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Space - Time Analysis of Forests Attacked by *Dendroctonus mexicanus* (Coleoptera: Curculionidae) in Nuevo Leon, Mexico

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Abstract

The mexican pine beetle, *Dendroctonus mexicanus* Hopkins (*Coleoptera*: *Curculionidae*: *Scolytinae*), is among the most important agents of ecological disturbance and economic loss in pine forests from South-Eastern United States to Guatemala. It is considered as a polyphagous insect within the *Pinus genus*.

In recent decades, the Mexican pine beetle (*Dendroctonus mexicanus*) increased the infested area of *Pinus cembroides* Zucc. forests of southern state of Nuevo Leon, Mexico. To understand the attack behaviour of this bark beetle we implemented a surveillance system in Aramberri, south of the state of Nuevo Leon, Mexico. The monitoring was conducted from October 2008 to October 2012 in 11,693.5 ha of *Pinus cembroides* forests. The monitoring system included aerial and ground surveillance to detect outbreaks of *Dendroctonus mexicanus* spots. Every two years the infested area was quantified as well as the topographical characteristics and the direction of the spreading heads. Between October 2008 and October 2012, *D. mexicanus* infested 1428.95 ha of *P. cembroides* forests (12 % of the forest). The number of hectares damaged was down significantly from the beginning of the experiment in 2008 when there were 438.5 ha to the last assessment in 2012 when we found only 74.1 ha attacked. Most infestations were presented at the summits and upper parts of the slopes, the spreading heads had a downward movement. The success of bark beetle populations could also be influenced indirectly by the effects of climate on community associates and host-tree vigour, although little information is available to quantify these relationships.

Keywords: Bark beetle, *Dendroctonus mexicanus*, *Pinus cembroides*, Scolytinae, spatio-temporal

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