



Deutscher Tropentag, October 8-10, 2003, Göttingen

“Technological and Institutional Innovations
for Sustainable Rural Development”

Spatial Continuity in a Multicohortal Ecosystem in the Natural Protected Area Cerro Potosí, Nuevo León, México

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Abstract

The Dynamics in a Forest express how ecosystem composition evolves in time and space. In forest stands, variations in any of the elements originates a dynamic expression at spatial level: floristic association, number of individuals, the strata structure, and the age categories, at this point the different age phases of a stand, express both temporal dynamics and the temporal continuity of the ecosystem.

The goal of the study was to document the spatial continuity and growth dynamics of *Pinus culminicola*, along elevational gradient and differences in the growing conditions. Such information helps to determinate the floristic association and its respective grade of association with others species present in the area. The study area is situated in Nuevo León, starting at 3100 m. The permanent plots samples were located along three different elevational gradients in which three permanent plots were also established.

According the analysis of the collected information, we found that the elevational factor is the variable that affects basically the species distribution. This variable affects the number individuals between the species, *P. culminicola* and *P. hartweggi*. The continuity from this ecosystem can be analyzed using the regenerational patterns of *P. culminicola*. Using coverage as dependent variable to modelling regeneration, the regeneration is expressed according the next function: using this function we apply a series of mathematical models trying to adjust the best tendency. Using the coverage, the capacity of regeneration in this area is low in the gradient nr 1 (3100 m) and then exist an increment in the second (3300 m) and in the last gradient (3500 m) exists a decrease in the regeneration capacity. Considering this type of analyzes concerning the population structure of the community, it is an appropriate method to describe the vegetational dynamic of the species present in Cerro Potosi. This is very important, because this is an endemic species from the subalpine areas from Northeast Mexico, which requires precise methods to preserve this species in the future.

Keywords: Forest dynamics, *Pinus culminicola*, spatial patterns, spatial structure