

### **Forest restoration in the Mediterranean region of Turkey**

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Turkey stands out with high biological diversity. Undulated topography varying in short distances along with great climatic variation has greatly contributed to this rich biological diversity. In this heterogeneous topography and climate, there exist many fragile forest ecosystems. The Mediterranean part of the country stands out with environmental conditions that are often not very conducive to plant establishment and growth. Typically, this region has long hot and dry summer seasons. Frequent forest fires, drought, soil erosion and sodification are among the ecological stresses in today's forest ecosystems. The Mediterranean Region of Turkey has hosted many civilizations throughout the history. Anthropogenic disturbance has therefore been another major player in the system, shaping up the region's forestlands. There is still considerable human population living in small villages in the forestland in the region. These communities largely depend on forests, agriculture and animal husbandry for living and put pressure on forest resources. Overexploitation, tourism, urban development, grazing, and mining are major issues that Turkish foresters have to tackle and protect already fragile forest resources. The governmental forestry agencies had attempted to address the restoration issues with many expensive afforestation projects in the area, which were however concluded with major disappointment. The agencies has recently changed its approach and begun to implement ecological restoration projects supplemented with socio-economic measures. Natural regeneration supplemented with seedling and planting, converting coppices to high forests, and afforestations through terraces on steep slopes, prioritizing the local forest communities for forestry jobs, afforestation with income-generating native tree species, establishing stands with beekeeping, restoration of pastures within forestlands for grazing, providing loans with no or low interest rates for housing are among the integrated rehabilitation efforts implemented in this region to mitigate the impact of anthropogenic and environmental stresses.

### **Conservation of forest biodiversity in Sicily: contribution of the University of Palermo Germplasm Bank (Italy)**

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Germplasm Banks dedicated to the wild plants seeds conservation play a unique role in integrating the *in situ* conservation of endemic, rare or endangered plant species. One of the missions of the Seed Bank of the University of Palermo (HBP-Bank) is to support the conservation of biodiversity with particular attention to the spectrum of genetic diversity of plants belonging to Mediterranean habitat. *Abies nebrodensis* (Lojac.) Mattei is a relict species consisted of 30 natural individuals, gathered in a small area of the Madonie Natural Park in Sicily (1500 -1600 m above s.l.), recorded on the checklist “TOP 50 Mediterranean Island Plants”. It is also one of eight conifers species critically endangered because of reproductive biology issues. *A. nebrodensis* species has been monitored *in situ* in order to evaluate the state of conservation of natural population and to implement the number of individuals. Its preservation has been integrated since 1994 with *ex situ* conservation of 83 accessions in the HBP-Bank in the long-term conservation conditions. The scientific strength of HBP germplasm collection is supported by results of several studies on taxonomy, seed biology and genetic diversity.

The embryonic loss observed into seeds produced in natural environment can reduce the genetic variability of germplasm collection. This study, carried out on the *A. nebrodensis* population, demonstrates that a five-year planning is needed to collect enough seed to represent the genetic variability intra-population. This seed collection scheme can represent a useful tool to apply on other forest endangered species spread in Sicily and in the Mediterranean area.

### **Atlas cedar regeneration and structure at forest edges (Djurdjura, Northwestern Algeria): role of microsite and anthropogenic disturbance**

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*Cedrus atlantica* forest stands are reported (mainly from a floristic perspective) to be subject to anthropogenic disturbance and microclimate constraints regarding the initial regeneration stages, but data on stand structure to illustrate constraints are lacking. The present study is an attempt to provide some data on the regeneration and structure stand at Atlas cedar forest edges.

The study was undertaken on plots of 25×25 m or 25×50 m. The sampling procedure included the type of cover (pure and mixed Atlas cedar -holm oak stands), elevation (low, intermediate and high) and slope. Structural features (tree height, diameter and density of individuals) were examined on *Cedrus atlantica* and associated ligneous species within.

The results revealed a structure dominated by Atlas cedar in the overstory, while the understory comprised few trees and shrubs of *Quercus rotundifolia*, *Juniperus oxycedrus*