CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J0901

Project Title
Thirsty Trees, Hungry Beetles: What Is Happening to Our Local Forests?

Abstract

Objectives/Goals
My family owns a cabin in the San Jacinto Mountains. Five years of severe drought has led to weakened trees and noticeable changes in the forests which are under attack by several species of bark beetles. The bark beetle problem has led to much tree mortality in the San Jacinto Forest. This study was conducted to try to determine which tree species at different elevations in the San Jacinto Mountains are most affected by bark beetles.

Methods/Materials
Interviews with forest rangers, naturalists, biologists, and entomologists were conducted to learn more about the problem and how to identify signs of beetle infestation. Data was collected from the Idyllwild Nature Center, and other local sources. Multiple 10mX10m plots of land were measured at elevations of 1,310m(4,300 feet), 1,615m(5,300 feet), and 1,890m(6,200 feet). Trees in each plot were identified with the help of a tree identification guide. The health status of the trees, and signs of bark beetle infestation were noted.

Results
At the 1,310m(4,300 feet) elevation level, Ponderosa pines sustained the most damage. At 1,615m(5,300 feet) Jeffrey pines were most affected, and at the elevation of 1,890m (6,200 feet) sugar pines were most damaged. The average tree mortality in the plots observed was found to be 23%.

Conclusions/Discussion
Cedar trees were not found to be damaged. Oak trees did suffer some damage, but it was difficult to decipher how the trees had died. Although different trees were found to be more susceptible at different elevations, this may be due to the fact that different trees thrive at different elevations (and so are more numerous and more affected). Recommendations for further research include measuring larger plots at several other elevations. This would allow for a more accurate assessment of tree mortality.

Summary Statement
This project investigated which tree species were most affected by bark beetle damage at different elevations in the San Jacinto Mountains.

Help Received
Interviews were held with:Laura Merrill, Ph.D. entomologist; Shelly Kibby, Director of the Idyllwild Nature Center; forest rangers: Chief Glen McWilliams, Joe Grammer, Jim Kutsch; Forest Sevice Dept.: Dave Jason, Roma Rodriguez; biologist Ann Poopatanapong. Thanks to my parents for driving me.