BEST MANAGEMENT PRACTICES
For Arborists and Tree Care Workers

Reducing the Spread of Invasive Insects and Pathogens in Cut Wood

Invasive insects and diseases are threatening numerous tree species throughout the country. Impacts include tree mortality, destruction of forest and urban habitats, and other significant changes in forest ecosystems due to the decline or elimination of tree species. Many of these pests can be transported in minimally-processed wood, including firewood and wood left behind from tree care operations. Preventing the spread of these pests to new areas is a principal means of protecting valuable forest resources.

Invasive forest pests of concern include those established in other parts of the country (e.g. emerald ash borer and Asian longhorned beetle), as well as those with limited distributions in California and other areas of the western U.S. (e.g. goldspotted oak borer, various bark beetle species, and the pathogens responsible for pitch canker and sudden oak death). Properly managing cut wood can effectively reduce the risk of spreading these threats to new areas. Arborists and tree care workers can help by using best management practices (BMPs) for cut wood.

BMPs need to be broad for a number of reasons:

- They are intended to prevent the spread of a number of invasive pests.
- These pests are located in many different areas and their distributions are not definitively known.
- Incipient or outlier infestations may not be reported, making it less certain which areas may be free of invasive pests.
- It can be difficult to determine if a particular tree or wood cut from it is infested (or contaminated) with an invasive pest, including trees that appear healthy.
- Wood can become infested *after it is cut* from a tree.
- Even insects and pathogens that are native to a particular region of the U.S. can become serious pests when moved to an area where they don't exist. Goldspotted oak borer and pitch canker are good examples.

Basic Recommendation - *Avoid moving unprocessed wood*

The safest approach is to assume that all cut wood can harbor invasive pests and therefore should not be moved from the local area. Utilize or dispose of the wood near the site where it was cut. For firewood, the outreach campaign slogans "Don't Move Firewood" and "Buy It Where You Burn It" encourage this approach.

Cut wood should not be left on the curbside for free pick-up. There is no way to keep this wood from being moved long distances. If wood is to be left with the landowner, advise them to use or dispose of the wood locally. Handouts explaining the risks of transporting cut wood can be downloaded from the California Firewood Task Force's website http://www.firewood.ca.gov/outreach.html, including a Firewood Question and Answer Factsheet and Firewood Postcard. These can be printed and distributed to landowners. Compliance with quarantine regulations will help limit the spread of serious insects and pathogens.

Treatments to Discourage or Destroy Invasive Pests in Wood

- Grinding wood to a chip size of one inch or less will eliminate most wood boring insects. Using the chipped material as a ground cover on-site or nearby is preferred. Chipping is also recommended if the wood is to be transported to a biomass or composting facility more than 50 miles away. If that is not possible, the receiving facility should promptly chip the material upon arrival.
- Heat treatment of infested firewood to a core temperature of 160° F for a minimum of 75 minutes has been shown to eliminate insects and diseases .
- Complete removal of bark from branch

and trunk rounds can eliminate certain insects that feed solely in or under the bark, such as bark beetles and some wood borers. This will not eliminate insects that burrow in the wood or pathogens.

- Drying firewood on site for greater than two years can reduce the risk of transporting most invasive insects. Similarly, wood that is cut from trees that have been dead for greater than two years is unlikely to contain living invasive insect pests. Invasive pathogens may still be present.

Invasive pests associated with firewood in the western U.S.

The following insects and tree diseases are found in limited areas of the western United States and represent forest health threats to hardwood and conifer species throughout the nation. Compliance with federal and state regulations is required to move wood from quarantine areas. Adhering to BMPs will limit the spread of all invasive pests and help protect our urban and native forests.

Federally quarantined species:
Sudden oak death, *Phytophthora ramorum*

Non-quarantined invasive species:
Goldspotted oak borer, *Agrilus auroguttatus*
Redhaired pine bark beetle, *Hylurgus ligniperda*
Mediterranean pine engraver, *Orthotomicus erosus*
Balsam Wooly Adelgid, *Adelges piceae*
Pitch canker disease, *Fusarium circinatum*
Thousand cankers disease, *Geosmithia morbida*

Online Resources

Continental Dialogue
http://www.dontmovefirewood.org/
APHIS
http://www.aphis.usda.gov/newsroom/hot_issues/firewood/index.shtml
USDA Forest Service
http://www.na.fs.fed.us/firewood/
CA Firewood Task Force
http://www.firewood.ca.gov/
Yosemite National Park
http://www.nps.gov/yose/naturescience/forest-pests.htm
Buy it where you burn it
http://www.oregon.gov/OISC/pressrelease_firewood2010.shtml

General recommendations for handling and using firewood

- Don't move firewood long distances from where it was purchased. Use the wood locally. "Buy it where you burn it."
- Ask about the firewood you are buying. Is it from a local source (less than 50 miles preferred) or has it been treated to eliminate or reduce pests (e.g. heat treated or seasoned for 2 or more years)?
- When purchasing firewood for camping, buy an amount that can be completely burned during your stay. If firewood is left over, leave it for the next camper.
- Plan on cutting firewood within 50 miles of where it will be used.
- Seasoning of green wood (letting it dry) for at least two years or using wood from trees that have been dead for at least two years can reduce the danger of transporting most invasive insects threatening trees.
- Cutting standing trees can be dangerous, especially dead trees which often are unstable. Only cut standing trees if you have the proper equipment and training to do it safely.