

Integrated approach for the *in situ* and *ex situ* conservation of woody species of conservation interest in the Sardinian Forest Agency territories

A. Casula¹, M. Porceddu²⁻³, G. Bacchetta²⁻³, E. Mattana⁴, G. Cinus¹, G. Cubeddu¹, D. Cogoni², G. Fenu⁵

¹Ente Foreste della Sardegna. V.le Merello, 86 – 09123 Cagliari.

²Centro Conservazione Biodiversità (CCB), Dipartimento di Scienze della Vita e dell'Ambiente, Università degli Studi di Cagliari. V.le Sant'Ignazio da Laconi, 11-13 - 09123 Cagliari.

³Hortus Botanicus Karalitanus (HBK), Università degli Studi di Cagliari. V.le Sant'Ignazio da Laconi, 9-11 - 09123 Cagliari.

⁴Royal Botanic Gardens, Kew, Wellcome Trust Millennium Building. Wakehurst Place, Ardingly, West Sussex RH17 6TN, UK.

⁵Dipartimento di Biologia Ambientale, "Sapienza" Università di Roma. P.le A. Moro 5, 00185 - Roma.

Corresponding author: Antonio Casula (acasula@enteforestesardegna.it)

Sardinia, the second largest Mediterranean island, thanks to its isolation and high geological diversity, presents a wide range of habitats with high rates of plant endemism, particularly in mountainous areas where ecological insularity conditions occur. Thus, a representative number of endemic species are mainly located in mountainous areas, and most of these fall within forest sites managed by the Sardinian Forest Agency (EFS). However, despite their high diversity and the threats affecting many endemic species living in these places, so far, at the regional level, few conservation biology studies have been carried out.

In 2010, EFS financed a five-year project at the Biodiversity Conservation Center (CCB - University of Cagliari) for the protection of woody species of conservation interest at high extinction risk. The project included a preliminary selection of plant species based on a specific priority list, to draft which 11 parameters considering rarity, threats and protection status of all forest species present in Sardinia were considered. Particular attention was paid to endemic forest species, which were awarded additional points. The elaboration of this list identified 15 woody plant species at the greatest risk of extinction, and on these *taxa* integrated *in situ* and *ex situ* conservation programs were started. For the selected plant species (three per year), populations were characterized through long-term *in situ* studies and monitoring activities. Simultaneously, long-term germplasm conservation was activated at the Germplasm Bank of Sardinia (BG-SAR). In addition, detailed studies concerning ecology, conservation status assessment and germination ecophysiology were carried out on the species of greatest conservation interest.

The different project actions were mainly developed within the EFS forest sites, ensuring the island's integrated plant diversity conservation. Thanks to the greater attention paid to endemic species, the criterion of "regional responsibility" was followed as the basis of the CCB conservation actions.

Keywords: conservation biology, germination ecophysiology, monitoring, Sardinia, woody plants.