

# THE EUCALYPTUS LONGHORNED BORER

A new insect pest is threatening California's eucalyptus trees. So far, there aren't many solutions to the growing problem.

by Dr. A.D. Ali, Janet S. Hartin, and Dr. T.D. Paine

**T**he eucalyptus longhorned borer (ELHB), *Phoracantha semipunctata* (F.), is an exotic beetle now attacking eucalyptus trees in southern California.

Adults are 1-1½ inches long, dark brown with two yellow zig-zag lines and two yellow oval dots on the wings. The beetle belongs in the family Cerambycidae whose members generally possess a pair of antennae as long or longer than the body, hence the name "longhorned."

This pest was first detected in October, 1984, in El Toro (Orange County). Since then, infestations have spread to six southern California counties ranging from Camp Pendleton, San Diego County; north to Simi Valley, Ventura County; inland to Redlands, San Bernardino County; and Hemet in Riverside County.

## Life cycle and damage

Adult ELHB fly only at night and hide under loose eucalyptus bark in the day. Mated females lay eggs under loose bark in masses ranging from 10-100 eggs.

The larvae hatch in 10-14 days and feed superficially on the bark, leaving dark trails up to 1 inch in length.

As they increase in size, the larvae start boring inside the bark and feed in the cambium layer. The larval stages known as roundheaded borers cause most of the damage.

Larvae tunnel through the phloem

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The eucalyptus longhorned borer as an adult beetle (A) and as a larva (B). The larvae cause the heaviest damage to Eucalyptus trees.



The feeding galleries of the eucalyptus longhorned borer. Note the parallel galleries.

and cambial tissues as they feed, producing galleries that usually run parallel to each other and are tightly packed with frass (fecal pellets which the larva produces as it feeds). These tunnels widen as the larva grows and may reach three times the width of the larva's head region.

This feeding disrupts the movement of water and nutrients through the plant, which leads to the death of infested limbs and branches. Under severe infestations the main trunk can be girdled, resulting in tree death.

As the larva matures it starts boring into the wood up to a distance of 4-6 inches where it constructs a pupation chamber. The pupa, the intermediate stage between the larva and the adult, remains protected deep inside the tree until maturity.

At that time it transforms into an adult and emerges through characteristic oval-shaped exit holes on the trunk, completing the life cycle.

Under warm conditions, the cycle from egg to adult can be completed in two months. In cooler climates, this cycle may last as long as nine months. Consequently, in California this pest may have two or three overlapping generations per year.

To date, ELHB has only been found in eucalyptus species in California. Reports from other countries indicate that other trees in the Myrtaceae can be attacked as well. These include the gum myrtle (*Angophora* spp.) and the turpentine tree (*Syncarpia* spp.)

## Cultural control

Although adult females lay their eggs on healthy, weakened, and dead eucalyptus trees, the larvae can only establish their infestation on weakened or dead trees.

Deep watering and proper fertiliza



The eucalyptus tree in the center shows symptoms of damage due to the longhorned borer.

tion which keep trees in good vigor are recommended to discourage ELHB attacks. Healthy trees produce copious amounts of dark sticky gum which drowns and kills penetrating larvae.

Dead trees and those weakened by physiological or moisture stress lack the ability to defend themselves. Branches and whole trees which have succumbed to ELHB attacks are brown in color and retain the dried up leaves.

When this situation is encountered, the affected branches and dead trees must be removed and disposed of through incineration or burial to a depth of 6-8 inches. This will prevent adults from emerging and spreading the infestation.

Adults can fly over distances up to nine miles. However, the physical transportation of infested eucalyptus logs may be the biggest cause contributing to fast spreading infestations in southern California.

Thus it is necessary that eucalyptus logs used for firewood be thoroughly inspected for infestation before transport. Furthermore, firewood logs should be arranged in uniform piles and covered with a thick plastic tarp.

The tarp prevents adult beetles from detecting the wood pile and depositing eggs on it. And, if the pile already contains an infestation, it prevents those adults from emerg-

ing and spreading.

#### Chemical control

Adults and eggs of the ELHB are sheltered under loose bark, whereas larvae and pupae are protected inside the trunk. Consequently, the use of foliar applications of insecticides is not recommended due to the difficulty of getting the material in contact with any stage of the pest's development.

Two other considerations also limit the effectiveness of foliar applications against this insect.

The first is the height of trees, especially those planted in windbreaks that may be more than 100-years-old. Coverage becomes a problem with such trees that are 100 feet or taller.

The other problem with using foliar applications of insecticides is the lack of distinct generations or "peak flight" of this insect which would better allow timing of applications.

It is believed that two or three overlapping ELHB generations occur in California and adult females may live up to six months. This has led researchers at the University of California in Riverside to initiate studies for controlling this pest with systemic soil-injected insecticides.

The objectives are to determine efficacy and to document the economic feasibility of such control practices in both windbreak and woodlot eucalyptus plantings.

#### Biological control

Due to the wide-area planting of eucalyptus alongside highways, in parks, woodlots, and backyards, it seems that long-term control could be achieved through the use of biological agents.

However, not many native predators or parasites feed on this introduced pest.

While a predaceous mite has been observed feeding on ELHB eggs in California, the quantitative impact of such mortality has not yet been assessed.

In its native Australia, ELHB is attacked by numerous biological agents including both predators and parasites. Researchers at the University of California in Riverside are studying the feasibility of introducing parasites from Australia into California to combat this pest problem.

#### No long-term solutions

The use of cultural practices (keeping trees in good growing condition, cutting and destroying infested limbs and trees, tarping eucalyptus firewood piles) is recommended.

Use of systemic insecticides may provide a short-term solution to slow down the spread of ELHB infestations. And the successful introduction and establishment of effective parasites could provide a long-term solution for containment of the eucalyptus longhorned borer.

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