition, a soil analysis was performed to evaluate the following parameters: texture, pH, electrical conductivity, N, K and soil organic matter content. Demographic results showed that the Italian population of this species is composed by ca. 10.000 individuals with a mean density of 0.116 plants/m^2. The smallest subpopulation has currently just one adult plant left, so that it could be considered as almost extinct, whereas the largest subpopulation contains more than 90% of all the Italian plants. The subdivision of investigated plants into three age classes highlighted that 2% of the individuals are juvenile plants (i.e. with no more than 6 leaves), most of the plants (86%) are adult and the rest (12%) belong to an intermediate developmental stage. Our results revealed that plants occurring in high-density plots produced a number of flowers, fruits and seeds significantly higher than plants growing in medium- and low-density plots (Wilcoxon-Mann-Whitney with Bonferroni correction test; $p < 0.05$). In addition, at subpopulation level, the largest one produced a significantly higher number of seeds per fruit than others ($p < 0.01$). These preliminary results led us to hypothesize an Allee effect for the Italian population of this species: small or sparse subpopulations may suffer fitness reduction. Values of Specific Leaf Area (i.e., leaf area (mm^2)/dry leaf weight (mg)), expressed as mean ± st. dev., were 4.58 ± 0.47 in garrigue and 7.83 ± 1.79 in underbrush context, whereas those of Leaf Dry Matter Content (i.e., oven-dry mass (mg)/water-saturated fresh mass (g)) were 377.61 ± 33.36 in garrigue and 317.06 ± 42.20 in underbrush context, revealing significant differences (Student's t test; $p < 0.01$). Our results are in agreement with the typical sun-shade morphological responses, in which thinner leaves with higher leaf area were produced under low light conditions. These parameters suggest an acclimatization to maximise the carbon gain under shade conditions. Concerning future perspectives, our work aims to obtain a better understanding of the adaptive responses and optimal ecological requirements of laurel-leaved rockrose in Italy in order to plan, if necessary, efficient and taxon-calibrated conservation measures.

1) M. Fernández-Mazuecos, P. Vargas (2010) Molec. Ecol., 19(7), 1381-1395
2) G. Astuti, F. Roma-Marzio, M. D'Antraccoli, M. Gennai, M.C. Villani, L. Peruzzi (2015) Inform. Bot. Ital., 47(2), 261-264
3) N. Perez-Harguindeguy, S. Diaz, [..], J. Cornelissen (2013) Austr. J. Bot., 61, 167-234

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