

Elvenia J. Slosson Endowment Fund Project Progress Report  
July 1, 2002 – August 21, 2002 (Year 2 of a 3 year project)

Title: Interactions of Tactics for Management of Eucalyptus Insect Pests.

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## **I. INTRODUCTION**

Eucalyptus trees have been planted in the California landscape for at least the last 150 years because of their rapid growth, drought resistance, and lack of damaging pests and diseases. The first important insect pest of eucalyptus in California was identified in 1984, and the state has been accumulating new pests at an average rate of one every year since that first discovery. We have been developing pest management solutions for individual pests over the last 15 years. However, it is now clear that this approach requires refinement.

The ornamental horticulture community and home gardeners have been placed in a difficult management position because the recommendations they have received for control of one pest may exacerbate problems associated with another pest. For example, recommendations to water and fertilize to enhance tree vigor and resistance to eucalyptus longhorned borers may create trees that are more susceptible to red gum lerp psyllid and eucalyptus tortoise beetle. Systemic insecticide applications for control of the psyllid may disrupt the effectiveness of biological control.

We are examining the interactions among pest management strategies and the impact on the different classes of pests (borers, sap feeders, and defoliators). The results from the study will enable us to develop optimized pest management recommendations aimed at the complex of pests rather than individual pests, to ensure that the complex of pests is controlled below damaging levels. The results will be made available to a variety of home gardener and commercial clientele through presentations, UC Cooperative Extension, and print and Web-based publications.

## **II. OBJECTIVES AND TIMETABLE**

Objective 1. Determine if cultural practices of high levels of irrigation and nitrogen fertilization implemented to improve resistance of eucalyptus trees to borers result in increased suitability and susceptibility of foliage to leaf beetles and psyllids.

Objective 2. Test whether soil-injected systemic insecticides applied to protect trees against red gum lerp psyllid, tortoise beetle, and borers have negative impact on their natural enemies.

Objective 3. Determine if there is an interaction between water and fertilization treatments, systemic insecticide efficacy, and impact on natural enemies.

## **III. LAY SUMMARY OF ACCOMPLISHMENTS**

The project is a three-year effort and we are on schedule for completion of the proposed research. During the first six months of the project, we implemented all of the

experimental nitrogen and irrigation treatments and increased the number of red gum trees in the experimental plots. Tensiometers have been established in the plots to monitor soil moisture levels. The insecticide treatments have been applied to the appropriate blocks of trees. In cooperation with Dr. Don Dahlsten at UC Berkeley, we have also released parasitoids of the red gum lerp psyllid in adjacent groves of eucalyptus. The parasites are established and have colonized our experimental plots. We are sampling leaves from all trees to determine the natural levels of infestation by both the psyllid and the leaf beetle and the rates of parasitism.

The study is in the middle of the field season and, consequently, the results are incomplete. The caging studies with the psyllids and the leaf beetle await completion of cage construction. The trees in the experimental plots are beginning to produce flower buds and we are preparing to begin the parasitoid feeding studies to evaluate the impact of nectar from control trees and trees treated with insecticide on parasitoid survival. The phenology of the trees will determine when this portion of the project is initiated.