



## Op-Ed: The shot hole borer beetle could kill 38% of all trees in the L.A. region



The cross section of a tree that was destroyed by a polyphagous shot hole borer in Fullerton, Calif. on April 7. (Los Angeles Times)

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Pick a tree at random anywhere in Southern California and examine it closely. Chances are good that you will find small wet stains on its trunk. Those wet stains are most likely signs of a fatal tree disease that is spreading throughout the region at an alarming rate, and which has the potential to significantly change the way Southern California looks. 

The disease is called Fusarium dieback, and it is transmitted by one type of fungus-farming beetle: the invasive shot hole borer.

Thought to have arrived in Southern California in packing materials from Southeast Asia, this beetle burrows into trees and grows fungal pathogens for food. The pathogens then interrupt the transport of water and nutrients within the tree from roots to leaves, eventually causing branch dieback and possibly death. Report heavily infested street trees in public areas to local and county officials as soon as possible.

What sets this invasive ambrosia beetle apart from similar pests is the wide variety of tree species it threatens. Whereas many bark and ambrosia beetles can target a handful of species, the shot hole borer can drill, grow its fungi and reproduce in 58 tree species.

Moreover, while many of these pests attack weakened trees that are already under some type of stress, such as drought, pollution, dense planting or other tree diseases, the shot hole borer requires healthy trees so that it can grow its fungus, which needs moisture and nutrients.

What exactly might this mean? According to a U.S. Forest Service survey conducted earlier this year, this single insect could kill as many as [27 million trees](#) in Los Angeles, Orange, Riverside and San Bernardino counties — roughly 38% of all trees in the urban region.

The first shot hole borer on record in California was found in L.A. in 2003, caught in a California Department of Food and Agriculture trap. The beetle went largely unnoticed until 2012, when we found that it was damaging backyard avocado trees and urban-forest trees in the L.A. Basin. Although researchers quickly began to monitor the beetle at that point, its ability to affect street trees and native vegetation was only gradually recognized.

Because such an unusually wide variety of tree species are susceptible to this pest-disease, it has spread quickly throughout urban forests, wildlands and avocado groves across Southern California. Among the 58 tree species it can target are willows, palo verdes, sycamores, cottonwoods, oaks and maples. Preliminary results from our surveys of urban forests in L.A. suggest that its movement through the landscape is strongly correlated with the location of sycamores, but more monitoring over time will better determine the strength of this association.

Epidemiologically, rare tree hosts are less important, but their vulnerability suggests the pest could cause a loss in overall biodiversity. What's more, many of the native plant communities it targets are critical breeding habitats for endangered animals, such as the least Bell's vireo, the southwestern willow flycatcher and the arroyo toad. As it kills off willows and cottonwoods, the beetle could also make riparian habitats more susceptible to invasive plant species.

To manage the invasion effectively, we need to predict where it will spread and cause damage. We have therefore begun a systematic survey of urban-wildland forests and agricultural lands throughout the region. We are measuring vegetation and landscape characteristics, microclimate and microorganisms. By comparing these data with what we know about the beetle's host range, we will be able to identify areas where it is most likely to spread. The public can help in a number of ways. This winter, purchase firewood locally and avoid moving wood or green waste out of infested areas. Do not remove heavily infested trees, however, to help reduce populations of the beetle. Chip the infested wood onsite, to a size of one inch or smaller. If branches are too large to chip, you can "solarize" them by covering them with a clear tarp and allowing them to sit for several weeks. Be sure to cover and contain the wood during transport. Sterilize pruning tools with household bleach or another cleaning solution. Finally, please report heavily infested street trees in public areas to local and county officials as soon as possible.

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