Helpline Hot Topic for March 2020

The Beetles are Coming! The Beetles are Coming!

By Cynthia Zimmerman

There was a time when that declaration meant John, Paul, George and Ringo but in Northern California today it means PSHB (polyphagous shot hole borer) and KSHB (Kuroshio shot hole borer). It's only a matter of time before these destructive pests make their way from Southern California to the Central Valley.

"*I don't think the public really has a clue how devastating this potentially is…and it's rapidly spreading…"* --- Dr. Glenda Humiston, Vice President, University of California, Agriculture and Resources.

Polyphagous shot hole borer, believed to be from Vietnam, is an ambrosia beetle (*Euwallacea* sp.) that has a symbiosis with *Fusarium euwallaceae* and is a serious problem. It made its first appearance in Los Angeles County in 2003 but it was misidentified as a tea shot hole borer. By 2010 an entire street of box elders failed in Long Beach. Today PSHB is well established in Orange, Western Riverside and San Bernardino Counties and has spread to eastern Ventura County. Kurushio shot hole borer (KSHB), from Taiwan and similar to PSHB, originally appeared in the San Diego area, having now affected trees in San Luis Obispo and Santa Barbara counties.
Together they are referred to as ISHB (invasive shot hole borers).

The beetles have been called the perfect pest. They tunnel into trees, far from the reach of chemicals and pesticides, to lay their eggs while at the same time introducing a type of Fusarium fungus for food. The fungus disrupts the flow of water and nutrients needed for survival by the tree. The beetles' tunneling activity weakens the tree's trunk and branches. With repeated attacks tree branches can die back and the host tree can even be killed.

It is difficult to identify the shot hole borer because it is no bigger than a sesame seed. The borer entry hole is round and about the size of a ballpoint pen tip. Symptoms of attack include staining, gumming, sugary exude or sawdust frass. The fusarium infection causes dark discoloration of the wood beneath the bark and around the beetle gallery. The staining will be revealed by lightly scraping away the bark around the entry hole.
(**Identifying ISHB Attack and Fusarium Dieback (FD) in Trees**
https://ucanr.edu/sites/pshb/diagnosis-and-management/identifying-signs-and-symptoms/).

IHSB are known to attack 137 different species of landscape, agricultural, riparian, and native trees. Among the known hosts are box elder, castor bean, avocado, coast live oak, English oak, valley oak, California sycamore, big leaf maple, Japanese maple, red willow, goldenrain tree, olive , persimmon, silk tree, American sweet gum, coral tree, weeping willow, blue palo verde, palo verde, Chinese willow, and white alder. Researchers estimate that ISHB could kill over 23 million of the 70.8 million urban trees (almost 32.8%) in Southern California. It is estimated that if 80%

of the vulnerable trees die by 2031, it will cost $25.4 billion for removal and replacement. Our urban forests provide many benefits such as helping to cool cities, reducing air and water pollutants, and reducing energy consumption, all of which will be greatly impacted by such serious tree loss.

How to stop the pest is a huge challenge for researchers and resource managers according to Sabrina Drill, PhD, a Ventura County-based expert for UCANR. Currently there are not any known ways to combat this invasion. UCANR, California Avocado Commission, UC Riverside scientists, U. S. Forest Service, the Huntington Botanical Gardens, California Native Plant Society, and Orange County Parks are among the agency informing the public and working to find controls for ISHB/FD.

"*The numbers in Southern California are astronomical. . . It is only a matter of time before it gets to Northern California.*" -- Dr. John Kabashima, Environmental Horticulture Advisor, University of California.

Racing to Stop the Destructive Shot Hole Borer https://www.cnps.org/flora-magazine/racing-to-stop-the-destructive-shot-hole-borer-11489
Small Beetle, Big Problem https://ucanr.edu/sites/pshb/
A Devastating Threat to California Trees https://ucanr.edu/sites/pshb/files/240640.pdf
Urban Trees Are Under Attack https://caufc.org/project/urban-trees-are-under-attack/
Associated Host Identification Guide https://ucanr.edu/sites/pshb/files/319244.pdf
How to Sample a Suspect Tree https://ucanr.edu/sites/pshb/files/259567.pdf