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Assessment of Diversity in Areas with History of Use in Forestry, Agriculture and Cattle Grazing Activities in the Tamaulipan Thornscrub, Mexico

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Abstract

The Tamaulipan Thornscrub is the second ecosystem more impacted in Mexico and there insufficient information about your restoration. This research assessed the shrub species in the Tamaulipan Thornscrub, of Northeast of Mexico, in three areas with different historical of use; cattle grazing, agriculture and clear-cutting, on which technique was applied as restoration, the exclusion of activities for forestry, agriculture and cattle grazing for a period of 21 years. The objective was assessing the recuperation of the areas without anthropologic activities and an comparative analysis of species richness, diversity and ecological parameters of arboreal layer in the three areas with different historical of use. In each area were established 4 sites for sampling of 250 m², where obtained height (h), diameter (d0.10) and crown (N-S, E-W), with the values obtained are estimated the ecological indicators of abundance (Ar), dominance (Dr), frequency (Fr) and importance value index (IVI), the richness index of Margalef (DMg), of diversity index of Shannon (H') and an analysis of variance (ANOVA) for compare statistically the areas. The results showed that technique of exclusion of areas is an effective method of rehabilitation in the Tamaulipan Thornscrub, due to heliofilas shrub species and nitrogen fixing that after the cessation of activities are pioneers. The richness ($S \geq 20$) and diversity ($H' \geq 2.10$) of shrub species of the three areas is higher that pristine ecosystem. According of analysis of variance ANOVA the areas assessed showed significative difference in diversity ($P=0,019$), according the Tukey test, clear cutting area ($1,68 \pm 1,14$) not is significative different with agriculture ($1,27 \pm 0,92$) and cattle grazing, while that agriculture and cattle grazing are different. The research contributed important information for the rehabilitation and restoration of affected areas for activities of forestry and cattle grazing in the Tamaulipan Thornscrub.

Keywords: Ecological indicators, exclusion of areas, rehabilitation