

New beetle threatens arbors, orchards

By Deborah Sullivan Brennan 5:23 P.M. DEC. 14, 2013

The century-old sycamore on David Fleming's El Cajon property was the focal point of his hacienda style home, with five trunks and a lush canopy of golden leaves. It's now ground zero of a San Diego infestation by the **polyphagous shot-hole borer beetle**, a pernicious pest that has ravaged backyards, street trees and arbors in Los Angeles and Orange Counties. So far, there's no solution.

Unlike other insects that target just a few species, the shot-hole borer beetle is **an equal opportunity pest, infesting at least 286 tree species** and posing the potential for widespread destruction. Its hosts include California natives such as **coast live oaks** and **sycamores**, and **key agricultural crops, including avocado**.

"It's extreme," said Tom Launder, an Oceanside arborist who flagged the infestation at Fleming's home. "It has the potential to be one of the worst (pests) that we've seen in decades."

The **shot-hole borer beetle injects trees with a fungus**, which it then **"farms" for food**. It has successfully colonized 117 of its hosts with the fungus, said Akif Eskalen, a plant pathology researcher at UC Riverside, who has tracked the beetle and confirmed the infestation of Fleming's tree. While most pests target distressed or dying trees, this one prefers healthy, vigorous hosts, and has spread swiftly through Southern California.

"That just shows how dangerous it is," Eskalen said. "This beetle can show up **any time, anywhere**."

Although there's no dollar figure for its damage, hundreds of affected street trees in Los Angeles have been removed at a cost of at least \$1,000 each, Eskalen said. That figure is likely to rise, especially if it strikes orchards. In Israel, which has battled the pest since 2009, 40 percent of avocado groves are infested, he said.

The beetle originated in South East Asia and appeared in Los Angeles in 2011. It destroyed hundreds of trees at the Los Angeles County Arboretum and Botanic Garden Huntington Botanical Gardens, according to an alert by Los Angeles Supervisor Zev Yaroslavsky, which described the new pest as "tinier than a sesame seed but devastating as poison."

By 2013, it had spread to Orange County, and in fall, turned up in Fleming's yard in El Cajon.

Fleming, a golf course architect and superintendent, has spent 40 years designing landscaping for beauty and resilience, selecting a diverse plant palette to hedge his bets against pests

He planned his own home to showcase the towering, five-trunked sycamore, and carefully nurtured the 100-year-old tree.

In the spring, he added a new fertilizer to encourage its growth and to prevent a common fungus that causes sycamores to shed their leaves. The tree flourished after the treatment, sprouting dense foliage from May through July.

By September, however, it was failing.

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"The main trunk of the tree, it just collapsed," Fleming said. Fleming contacted Oceanside arborist Tom Launder, who had recently given a presentation to golf course superintendents warning them about the new pest.

"From the photos alone, I saw the staining on the trunk and the dieback symptoms on the leaves didn't look like anything we see from other pests," Launder said.

"I thought this sounds like everything I've been reading about the polyphagous shot-hole borer."

Suspecting the worst, Launder called Eskalen. After a site visit and lab tests, Eskalen confirmed last month that the shot-hole borer had jumped 60 miles from its last point of infestation in Dana Point, to El Cajon.

The beetle's adaptability and wide host range make it tricky to identify, because symptoms of infestation vary among the hundreds of trees it attacks. A handout on Eskalen's website shows the beetles' effects on different trees.

Some ooze with gummy deposits on their bark. Others display dark or reddish stains on their trunks. Still others erupt in clusters of crystals called "sugar volcanoes."

The beetles are prolific breeders too, and can lay eggs several times per year, experts said.

"The female will bore into hundreds of typical, common tree species," Launder said. "In most of those species, the fungus will grow. The fungus is the food source for their offspring. The tree ends up just bleeding."

San Diego is already battling the gold-spotted oak borer, which has felled thousands of California live oak, black oak and canyon live oak in the backcountry, and in parkland near La Jolla.

The oak-borer beetle spreads on firewood, and apparently hitchhiked that way from San Diego County to the mountain town of Idyllwild, in Riverside County, late last year. Forestry and agricultural officials have urged residents not to transport wood, and say that message is doubly important in light of the new pest.

"The message we're trying to get out... is to know where your firewood came from and burn it locally and cure it locally," said Tracy Ellis, an entomologist for the San Diego County Department of Agriculture, Weights and Measures. "Ask your firewood dealer where the firewood came from."

Homeowners who remove dying trees can unwittingly spread the pest by dumping or selling the wood. Instead, she said, they should chip and cover it in, order to kill the beetles.

The bug can also spread through saplings planted in farms and yards.

"So we're looking for it when we do inspections of nurseries, to make sure any nursery stock is shot-hole borer free," Ellish said. He'll visit Fleming's property in the next few weeks to try different combinations of pesticides and fungicides on the ailing sycamore, in hopes of containing the infestation.

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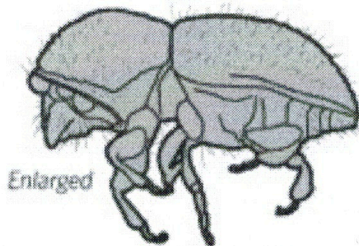
He'll also look in Southeast Asia, where beetle occurs naturally, but doesn't wipe out forests and orchards.

In California, Launder said, "The trees don't know how to protect themselves, because the trees and the bugs and the disease didn't coevolve together." So in February, Eskalen will travel to Southeast Asia to search for natural biological controls that can safely be used in California.

Fleming is resigned to removing the central trunk of his sycamore, but he's hopeful that researchers can save the rest of his prized tree.

"That was a beautiful tree," he said. "Hopefully we can save the character of it, but if we lose it, that history is gone. Not in my lifetime will I see another tree of that size planted from seed."

Polyphagous shot hole borer beetle



Color: brown or black

Some known host include:

Box Elder, castor bean, avocado, English oak, California coast live oak, big leaf maple, silk tree, Liquidambar, coral tree, Titoki tree, California sycamore and Blue Palo Verde

Approximate size:

Male	Female
1.5 mm	2.5 mm



Sources: Eskalen lab; UC Riverside

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David Fleming looks at a polyphagous shot-hole borer beetle, just dug out of the bark of a California sycamore tree in front of his Dehesa Valley home, east of El Cajon, on Saturday.

Hayne Palmour IV