

International Collaborations are Helping Address New Forest Health Issues in Southern California

The polyphagous shot hole borer (PSHB) is an exotic ambrosia beetle threatening numerous hardwood tree species located in the urban areas, native forest stands, and agricultural settings in southern California. In 2012, the beetle was first linked to tree injury and mortality in the region. The beetle prefers to attack maple, willow, and sycamore species, but is also threatening avocado trees. The distribution of the beetle currently spans five counties in southern California, including Los Angeles, Orange, Riverside, San Bernardino, and San Diego.



The adult female of the polyphagous shot hole borer is about 2.5 mm long.



California sycamore can be heavily attacked (dark spots) by the polyphagous shot hole borer in southern California.

Since 2012, Forest Health Protection (FHP) has monitored the spread and impact of the beetle and assessed management options for infested wood material. To better understand this new pest and assess its potential threat to native hardwoods in the U.S., FHP from Washington, D.C. and southern California visited Vietnam and China where the pest may be native. Working with collaborators from each country, FHP established traps in PSHB-infested areas to contribute to life history studies and surveyed infested areas to assess the impact of PSHB to various tree species. A three-year study was planned with the collaborators from Vietnam and China.



Insect traps were established in *Acacia mangium* plantations to monitor the flight period of the polyphagous shot hole borer in Vietnam.



Forest Health Protection and collaborators from Vietnam and China inspect traps for the polyphagous shot hole borer.



Acacia mangium attacked by the polyphagous shot hole borer in northern Vietnam. Boring dust pushed out by the beetle can be seen along the main stem of the tree.



Infested *Acacia mangium* was sampled and returned to the laboratory to contribute to studies assessing the beetle's life history.



Oriental sycamore heavily attacked (dark spots) by the polyphagous shot hole borer in an urban landscape in Kunming, China.



Dark-colored galleries of the polyphagous shot hole borer were exposed in a dead branch of trident maple sampled from Kunming, China.

Polyphagous shot hole borer was collected in traps in each country and trapping efforts continue to define the best sampling period for this beetle. In year two of the proposed study, traps will be expanded to additional regions in each country to identify other infested areas. The beetle is attacking and killing *Acacia mangium* at low levels in plantations in Vietnam, whereas the beetle is causing elevated levels of injury to ornamental plantings of oriental sycamore and trident maple in urban areas of Kunming, China. Polyphagous shot hole borer has been linked to tree injury for at least two decades in southern China, but the pest was only recently detected in Vietnam (<5 years).

Assessments of tree injury and mortality from Southeast Asia have provided valuable comparisons of the potential impact of this exotic species in the U.S. Elevated tree injury and mortality may be expected on maples and sycamore species from PSHB in the U.S.

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