Can Firewood Be Harmful To Our Forests?

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Hot and humid days of summer are changing into cool and windy ones of autumn, making popular recreational activities such as water sports and picnics transition into wild game hunting and camping. Usually associated with these fall activities is a familiar custom: sitting around a warm campfire, roasting meals, and laughing with friends. This campfire social seems peaceful and innocent enough, but the firewood that fuels these fires can be detrimental to Alabama's forests. Besides the obvious potential of wildfires, something more devastating and long-lasting can spread into our native environment. Firewood that is transported into the state from other locations can possibly harbor non-native, invasive forest pests.

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Asian Longhorned Beetle

To fully grasp the possible effects of importing firewood and other untreated wood material into the state, it is important to understand the pests associated with these wood products. Several non-native insects and disease pathogens can survive for an extended time and for long distances in firewood. Insects in this group that are currently a threat to our southern forests are the Asian longhorned beetle, emerald ash borer, *Sirex* wood wasp, gypsy moth, and redbay ambrosia beetle. Most of these invasive insects are presently established in the northeast United States and are gradually moving south.

Remember chestnut blight? Well, there are other perilous disease pathogens wreaking havoc on our native forests. Diseases such as beech bark and sudden oak death are present in other areas of the United States and can easily be transported into Alabama's forest ecosystem through firewood and other untreated wood products. To quantify the devastation caused by these pests, each one has its own unique way of inhabiting the wood and spreading into a non-native environment.

1. **Asian longhorned beetle** (*Anoplophora glabripennis*) – Discovered in 1996 on several hardwood species in Brooklyn, New York, this insect was believed to be introduced into the United States from wood packing material imported from Asia. To date, this beetle has infested areas in New York, New Jersey, and Massachusetts. While a separate introduction was discovered in 1998 near Chicago, successful eradication efforts in Illinois have contained and virtually eliminated the infestations in that state.

The Asian longhorned beetle is shiny black with small white markings, 1 to 1¼ inches in length with long distinguishable antennae. The larvae do most of the damage by feeding into the tree's heartwood, forming galleries in the trunk and branches. In severe cases, this girdling activity will kill the host tree. This beetle mainly attacks maple species such as Norway, sugar, silver, and red, but will also attack other tree species such as boxelder, horsechestnut, buckeye, elm, birch, willow, London plane, ash, and poplar. The larvae can hide deep in the wood where they pupate increasing the potential of unknowingly transporting infested firewood from these states to other locations.

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Emerald Ash Borer

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2. **Emerald ash borer** (*Agrilus planipennis*) – Discovered in 2002 near Detroit, Michigan, this insect is suspected to have arrived on imported solid wood packing material from Asia. Following the initial attack on its host tree in Michigan, the emerald ash borer has spread into Ohio, Indiana, Illinois, Maryland, Pennsylvania, West Virginia, Wisconsin, Missouri, Virginia, Minnesota, and New York by 2009, killing over 10 million ash trees.
   The emerald ash borer is a small, metallic-green beetle approximately ½ inch long. The adult beetle generally leaves a D-shaped exit hole in the bark as it emerges in the spring. The larvae, however, do most of the damage by feeding in the inner bark of ash trees, causing the vascular system of these infested trees to be disrupted. Eventually, this disruption kills the host tree. Ash species are the only known host. No affirmative eradication method is currently successful. Larvae can exist in the inner bark of cut firewood from ash trees, making transportation and introduction of this invasive pest into another location quite simple.
3. **Sirex wood wasp** *(Sirex noctilio)* – This wood wasp species was discovered in a routine trap survey in Oswego County, New York, in 2005. Not known to have spread extensively, the insect has reported infestations in New York and Indiana. Also believed to have been introduced into the United States from solid wood packing material, the *Sirex* wood wasp originated from a wide area that includes Europe, Asia, and North Africa.

Sirex Wood Wasp

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A rather large wood-boring wasp, the *Sirex noctilio* is 1 to 1½ inches long, with a metallic blue body and some black and orange areas on the abdomen and legs. The appearance of the adult male is slightly different from the adult female, but the general color scheme for both is basically the same. Both the adult insect and the larvae cause damage to the host tree. The adult female wasp bores into a pine tree and vectors a toxic fungus, *Amylostereum areolatum*. This fungus assists the larvae in feeding by converting the wood cellulose into a more easily digestible form. The fungus spreads into the wood causing the host tree to desiccate and eventually die. The larvae feed and exist in the sapwood of pines, creating the potential for unknowingly transporting infested firewood to other locations. Several pine species known to be potential hosts include Monterey, loblolly, slash, shortleaf, Virginia, Jack, lodgepole, ponderosa, and Jeffrey pines.

USDA APHIS PPQ Archive, USDA APHIS PPQ, Bugwood.org

Gypsy Moth

4. **Gypsy moth** *(Lymantria dispar)* – The gypsy moth was intentionally introduced from Europe into the United States near Boston, Massachusetts, in 1869 by a scientist trying to breed this insect for silk production. Approximately 10 years later, outbreaks of gypsy moth attacks were noticed in many areas of Massachusetts. Since that time, isolated infestations have continued to spread throughout New England. Some populations have disappeared without intervention, due to a variety of natural enemies. A second introduction of gypsy moth – an Asian species – was also found in the New England states. Overall, the gypsy moth has attacked host trees in the eastern states from Maine, west to Wisconsin, and south to North Carolina.
   Quite different in appearance, the male gypsy moth is brown in color while the female is white. The female European gypsy moths are flightless. Both adult moths, however, can attach themselves onto firewood, vehicles, or camping equipment and unknowingly be transported to other locations. The larvae do most of the damage by defoliating leaves of the host tree. With hardwood trees, one or two consecutive years of defoliation usually do not kill the tree, but repeated years of defoliation can. The main hosts are hardwoods such as oaks and aspens, but the gypsy moth will also attack other tree species such as apple, alder, basswood, birch, poplar, willow, hawthorn, hemlock, tamarack, pine, spruce, and witch-hazel.

Florida Dept of Agriculture and Consumer Services, Bugwood.org

Redbay Ambrosia Beetle

5. **Redbay ambrosia beetle** *(Xyleborus glabratus)* – The redbay ambrosia beetle was first discovered in a survey trap in the southern part of the United States in 2002 at Port Wentworth, Georgia. As with many others, this insect was believed to have been introduced on untreated wood-packing material from Asia. Since this time, the redbay ambrosia beetle has spread into other areas of Georgia, South Carolina, and Florida. In 2009, a new introduction was discovered in Mississippi very close in proximity to Mobile County in Alabama.
   As with most ambrosia beetles, the redbay ambrosia beetle is small (approximately 1/16 inch long), elongate, and black in color. When it bores into a host tree, the beetle vectors an associated fungus (*Raffaelea lauricola*) that aids in the feeding process of the adult beetle and larvae. Eventually, the fungus "clogs" the vascular system of the host tree, killing it within a few weeks. The redbay ambrosia beetle is known to initially attack redbay and sassafras trees, but this insect will also infest other trees in the Laurel family such as swampbay, pondberry, pondspice, camphor, and avocado. Because both the adult beetle and larvae inhabit the inner areas of the tree, unintentional transportation of this pest by firewood is very possible.
6. **Pathogens including sudden oak death and beech bark disease** – As with invasive, non-native insects, pathogens are usually accidentally introduced into the United States on untreated wood products. Most of these forest pathogens are originally from Asia, although several are from Europe. Pathogens such as the one associated with sudden oak death disease spread from one host tree to the next either by root graft or translocation in the soil. Others are associated with a complex such as beech bark disease where there is a connection with a pathogen and an insect. If infected firewood or other untreated wood material is transported to another location from a quarantined area, introduction and spread of that particular pathogen can be inevitable.

Do Not Move Firewood

Several regions in the country are collaboratively campaigning to halt the interstate movement of firewood and other unprocessed wood material. State agencies, private groups, as well as federal government representatives are emphasizing the statement, "Do not move firewood from one location to the next." Public information and awareness about the possible effects of using non-local firewood can aid in the prevention and spread of these invasive forest pests. In some quarantined states, the Department of Agriculture and Consumer Services in association with the Animal and Plant Health Inspection Service (APHIS) are working diligently to submit a proposal to regulate the movement of such wood products. Flyers are being placed at state parks, national forests, and other natural areas to encourage campers to follow steps such as:

- When camping at state parks and national forests, purchase and use local, aged (dry) firewood.
- Purchase firewood within 50 miles of your destination.
- Many parks and forests sell firewood right outside the entrance.
- Local stores may also provide firewood products.
- Use firewood in its entirety during your camping vacation.
- Do not leave any unused firewood on site or transport it to another destination.
- If any firewood is left, give it to park or forest ranger, or donate it to a nearby camper.

Following a few simple rules can keep the serenity and peacefulness of camping without potentially harming Alabama's native ecosystem. "Do Not Move Firewood" is a great catch phase that can alert and inform all outdoor enthusiasts of the importance of preventing infested firewood from becoming detrimental to our forests.

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