

## EFFECT OF ENVIRONMENTAL FACTORS ON MORPHO-FUNCTIONAL TRAITS OF *PRIMULA PALINURI* PETAGNA (PRIMULACEAE)

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Habitat protection is generally considered of primary importance for the conservation of endangered species. The lack of knowledge about autoecology and reproductive biology of most endangered species could nullify the efforts of many conservation actions based only on protection from human impact.

The aim of this research was to investigate the autoecology and reproductive biology of *Primula palinuri* Petagna, one of the rarest endemic species in Italy (Fig. 1). Apart from a step by step monitoring of the phenology and reproductive success, we performed a specific experiment aimed to understand the combined effect of light and water availability on the first phases of plant development.

Seedlings were obtained from seeds harvested from plants growing in three experimental sites in the National Park of Cilento and Diano Valley. Seedlings were transferred in pots, divided in four groups and subjected to different combinations of light and watering regimes: 1) plants exposed to 100% sun light and watered in order to completely reintegrate the water lost by evapotranspiration; 2) plants exposed to 10% sun light and watered in order to completely reintegrate the water lost by evapotranspiration; 3) plants exposed to 100% sun light and kept without water; 4) plants exposed to 10% sun light and kept without water.

The development of these plants and their survival was monitored over several months until they underwent summer dormancy. Different growth parameters, such as the number of leaves and the size of epigeal organs, were measured. Leaves formed under the different environmental conditions were compared in different developmental phases on the basis of leaf traits and morpho-anatomical parameters. Specific leaf area (SLA), leaf dry matter content (LDMC) and leaf relative water content (RWC) were recorded on fully expanded leaves. Samples of these leaves were also collected, chemically fixed and subjected to the preparation for microscopy analyses. Resin-embedded samples were thin sectioned and sections were

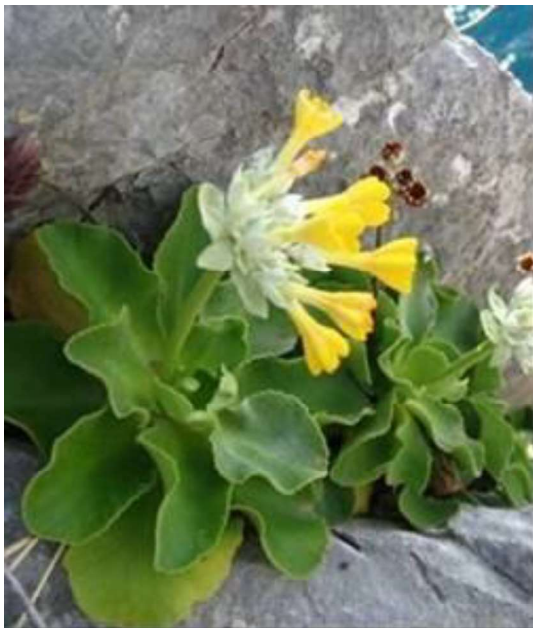


Fig. 1. *Primula palinuri* Petagna

observed by means of light and epi-fluorescence microscopy. Digital microphotographs were analysed with software programs devised for the quantification of anatomical and cytological features in order to obtain a quantitative characterisation of tissues. Several anatomical and cytological parameters, including tissue thickness and cell size were measured, as well as the presence of starch and phenolic compounds were recorded. All data were combined and interpreted in a functional way.

The results of this research improved the knowledge on adaptation of this species to variable environmental conditions, also helping to detect critical phases of its life cycle. Moreover, gained information can be used to plan actions for conservation of this species and management of the sites where it grows.

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INDICE