



CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION

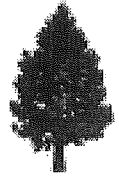
Gray Davis
Governor
State of California

Andrea E. Tuttle
Director,
CDF

Mary D. Nichols
Secretary for Resources
The Resources Agency

NUMBER 24

NOVEMBER 1999



TREE NOTES

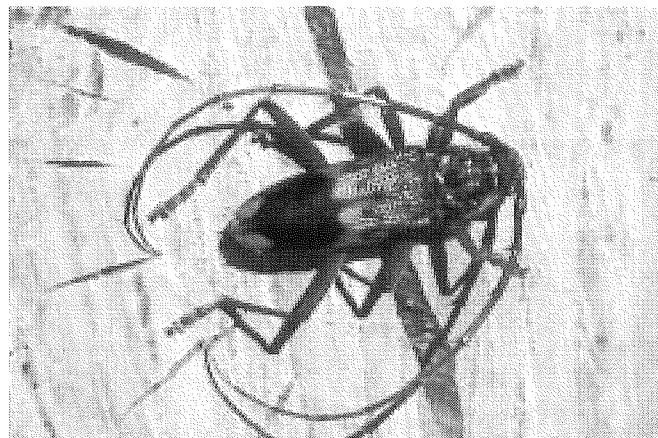
New Pests Threaten Urban Eucalyptus

Bruce W. Hagen¹

Eucalyptus trees, once virtually pest-free, are now plagued by a growing number of serious new insect pests. Their continued use and the survival of certain species in the urban landscape are threatened. Eucalyptus trees have thrived in California since their introduction from Australia more than a 130 years ago. The first sign of trouble came in 1984, when the eucalyptus longhorned borer (ELB), a native of Australia, was found killing eucalyptus trees in Southern California. This beetle, which has caused much widespread damage, is now found throughout much of California. More recently, another Australian borer, commonly known as the "yellow phoracantha" has joined it. A serious defoliating pest, the eucalyptus snout beetle, was detected on blue gums in Ventura County in 1995. Perhaps of even greater concern is the recent arrival of the redgum lerp psyllid, a sap-feeding insect, which has caused widespread defoliation of redgums throughout much of the Los Angeles Basin and other areas of the State. At least five other psyllids, two gall-forming wasps and another leaf-feeding beetle have been found – all of which are native to Australia. In their native habitat, none are considered to be serious pests. Their populations are, for the most part, kept in check by their natural enemies. In California, population buildup and spread of these new pests, which were accidentally introduced, has been rapid because their natural control agents were absent.

Eucalyptus trees have become an important component of the urban forest landscape. They tolerate a wide range of environmental conditions and can be found flourish-

ing along the coast, inland valleys, the Central Valley, the surrounding foothills and the arid areas of Southern California. They have been used for windbreaks, wood and biomass production, and for shade and ornamental purposes in highway, street, park and residential plantings. Large stands of blue gum and river red gum planted for windbreaks can be found from San Diego to Redding. Various eucalyptus species populate virtually every lowland area of California.



Adult eucalyptus longhorned borer

There are more than 500 species of eucalypts in Australia, occupying many different habitats. Eucalypts are absent from the dry interior of the continent except for where they find refuge in a few isolated mountain ranges or along intermittent streams. Eucalypts dominate high rainfall woodland areas

while some extend into drier inland areas. Some species grow along riverbanks and in flood planes. Although many species of eucalyptus appear to grow well in California, few are well adapted to its arid climate. California's climate is much like that of the Mediterranean where the summers are dry and the winters wet. Thus, most species, unless irrigated, suffer varying degrees of drought stress during the summer. Susceptibility to borers and other pests greatly increase when trees are stressed by drought. Nearly all eucalyptus species will benefit from regular and thorough irrigation during the summer. Their rapid growth rate, attractive branching and bark, lacy foliage, relative tolerance to drought and urban conditions, and their, until recently, pest-free status, have made them a popular choice for city arborists, landscape architects and homeowners. Many new species have been introduced into the urban landscape in recent years, and

Irrigation:

Regular irrigation will help promote vigor and prevent drought stress which often leads to increased susceptibility to borers and other pests like psyllids. Trees receiving adequate irrigation are seldom successfully attacked by ELB. Monthly irrigation during the summer, particularly during prolonged dry periods, is recommended. Apply water within and around the dripline, avoiding the area close to the trunk. Allow the water to penetrate into the soil to a depth of 6 to 8 inches. Frequent, shallow irrigation provides little benefit and frequent heavy irrigation can promote root disease.

Fertilization:

Poor growth is usually the result of poor growing conditions, environmental stress, substandard tree care or root disease rather than mineral deficiencies. Trees stressed by drought, poor soil aeration, inadequate light, root disease, etc., may not respond to fertilization. Improving the rooting environment through mulching, judicious watering, aeration (shallow holes or careful soil loosening) will often improve tree growth. The yearly application of coarse, wood-chips mulch will also provide nutrients upon break down. This is a more natural way to fertilize trees.

Most trees growing in relatively fertile soils grow reasonably well, although young established trees, particularly those growing in infertile soils, usually grow more quickly with fertilization. Mature trees, on the other hand, can adapt to reduced soil fertility by slowing growth to maintain a healthy appearance. Moderately slow growth in mature trees is generally normal and desirable. However, moderate to severe nutrient deficiency can cause abnormalities and poor growth. Mineral deficiencies may occur in mature trees because much of the available nitrogen is tied up plant growth, and nitrogen recycling and deposition is inadequate to satisfy demand. Phosphorous and potassium are seldom lacking in California soils. Trees in landscaped areas where the leaf litter is regularly removed, or where there is extensive landscaping, e.g., turf or ground covers, etc. may benefit from low to moderate fertilization every three to five years. Drought stressed or root-injured trees should be fertilized sparingly, if at all, unless a mineral deficiency has been diagnosed. The over-stimulation of trees with fertilizer may result in excessive growth, limited root development, reduced drought resistance and increased susceptibility to certain pest problems, e.g., aphids, scale, psyllids, mites, canker diseases and others, etc. This often increases maintenance costs. If you do fertilize use a slow-release formulation and use at the lowest recommended rate.

Sanitation:

Remove dead branches and trees without delay. Dispose of all woody debris at an approved disposal site. Wood kept for burning must be placed in a sunny location and

securely covered with 6 mil, ultraviolet-resistant, clear polyethylene tarping for at least 6 months. This will prevent new beetles from attacking or resident beetles from emerging and flying to nearby living eucalyptus.

Pruning:

Except for hazardous branches, which should be removed without delay, prune during December and January when adult ELB and Yellow Phoracantha beetles are inactive. Destructive pruning, e.g., topping and excessive foliage removal diminishes health, safety, longevity, aesthetics, environmental benefits, and property value. Proper pruning minimizes foliage removal and avoids significant changes to the tree's natural shape, growth habit and size. This saves money, reduces impact on health and maintains maximum environmental benefits.

When done improperly, pruning can be destructive. Severe (hard) pruning can kill or seriously weaken trees by removing too much foliage. This diminishes food production (photosynthesis) causing stress, which may result in energy depletion, dieback, increased susceptibility to pests, or decline. Problems, however, seldom develop when pruning cuts are few in number, kept small and properly made.

Horticultural:

Select eucalyptus species that will tolerate the local conditions, particularly the prevailing moisture availability. Certain species are tolerant of hot and arid climates. Furthermore, careful species selection may help to prevent the most prevalent pest problems.

Chemical:

Chemical treatment may be necessary to avoid injury to high value trees. Monitor regularly and act when damage threatens to become unacceptable. Use the least toxic, least persistent, and most host-specific products, e.g. insecticidal soap and horticultural oils, Abamectins (Avid), Spinosins, (Conserve), *Bacillus thuringiensis* (B.T), Nemazid (neem), imidacloprid ("Merit,") and permethrin (Dragnet and Astro). Time treatment to optimize effect. Merit, which is effective against most sap-feeding insects may provide good control for the psyllids until natural control is achieved. Consult a pest control advisor or your nearest University of California Cooperative Extension Office for pesticide recommendations.

Bruce Hagen is an Urban Forester with the California Department of Forestry and Fire Protection
135 Ridgway Drive, Santa Rosa CA 94401
(707) 576-2936
e mail: bruce_hagen@fire.ca.gov