

Abstract :

Palatable exotic shrubs plantation in heavily degraded rangeland has been massively managed in arid and semi-arid Algeria. An associated effect observed to these managements is an increase of plant richness in these plantations due to positive interactions involving nurse species that ameliorate stressful environmental conditions. Our objective was to assess the importance and impact of nurse age on the recovery of herbaceous plant species richness. The impact of the shrub presence on the spatial repartition of herbaceous plant richness was quantified, and we tested whether it remains constant with nurse growth and ageing. Using cumulative species richness on radial transects from the nurse centre to nurse external canopy we described the spatial patterns of plant species richness around different *Atriplex canescens* from saplings to senescent individuals. Resulting cumulative radial species curves were modelled using linear and non-linear models and tested against null models. Nurse volumes and overall plot species richness exhibited a sigmoid shape from 2 to 15 years. The best-fitted models of the radial cumulative species richness changed with the nurse age. In young life stages, a strong positive effect under the shrub was detected. At intermediate life stages, the richness in the subcanopy was significantly impoverished whereas cumulative richness sharply grew under the shrub external canopy. At senescent life stage, cumulative species richness did not indicate a remaining effect of the shrub. An improved description of planted shrubs nurse effect consequences on plot richness is provided and suggests that late plantation opening to stock can concur to the maximization of species richness in afforested plots.