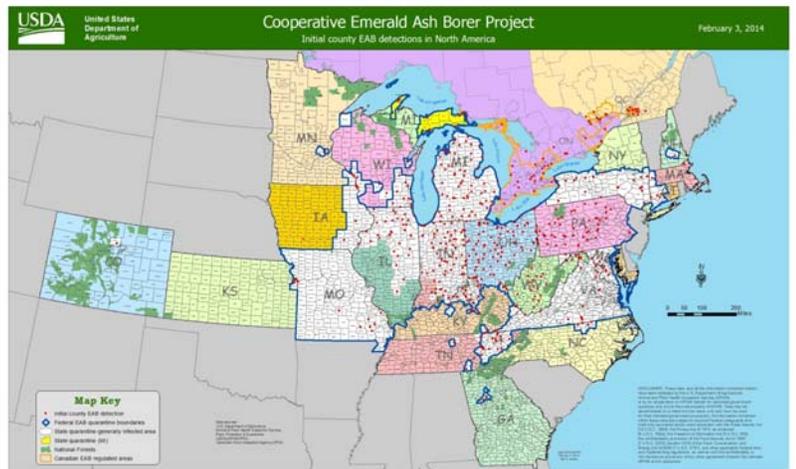




Pathways of Pest Spread Within the U.S.

Firewood

When campers or homeowners take firewood from one place to another, they can spread pests to new areas. One example is the emerald ash borer.



Pests transported in firewood:
Hardwood:

- Asian longhorned beetle
- Gypsy moth
- Goldspotted oak borer
- Beech bark disease
- Oak wilt
- Laurel wilt disease complex
- Thousand cankers disease of walnut.

Softwood (conifers):

- Pitch canker
- Sirex woodwasp
- mountain pine beetle

Most of the ten thousand campgrounds across the United States are in, or near, vulnerable woodlands. Perhaps 60,000 opportunities for pest introductions occur each year because campers carry infested firewood to federal campgrounds.

Many campers visit the lakes found from eastern Texas to Missouri, yet none of the states in this region have adopted firewood regulations.

More than a thousand companies sell firewood in metropolitan areas for use in more than 30 million homes. There are also many “mom and pop” dealers. Obtaining and transporting this wood also could move pests.

Several recommendations adopted by a task force composed of government agencies and stakeholders in 2010 have not yet been implemented. Twenty of the 48 coterminous states don’t restrict the movement of firewood. Neither the National Park Service nor U.S. Forest Service has adopted a nation-wide policy on firewood. Instead, these agencies follow state regulations where the individual Forests or Park units are located.

National Parks at Risk:

About 330,000 campers take firewood to national parks in the Rocky Mountain West every year. The large number of visitors from Los Angeles to Yosemite National Park might introduce the polyphagous shot hole borer, which attacks more than 200 types of trees, including the valley oaks found in the Park.

Firewood producers and dealers have formed two associations and are developing a firewood certification program – but it has not yet been formally established. Nor has APHIS issued the promised regulation to establish label and record-keeping requirements.

There are significant outreach and education efforts, *e.g.*, enforcement blitzes, billboards, posters, and press releases. The Don't Move Firewood campaign (www.dontmovefirewood.org) provides leadership.

Living Plants

The movement of living plants has the potential to be a significant factor in spreading invasive pests and pathogens across the country. A recent example is the pathogen that causes sudden oak death (SOD), *Phytophthora ramorum*, a disease of unknown origin.

First detected in California in 1995, within a few years, the disease was found in 14 counties in California and one county in Oregon. It continues to spread in those states. In 2013, the disease killed an estimated 300,000 trees over 47,000 acres. In 2014, the disease was discovered in a 15th county in California.

Infected plants also appeared in a small number of nurseries in California, Oregon, Washington State, British Columbia, and Europe. Despite the efforts of growers and state and federal regulations, between 2003 and 2011, 464 nurseries located in 27 states had plants test positive for the disease. Most nurseries with positive finds were the recipients of infected material.

Why has the disease persisted? Some nursery practices facilitate the pathogen's establishment on their premises, for example, allowing standing water in plant production areas; placing containerized plants on the ground; storing potting media on the ground; or failing to sanitize containers before re-using them.

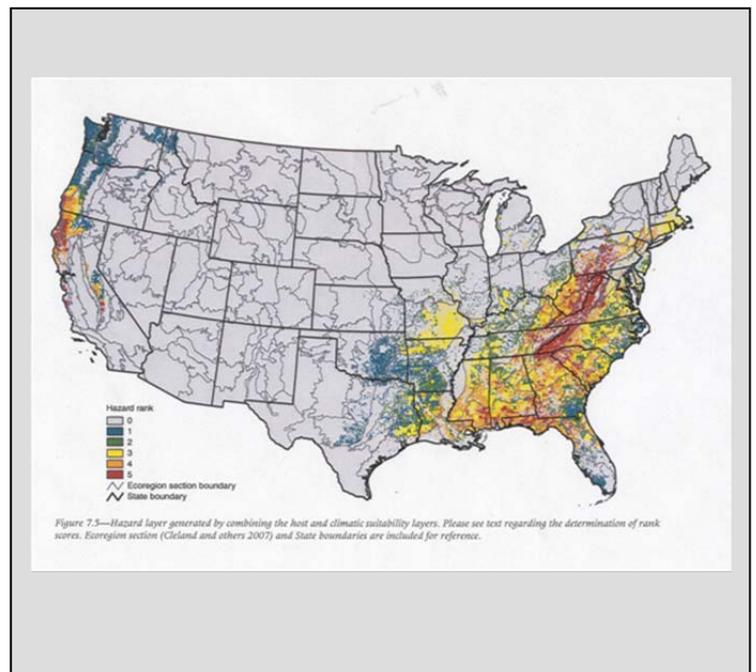
While infected plants have rarely been found in the East, and nursery-related outbreaks have been eradicated, the pathogen has been detected in eleven streams and ponds outside nurseries in several southeastern states. The pathogen cannot survive long in water, so how it persists is unclear.

Among the more than 100 species of plants that can be infected by *P. ramorum* are several trees and shrubs native to the eastern United States, including mountain laurel, rhododendron, dogwood, redbud, red maple, and several oaks – *e.g.*, chestnut oak, white oak, and northern red oak. Many risk assessment maps show the Southeast to be vulnerable to the disease.

Potter, K.M. and B.L. Conkling. Forest health monitoring: 2009 national technical report. USDA Forest Service, Southern Research station. GTR-SRS-167.

In 2010, APHIS and stakeholders agreed on a new consensus goal and recommended actions:

“The program will take a proactive approach to protect native biodiversity, wild lands, and managed landscapes from *Phytophthora ramorum* through a system of voluntary ... and mandatory approaches focused on Critical Control Points.”



The most important of several steps to implement the recommendations was a Federal Order issued in January 2014. The Federal Order:

- focuses the federal and state effort on the highest risks by
 - exempting from further regulation most nurseries in California, Oregon, and Washington – those located in areas where sudden oak death is not established in the wild and which have been determined to be free of the pathogen since March 31, 2011. If *P. ramorum* has been detected in that nursery on or after March 31, 2011, that nursery remains under regulation and must be inspected, sampled, and certified in order to ship host plants interstate. Nurseries operating in parts of California and Oregon where the disease is established in the wild remain under regulation.
 - regulating nurseries in the rest of the country only if they ship SOD-host plants interstate and the pathogen has been detected at the nursery on or after March 2011.
- Mandates testing samples of soil, standing water, drainage water, irrigation water, growing media, and other articles, not just looking for disease on the plants themselves.
- Requires all nurseries, wherever they are located, that have had the disease detected on their premises since March 2011 to adopt APHIS-approved critical control point programs to address risks found in the nursery.

Wood for Turning or Woodworking – or Processing into Lumber



Any pests that can be transported in unprocessed logs can be spread by movement of wood to supply woodworkers or lumber mills. An outbreak of laurel wilt [www.dontmovefirewood.org/gallery] was linked to transportation of infested redbay wood by an amateur woodworker. Thousand cankers disease, which infects black walnut [www.dontmovefirewood.org/gallery], has been introduced several places *via* the woodworking and veneer industries.

photo by Mark Stanley

Woodworkers who turn wood on a lathe or carve it sometimes prefer to use blocks of green wood with bark intact. Such green wood is transported and traded at the regional, national, and international level; it is sold at large shows, events, and on the Internet. Also, it is traded among individuals. The risk of transporting pests is high, due to the attached bark.

So far, efforts have focused on educating woodworkers about state quarantines (neither walnut nor redbay is regulated by APHIS). For example, the Continental Dialogue on Non-Native Forest Insects and Diseases produced a factsheet in 2012 that was endorsed by 11 organizations, including two woodworkers' associations – the American Association of Woodturners, and the International Society of Wood Collectors [go to www.continentalforestdialogue.org/library/activities/2012/WoodTurners.pdf].

Source: Campbell, F.T. and S.E. Schlarbaum. 2014. *Fading Forests III. American Forests: What Choice Will We Make*. The Nature Conservancy, Arlington, VA, and the University of Tennessee, Knoxville, TN. Online at www.nature.org/fadingforests or www.treeimprovement.utk.edu/FadingForests. For more information, contact Bill Toomey at btoomey@tnc.org