

New Eucalyptus Pests in California

by Karen Wikler

Though eucalyptus trees were introduced into California over 150 years ago, they remained relatively pest-free until the mid-1980s. The first major eucalyptus pest, a longhorned borer, first showed up in southern California in 1984. Since then, approximately one new eucalyptus pest has been introduced into California every year, and at last count, there were 18 new pests. Unlike Australia, where eucalyptus pests have numerous natural enemies, the same insects in California can become very problematic and cause widespread damage to eucalyptus trees. Furthermore, eucalyptus trees in California are often planted in non-optimal environments, causing the trees to become stressed and more attractive to the insect pests. Therefore, many of the eucalyptus pest control programs focus on cultural practices which enhance tree health, as well as the importation of natural enemies to help control the pest populations. Below is some information on four of these new pests:

Phoracantha semipunctata, a eucalyptus longhorned borer, was the first major eucalyptus pest introduced into California. It was first identified in Orange County in 1984, and it is now widely distributed on eucalyptus trees throughout the state. The female borers lay their eggs under loose bark or in cracks and crevices on tree stems, and the larvae bore through the outer bark of the tree and mine through the phloem, cambium, and outer layers of xylem. As a result, larval feeding in live tissue can girdle and quickly kill the colonized trees. After the larval feeding period, the insects bore deep into the wood to construct a pupal chamber; the adults later bore out and emerge to search for mates and begin a new generation. Interestingly, larvae are unable to bore through eucalyptus bark which contains over 55% moisture (the larvae functionally drown as they attempt to plow into the bark); therefore, maintaining an irrigation schedule to keep eucalyptus well-hydrated has proven to be an effective borer barrier. Furthermore, the beetles are attracted to volatiles released by stressed trees, so activities which can create additional stress, such as pruning or transplanting, should be performed when the adult borers are not active (generally in December and January). University of California researchers have also identified an Australian parasitic wasp, *Avetianella longoi*, which lays its eggs into those of the longhorned borers', and the wasps kill the host eggs. These egg parasitoids have been reared in large numbers and released in northern and southern California. The wasps are highly effective at locating and killing *P. semipunctata* eggs, and there has been a dramatic reduction in the number of eucalyptus trees killed by *P. semipunctata* since the wasps were released.

A second borer species, *P. recurva*, was found in California ten years after the arrival of *P. semipunctata*. Both species have similar ecological niches, but the parasitic wasp, *A. longoi*, seems to prefer *P. semipunctata* eggs. However, two other parasites have been released, but it is still too early to assess the impacts of the new parasites on the borer populations. Cultural and sanitary practices which reduce *P. semipunctata* damage, such as careful water management of live trees and the proper disposal of wood (such as

burying, chipping, bark removal, or solarization), contributes to controlling *P. recurva* populations.

The red gum lerp psyllid (*Glycaspsis brimblecombei*), another Australian native, was first reported in California on red gum in Los Angeles County in June 1998, and was found in northern California at Ardenwood Farm East Bay Regional Park one month later. The psyllid nymphs and adults suck plant juices through their straw-like mouthparts, and infestations can cause defoliation and tree mortality. The stress caused by the psyllid feeding also makes the trees even more susceptible to the wood borers described above. The red gums, most notably the river red gum (*Eucalyptus camaldulensis*), are much more susceptible to the psyllid than blue gums. A natural enemy of the lerp psyllid has been identified from Australia, reared in an insectary, and released at selected field sites in California. Surveys indicate that the parasitoid has become established throughout the state, and some trees which were previously infested are beginning to re-leaf. Furthermore, preliminary research indicates that the lerp psyllid favors water stressed trees, thus the water regime prescribed to protect trees from longhorned borer attack also increases resistance to the red gum lerp psyllid.

Trachymela sloanei, the eucalyptus tortoise beetle, was first detected in Riverside County in 1998. Because these beetles feed on young leaves and tender stems, and clip off young leaf shoots as they begin to expand, the beetles are particularly damaging to trees which are in the process of re-leafing after sustaining damage from other eucalyptus pests. The tortoise beetle is active at night, and is difficult to detect because it is well camouflaged and hides under loose bark during the day. An egg parasitoid (*Enoggera reticulata*), which previously proved to be an effective biological control agent for a tortoise beetle accidentally introduced into South Africa, was recently released in an attempt to control *T. sloanei* in California. Monitoring is currently underway to determine the effectiveness of the bio-control agent.

Because natural enemies are essential for the long-term control of the newly introduced eucalyptus pests, broad spectrum pesticides should not be applied to eucalyptus trees. Any rapid population decline of the natural enemies would likely lead to further outbreaks of the pests.

References (and for more information and pictures):

- Dreistadt SH, RW Garrison, and R Gill. 1999. Eucalyptus redgum lerp psyllid. [UC DANR Pest Note, Publication 7460](#).
- Paine TD, DL Dahlsten, JG Millar, MS Hoddle, LM Hanks. 2000. UC Scientists apply IPM techniques to new eucalyptus pests. *California Agriculture* 54(6): 8-13.
- Paine TD, JG Millar, and SH Dreistadt. 2000. Eucalyptus longhorned borers. [DANR Pest Note Publication 7425](#).