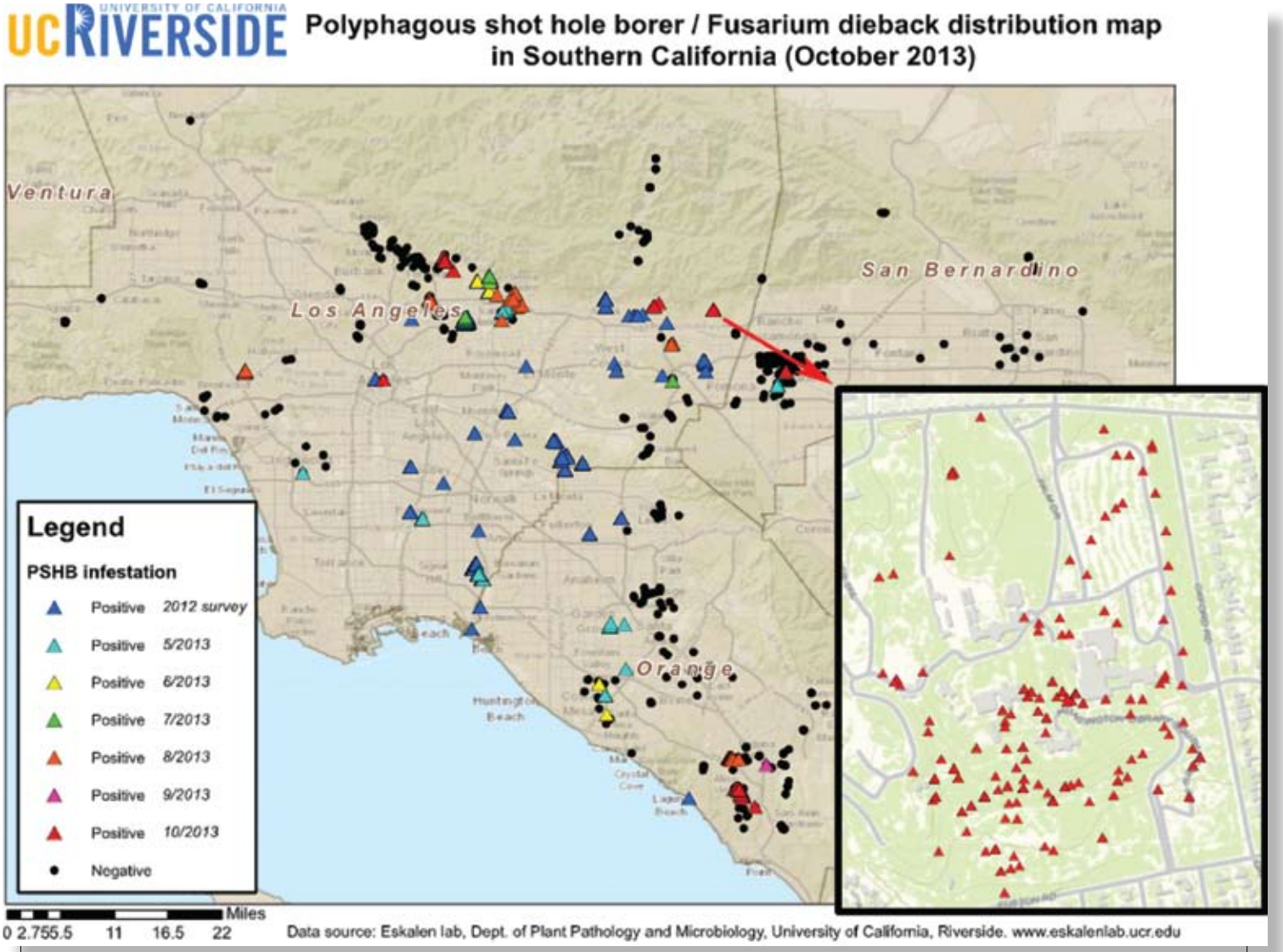

Polyphagous Shot Hole Borer/ Fusarium Dieback Update

By Tim Spann
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Unfortunately, there has been a significant amount of movement of the Polyphagous Shot Hole Borer (PSHB) in the southern part of Orange County around the Mission Viejo area in the latter half of 2013. The accompanying map shows the distribution of the beetle as of the end of October. This map has also been color coded to show how the beetle has spread during 2013 from the original area of infestation that was delineated in 2012 (dark blue triangles). Additionally, it is important to point out that each of the triangles on the map, which indicates a positive find, really represents numerous individual trees (see inset). However, at the scale that the map is usually drawn each individual point cannot be shown.

Although there are still no major commercial avocado groves infested, the known infestation is getting very close to some groves. It would be wise for growers who may be

PSHB Found in San Diego County

On December 2, 2013, the Polyphagous Shot Hole Borer was confirmed in San Diego County. The beetle and associated fungi were found attacking sycamore and goldenrain trees at the Sycuan Golf and Tennis Resort in El Cajon. This finding is very alarming since it is about 60 miles from the most southern end of the known infested area near Mission Viejo. Although how the beetle made this jump is uncertain, it is most likely not a natural dispersion, but due to the movement of infested material (mulch, firewood, etc.).

While the beetle has still not been confirmed in commercial avocado groves, this latest find illustrates how easily and quickly this infestation could become an epidemic if human activity moves the beetle to new areas. Avocado growers are urged to be vigilant—know what the beetle attack symptoms look like, actively scout your groves, and do not import mulch from the known infested area—to help limit the spread of this pest.

near the infestation boundary to survey their grove perimeter routinely. If possible, known alternative host species, especially castor bean, should be removed from the immediate area surrounding groves. Growers should also be familiar with the symptoms of PSHB infestation on avocado and other hosts that may be near their groves so they can identify infested trees as soon as possible after infestation.

If you find an infested tree in your grove it should be removed immediately. The wood can then either be chipped or cut into logs, preferably where the tree was standing, and the chips or logs covered with clear plastic to kill any live beetles. In the summer, the surviving beetles will be killed within a couple of weeks of covering, but in cooler months it would be best to leave the material covered for several months.

Although Dr. Tim Paine, professor of entomology, UC Riverside, has identified several pesticides that can help to prevent beetle attack, none of these chemicals are currently labeled for use on avocados. However, with Dr. Paine's efficacy data CAC is prepared to file for a Section 18 Emergency Exemption as soon as commercial avocados are affected.

Dr. Richard Stouthamer, professor of entomology, UC Riverside, has been working to identify the origins of PSHB. His work has led him to focus on Southeast Asia, and he has recently identified several specimens from the northern part of Vietnam, close to the border with China, that are a genetic match to specimens from California and Israel. Based on the genetics of the specimens from California and Israel, Dr. Stouthamer believes it is unlikely that the beetle came directly from Vietnam, but probably came through some other area that had been invaded earlier. Regardless, it is interesting to note that Vietnam has a relatively high production of both avocados and castor bean, but there are no reports in the literature discussing the pest status of this beetle in Vietnam. This strongly suggests that there may be biological control agents at work keeping the pest in check there. Dr. Stouthamer is currently working to secure funding for a trip to Vietnam.

We encourage all growers to be vigilant and to familiarize themselves with the symptoms of PSHB attack on avocado. The beetle entry holes are quite small (about the size of the tip of a ballpoint pen), but the tree responds by exuding copious amounts of sugar, forming very visible "sugar volcanos" around the entry holes. If you see anything in your grove resembling these symptoms you are encouraged to report it immediately either to the CAC office at 949-341-1955 or to Dr. Eskalen either by phone 951-827-3499, or email at akif.eskalen@ucr.edu for confirmation of the pathogen.

DO NOT transport suspect material from your grove, but wait for someone to visit the grove and collect samples for confirmation. More information about this pest/disease complex and pictures of the beetle and symptoms on a variety of species can be found on Dr. Eskalen's website (http://eskalenlab.ucr.edu/avocado.html).