Firewood Moved Long Distances: A Modern Day Trojan Horse

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According to Greek mythology, the Greek army defeated the Trojans in the Trojan War of 1184 B.C. by hiding soldiers inside a huge wooden horse. The horse was left outside the city of Troy as the Greek army pretended to sail away. Claiming the supposedly-abandoned horse as a war trophy, the Trojans hauled the horse inside the city walls. That night the Greek force crept out of the horse and opened the city gates for the rest of the Greek army, which had sailed back under cover of night. The Greek army entered and destroyed the city of Troy, decisively ending the war.

In the 21st century, firewood has become our "Trojan Horse." Firewood found at local stores or purposely transported into the state in personal vehicles may harbor an army of invasive insects and diseases, with the potential to destroy our forest resources. Let's look at the facts from a recent study. As detailed in an October 2012 publication in *Forest Entomology* entitled "Retail Firewood Can Transport Live Tree Pests" (W. R. Jacobi, J.G. Hardin, B.A. Goodrich, and C. M Cleaver, Vol. 105, pp.1645-1658), destructive insects and pathogens can hitchhike within untreated firewood and be transported to uninfested areas. In a national survey of retail stores selling firewood in 18 states, the authors document that over half (52%) of the firewood was from sources outside the purchase state and 76% of the firewood had at least some bark attached (potential source of destructive bark and wood-boring beetles). More alarming was the finding that live insects, representing 85 different families, emerged from 47% of the firewood bundles. Most insects found in this study were bark beetles and wood borers, both considered tree pests.

The authors of the above-cited article state that the likelihood that insects emerging from firewood will become established in new areas is not known. But, the potential is real. On average, most insects emerged within 200 days, but some emerged as late as 18 months after purchase. It was observed that most firewood sellers stacked firewood outside stores rather than inside, increasing the opportunity for emerging insects to find suitable hosts nearby.

It is possible that the invasive soapberry borer, *Agrilus prionurus*, arrived in Texas in firewood brought in from Mexico. This insect has been found killing western soapberry trees in 50 counties in Central Texas since it was first discovered in Travis County in 2003 (for more details on the soapberry borer, visit www.texasinvasives.org) .

Of particular concern to those responsible for Texas natural resources is potential long-distance movement of firewood that may harbor non-native invasive pests already established in limited regions of the United States. The Asian longhorned beetle (*Anoplophora glabripennis*), established in the northeast, and the emerald ash borer (*Agrilus planipennis*), now distributed among 18 states, are prime examples of candidates that are major threats for long-distance movement via firewood.

In 2012, some 1,300 large, purple, tri-panel traps baited with attractive volatiles were placed in ash trees within 118 counties in Texas to survey for emerald ash borer. Fortunately, no emerald ash borers were captured in this survey conducted by the Texas A&M Forest Service (TFS), Sam Houston State University, Texas A&M AgriLife Extension Service and collaborators. These results suggest that this particular invasive pest has yet to find its way to our state. Another emerald ash borer detection survey, involving traps placed primarily in high risk locations (in state parks and campgrounds, along major highways, and in areas with an abundance of ash trees) will be conducted in 2013.

Pathogens such as oak wilt – a major concern in Central Texas – also may be introduced into new areas with the transport of uncured firewood cut from disease-infected red oaks. Oak firewood produced from dead and dying oaks in Central Texas should be stored on site for at least one summer, before transport outside the county. Visit www.texasoakwilt.org for more guidelines on how to prevent and manage oak wilt.

To increase public awareness of the firewood/invasive pest link, the Texas A&M Forest Service, along with 12 other southern states, has initiated a firewood awareness campaign, with financial support from the U.S. Forest Service, State and Private Forestry. To get the word out, TFS has contributed project funds to support a radio spot aired during popular fall football broadcasts to advise listeners "Don't Move Firewood." Also, a full-page color ad entitled "Moving Firewood Transports Tree-killing Insects and Diseases" was published in the November and December issues of the popular Texas Parks and Wildlife Outdoor Magazine to coincide with the 2012 hunting season.

The Texas A&M Forest Service, in collaboration with the Texas Parks and Wildlife Department, Texas A&M AgriLife Extension Service, U.S. Forest Service, and the Internet website www.Dontmovefirewood.org, has published a pocket-sized flyer describing the firewood concern and describing common exotic pests that are likely to be moved long distances in

firewood. Ten thousand of these fliers have been distributed to state parks throughout Texas to be provided to campground visitors. The advice is to buy and burn only local firewood to help protect our forest resources from invasive pests.

Additional public awareness efforts, including educational posters installed in all public and private campgrounds in Texas, are planned for 2013. The potential of firewood as a means to transport invasive pests also is a topic routinely discussed in Citizen Scientist training sessions that the Lady Bird Johnson Wildflower Center and TFS forest health specialists conduct annually throughout Texas.

A more permanent solution to the firewood threat lies in national educational or regulatory actions aimed at the public user and all firewood retailers. Only firewood treated by heat or by other means to ensure that live organisms are eliminated should be transported across state lines or outside of locations where known invasive species have become established. Campers, travelers and recreational vehicle users can help safeguard our state's valuable tree and forest resources by buying and burning only firewood known to be "born in Texas."