

Soapberry Borer Infestations Found in 33 Counties in Texas

By

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The soapberry borer (*Agrilus prionurus*), a native of Mexico, was first reported in eastern Travis County in 2003 infesting western soapberry (*Sapindus saponaria* var. *drummondii*). Reports by landowners and arborists indicate that the insect had probably been infesting soapberry trees for several years prior to being identified. Infested trees were observed in Travis and McLennan counties as early as 1998. As of January 2009, infestations of this insect had been reported in 18 counties, including near or within the cities of Fort Worth, Dallas, Waco, College Station, Austin, Houston and Corpus Christi (Figure 1).

To obtain more information on the current geographical distribution of the soapberry borer in Texas, the Texas Forest Service (TFS) distributed a questionnaire to county extension agents with the Texas Agrilife Extension Service and administrators of state parks and wildlife management areas of the Texas Parks and Wildlife Department in counties where soapberry is known to occur in the spring of 2009. The questionnaire also was posted on the invasive species webpage at www.texasinvasives.org, the TFS web page at <http://texasforestservicetamu.edu>, and the International Society of Arborists Texas Chapter webpage at www.isatexas.com.

Recipients of this questionnaire and visitors to these web sites were asked to report infestations of soapberry borer, including location, symptoms of infestation observed, and numbers and size of trees infested. Photos of both the foliage of the infested trees and damage observed were requested from responders to confirm the host tree and causal agent. In addition, a full page advertisement was prepared and published in the September issue of the Texas Parks and Wildlife magazine, requesting that readers visit the invasive species webpage to learn more about the insect and to report new infestations.

As a result of responses to this survey, 15 new counties were added to the distribution map in Texas (Figure 1), as follows: Archer, Burnet, Cottle, Galveston, Grimes, Hill, King, Lavaca, Limestone, Parker, Roberts, Robertson, San Jacinto, Waller, and Wharton counties. It is worthy of note that responders at several State Park and Wildlife Management Areas (WMA) reported that no soapberry borer infestations have been observed to date. These parks and WMAs were the Elephant Mountain WMA (Brewster County), Kerr WMA (Kerr County), Goliad State Park (Goliad County), Eisenhower State Park (Grayson County), Fairfield State Park (Freestone County), Bonham State Park (Fannin County), and Lake Mineral Wells State Park (Parker County). Soapberry borer infestations have been reported from Parker County,

including the Lake Mineral Wells Trailway, but have not been observed on nearby Lake Mineral Wells State Park.

As its populations expand rapidly in Texas, this wood-boring beetle is killing all sizes of soapberry trees larger than two inches in diameter. It may eventually threaten western soapberry populations throughout the tree's range, which extends from northern Mexico to Missouri, and west to Arizona. To date, no infestations have been observed in adjacent states, although infestations in Roberts County in the Texas panhandle suggest that the insect is approaching the Oklahoma border.

Western soapberry appears to be the only host of the soapberry borer. Leaves of western soapberry, a medium-sized, drought-hardy tree, resemble those of the invasive Chinaberry (*Melia azedarach*). Both tree species have round fruits that persist from summer through the winter. But soapberry leaves are not double compound and the leaflets do not have serrated (toothed) margins, as does Chinaberry. The off-white flowers that female soapberry trees produce in the spring and yellow fruit visible by mid- to late summer are also useful for identifying this tree from a distance (Figure 2).

Signs of soapberry borer infestations are similar to those of the destructive emerald ash borer, *Agrilus planipennis*, a close relative not yet found in Texas. Infested trees can be easily recognized by the exposed sapwood that results when birds and squirrels chip off the bark to feed on the larvae (Figure 3). Bark chips accumulate at the base of the tree. A heavily-infested tree will be completely girdled by white larvae feeding beneath the bark. The adult beetle is about ½ inch-long, shining black and distinctively marked with four small white spots on the wing covers (Figure 4). Larvae are flat-headed wood borers (family Buprestidae) that may attain an inch or more in length as they mature. After feeding beneath the bark, the larvae bore into the wood to complete development and to pupate. The adult produces a D-shaped exit hole in the bark as it emerges (Figure 5). Western soapberry exhibits little resistance to this introduced pest.

To learn more about the biology of this pest in Texas, TFS entomologists caged infested soapberry log sections from Fort Bend, Brazos and Dallas counties in May 2008 and 2009 and collected adult insects as they emerged. Some 75 *Agrilus prionurus* adults were collected from the cages during the period from late May until early August, all from trees cut in Fort Bend and Brazos counties. No adult beetles have yet emerged from caged log sections collected in Dallas County, but the cages are being monitored in case of a delayed emergence.

Purple sticky traps developed for the emerald ash borer (Figure 6) were hung from trees in May 2009 in areas that had soapberry borer-infestations, six in Fort Bend County and two in Brazos County. These traps were monitored throughout the summer and fall, but were largely

ineffective in catching soapberry borer adults. No adults were caught in the Fort Bend traps while only two adults were caught in the Brazos County traps during the last two weeks of June. Results from rearing and trapping studies suggest that the soapberry borer has no more than one generation per year in Texas. Since we do not know when the trees we used for rearing adults were initially infested, it is possible that the insect may require more than one year to complete development. Further research is planned to establish the length of the soapberry borer life cycle.

Meanwhile, methods of prevention and control are being investigated. Among the most promising is injection of a systemic insecticide into uninfested soapberry trees or those in early stages of attack. Dr. Donald Grosman, TFS entomologist in Lufkin, injected infested and uninfested soapberry trees in Fort Bend and Dallas counties with the active ingredient emamectin benzoate (registered for prevention of emerald ash borer) last summer. The trees are still being monitored but early results look promising.

It is likely that the soapberry borer is present in more counties than the 33 shown in Figure 1. The Texas Forest Service is interested in new locations of this pest and encourages landowners, arborists, and others to visit the web page at www.texasinvasives.org or contact Ron Billings (rbillings@tfs.tamu.edu) to report infestations in new counties (those not highlighted in Figure 1).

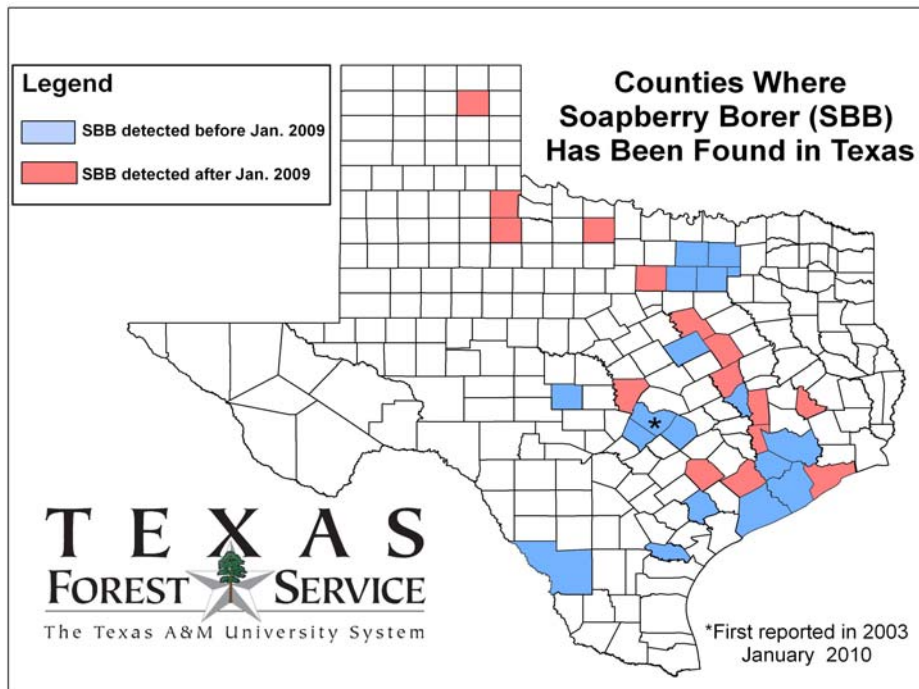


Figure 1: County map showing distribution of known soapberry borer (*Agrilus prionurus*) infestations prior to January 2009 and additional counties recorded after January 2009 as a result of the TFS questionnaire.



Figure 2: Western soapberry trees can be distinguished from Chinaberry trees by the single sets of compound leaves and the off-set mid-veins and lack of serration on the individual leaflets. On female soapberry trees, the off-white flowers and old brown fruits stand out in the spring (top photo). The yellow fruits are present in mid-to late summer, remaining on the tree throughout the winter (bottom photo).



Figure 3: The first signs of soapberry borer infestation are trees with missing bark from the tree bole and bark chips at the tree base. The winding larval galleries are visible on the bark chips and sapwood.



Figure 4: Adults of the soapberry borer, *Agrilus prionurus*. Note four white dots on the wing covers.



Figure 5: D-shaped exit hole on infested soapberry tree, produced as adult beetle emerges.



Figure 6: TFS entomologist Joe Pase examines a sticky trap for soapberry borer adults.