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# Reforestation of degraded Kermes oak shrublands with planted pines: effects on vegetation cover, species diversity and community structure

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**Abstract** This paper examines the results of plantings of the Mediterranean pine species, *Pinus halepensis* and *Pinus pinea*, in a degraded Mediterranean kermes oak (*Quercus coccifera*) shrubland in Northern Greece, which were accomplished in order to mitigate ecosystem degradation. Plant establishment and the vegetation differences between the degraded ecosystem's previous state and the new state following reforestation were measured in order to evaluate the effect of reforestation. Monitoring of the seedling survival and growth of the planted species was carried out during the next five years. In the fifth year we conducted botanical inventories in 18 and 15 plots (50 m<sup>2</sup> in size) from the reforested and control area, respectively. Plant community parameters estimated were: vegetation composition, total plant cover, planted species cover, native woody, herb and grass species cover, plant species richness, Shannon-Weiner index, community structure and dominant plant height. *P. halepensis* exhibited higher survival and growth than *P. pinea*. The reforested area exhibited higher plant diversity, higher vegetation cover, taller plants and more complex community structures than the control area, which concludes that plantings of pines can be successfully used in degraded ecosystem reforestation projects, in areas with similar site conditions.

**Keywords** Diversity · *Pinus halepensis* · *Pinus pinea* · Plantings · Reforestation · Species richness

## Introduction

Ecological restoration can be defined as “the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed” (SER 2004). Assisting ecosystem recovery augments biodiversity and ecosystem services, at the landscape scale (Aronson et al. 2006). Restoration of degraded ecosystems is of high importance in

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