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Analysis of the Livestock Passive Forest Restoration in the Tamaulipan Thornscrub in Northeast México

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Abstract

Around 29% of earth surface is used for livestock by establishing permanent grassland or sowing to produce fodder. In Mexico the area having livestock activity is 110 million hectare equal to around 56% of Mexican territory. Thornscrub is the most abundant and historically mostly used for livestock in desert and semi-desert zones in Mexico. The objective of the present study is to analyse the passive forest restoration after livestock overgrazing in Tamaulipan Thornscrub in the northeast of Mexico. Two study areas were selected, one having history of livestock use and 30 years of passive forest restoration, and a second area as reference. Four sampling sites of 40 m × 40 m each (1600 m²) were established in the study areas. In these sampling sites all the bushes and trees with diameter >3 cm (considering a height of 10 cm) were evaluated. Ecological indicators such as abundance, dominance, frequency, importance value index, Margalef index, and Shannon Wiener index were considered. In order to evaluate if significant difference exists in the variables for the evaluated areas the mean values of the sampling sites were calculated and an analysis of variance was performed. In the area used for livestock, two dominant species were registered (*Acacia farnesiana* and *Prosopis glandulosa*) with 97% of absolute dominancy and the remaining 3% divided into 10 species. Of the 3050 subjects counted 60% belong to *Acacia farnesiana*. The diameter distribution showed that from the total of *Acacia farnesiana* subjects 57% have between 0 to 10 cm of diameter, indicating that there is an active regeneration. The research showed that the passive restoring area presents significant difference ($p < 0.05$) compared to the reference area in all the variables (density, crown cover of trees, richness and density).

Keywords: Abundance, density, Margalef, Shannon