

# CENTRAL TEXAS

## WOODLANDS RESILIENCY PROGRAM

### HOW TO IDENTIFY AND MANAGE OAK WILT IN TEXAS

When we hear the word “forest,” we often think of large trees in parts of the US where commercial forests are harvested for lumber, paper and other wood products. Many people don’t often consider the tree communities in Central Texas as forests. However, by every sense of the word, the wooded areas of Central Texas are very much forests. Human beings depend on forests for many benefits including recreation, watershed protection, oxygen, and wood products, to name a few. In addition forests are valuable to wildlife. Unfortunately, most people take the forests of Central Texas for granted and expect these forests to naturally take care of themselves. In many cases our forests are quite healthy with no intervention from man; however, sometimes man’s activities cause great harm to our forests. Conversely, man’s activities can improve the health of forests. Natural agents such as fire, wind, hail, floods, drought, insects, and diseases can destroy large areas of forest.

Most people think that wildfires cause most of the tree mortality in our forests. A study of forest tree mortality factors indicates that in the United States, insects account for 41% and diseases cause 26% of the tree mortality. Put another way, insects and diseases together are responsible for killing two out of every three trees that die in our nation’s forests. There is no tree mortality factor data specific for Central Texas forests, but it is likely this trend is true for Central Texas, too. Surprisingly, fire only contributes about 10% to the total tree mortality picture.

Insects are the most successful group of organisms on earth. They are an integral part of most every ecosystem on the planet, including forests in Central Texas. The diverse forests of Central Texas harbor a rich abundance of insect species. From man’s perspective, the vast majority of these insects are either beneficial or neutral relative to damage in the forest. However, a few can cause serious problems.

In over 60 counties in Central Texas (generally between Dallas and San Antonio), the live oak tree is highly valued by people for its large, spreading branches and by wildlife for its acorn crop. In addition, it is the dominant tree in the rural landscape, adding great value to ranches and recreation areas. Live oak trees are also prized occupants of urban environments. However, a tree disease known as oak wilt is causing the death of thousands of live oak

trees (and other oak trees) in Central Texas every year. Property owners in Central Texas have mounted an attack against this tree disease under the leadership of the Texas Forest Service and have significantly reduced losses and saved many trees. Nevertheless, the disease continues to spread and “perfect” control procedures do not exist.

Interestingly, a tiny fungus-feeding beetle called a nitidulid beetle is usually not mentioned in the oak wilt story. True, it is the fungus that kills the trees and receives all of the attention, but this nitidulid beetle is considered the primary agent for spreading the disease over long distances. The fungus will rapidly spread locally through the interconnected root system of



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Typical nitidulid beetles, which are about 1/8-inch long. (U.S. Forest Service)

In general, with respect to insect and disease pests, keep in mind that healthy trees are usually much less susceptible to pest damage. Especially in urban areas, many times it is man's activities that compromise the health of trees and make them vulnerable to insects and diseases. During construction, damage to the tree's roots and bark by heavy equipment can be devastating. Also, cutting tree roots when

underground utilities are installed, adding fill dirt, removing top soil, changing drainage patterns, building roads and sidewalks, and other activities associated with development will weaken and stress trees.

Among the most common insect pests that infest damaged trees are borers. These beetles are usually not an issue in healthy trees, but they are commonly found in damaged and weakened trees. Borers are often seen in urban forests because of the stress that man's activities cause to trees. Borers may also be attracted to trees that have been weakened by natural factors such as fire, wind, flood, lightning, drought, and hail. Borers are generally of two types, commonly referred to as roundheaded or longhorned wood borers and flatheaded or metallic wood borers.

The soapberry borer is a non-native pest from Mexico that has recently invaded parts of Central Texas. This insect infests apparently healthy soapberry trees and eventually causes decline and death of most of the trees it attacks.



Classic symptoms of oak wilt veinal necrosis in live oak



Extreme abuse to a live oak tree. This tree

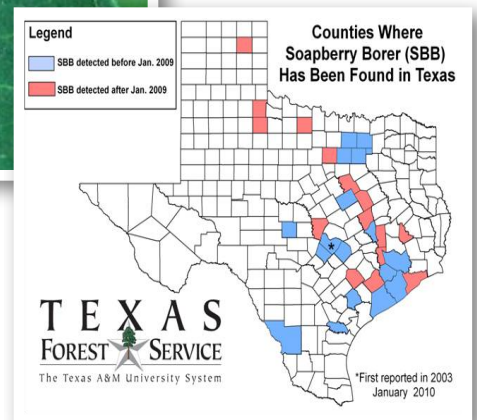


Flatheaded or metallic wood borer (in this case, the soapberry borer)



Roundheaded or longhorned wood borer

The soapberry borer has been reported killing soapberry trees in 33 counties in Texas.



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Defoliating insects feed on the leaves of trees. The larval or caterpillar stage of insects in the order Lepidoptera (butterflies and moths) is responsible for much of this damage. Adults and immature stages of certain beetles (Order Coleoptera), walking sticks (Order Phasmida) and katydids and grasshoppers (Order Orthoptera) also may defoliate trees and other plants in sporadic outbreaks. Healthy trees can withstand a single defoliation, but if the foliage is removed in two or more successive years, decline and death may result. Some common defoliators that occur in Central Texas include fall webworm, forest tent caterpillar, oak leaf roller, and cankerworms. During periods of extensive drought, cedar bark beetles often infest branches of weakened Ashe juniper and eastern redcedar trees. These beetles may kill a tree when they attack the main trunk or stem. The above accounts are only a few examples of how insects and diseases can impact the forests, both urban and rural, of Central Texas.

The use of pesticides in forests and woodlands has all but stopped. Not only is it expensive, but there are environmental considerations as well. Even with more “friendly” pesticides, non-target organisms are usually affected. Sometimes pesticides will kill more beneficial insects than the ones that are causing the damage. This can lead to an extended outbreak of the damaging insect because parasites and predators

have been eliminated. In many cases when forests are properly managed, pest problems are minimized without the use of chemicals. Nevertheless, a variety of registered pesticides is available to treat or prevent insect or disease problems in high-value residential, urban, or historical trees. Apply these chemicals in a safe and judicious manner, always following the instructions on the label.

The discussion of insect and disease pests in our forests must look briefly at the other side of the coin – beneficial insects and fungi. Many insects feed on other insects, serving as predators or parasites. This process is very important in keeping pest or nuisance insect populations at tolerable levels. Other insects recycle dead plants back into the soil to become nutrients for future plants. In addition, there are many decay fungi that play a significant role in the recycling process. Can one imagine what it would be like if insects and fungi did not eat dead trees, plants and other organic matter? The good news is that out of literally thousands of insects and diseases, only a very few are serious pests in our forests.

With an expanding global economy, the likelihood of importing (or exporting) forest pests is greatly increased. American chestnut, one of the most important forest trees in the eastern United States, is all but gone because of chestnut blight, an introduced disease. Gypsy moth was imported from Europe around 1870 and has become a serious defoliator of eastern hardwood trees. More recently, the Asian longhorned beetle (from China) has caused the death of many trees in New York City and Chicago. Other imported forest pests, like the pine shoot beetle and the emerald ash borer, are causing concern in other parts of the United States and are literally knocking on the door of Texas. If you come across an insect or disease you can't identify, or observe the unexpected death of native trees (particularly ash or walnut trees) in Central Texas, please contact the Texas Forest Service office or county extension agent in your area. You may be the first to detect an unwanted and destructive invasive insect or disease.



*Fall webworm “tents”.*