Bug off! Invasive insect pests threaten Vermont's forests

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Buy locally and think globally for the sake of Vermont's forests is a message Barbara Burns, a forest resource protection supervisor with the VT Department of Forest, Parks and Recreation relayed to a group at Green Mountain College earlier this month. With the increased risk of imported pests from other parts of the world, purchasing local grown nursery stock, locally grown lumber and not transporting fire wood more than 50 miles is now more important than ever. Taking these precautions reduces the risk of introducing or spreading exotic pests harmful to our native trees. Burns also notes buying local goods in general also means less wood packing materials arriving from overseas and less opportunity for unwelcome pests to arrive. She also emphasized that strict government regulation of imported goods to reduce the 'chance' arrival of exotic species is crucial.

While not the only pests to watch for, three unwanted invasive exotic insect pests, the emerald ash borer, the Asian longhorn beetle and the hemlock woolly adelgid deserve special mention as they have the potential to do considerable damage to the forests of Vermont in the near future. It is critical for Vermonters to be on the look out for these pests and to understand their habits. The sooner an infestation is detected, the greater the ability to slow its spread or eradicate it.

These three insect pests were accidentally introduced to North America from Asia -- their introduction a result of our increasingly global economy. Burns notes that wood imports from Asia to the U.S. have increased dramatically in the mid 1990s. Hemlock Woolly Adelgid was the first of the trio to arrive. It found its way to Virginia on hemlock nursery stock from Japan in the 1950s. The emerald ash borer and the Asian longhorn beetle are thought to have arrived in North America stowed away perhaps as eggs or larvae in solid wood packing material shipped from Asia. Because the forests of eastern North America share a similar climate to East Asia and many of the trees species have close Asian relatives, many of the Asian insects find conditions ideal for their survival here. Because the non-native insects have not co-evolved over thousands

of years with our forest species, the introduced insects often lack natural enemies and our native trees have not evolved a resistance to the pests. In contrast, Burns described how the outbreak several years ago of the forest tent caterpillar, a species native to our forests was brought under control by a host of native species including flies, wasps, beetles, fungus and virus diseases that have co-evolved over thousands of years with the forest tent caterpillar and our native trees. Burns notes that tent caterpillar outbreaks tend to occur every 10 – 15 years in our forests and are naturally brought under control within about 3 years.

Emerald Ash Borer – (*Agrilus planipennis*)

Of the three invasive insect species, Burns considers the emerald ash borer to be the largest current threat to Vermont's forests. Since being discovered in 2002 in Michigan, the wood boring insect has killed tens of millions of ash trees including white, black and green ash (species in the genus *Fraxinus*). According to the latest maps available the emerald ash borer has spread rapidly to at least 10 states and 2 Canadian provinces. Last summer it was discovered just 30 miles north of Vermont in Carignan Quebec.

The adult emerald ash borer is a shiny, metallic green beetle about 3/8 – 5/8 inches in size and is active during the summer months. The larvae which are about an inch long feed in the layer between the bark and the wood of all species of ash, leaving a series of twisting paths or "galleries" under the bark which kills the tree by preventing the transport of water and nutrients. The larvae can be found under the bark year-round. On infected trees there are D-shaped holes about ¼" in size where the larvae emerge. Trees are killed within a few years and adults have the ability to fly up to ½ mile and infest new areas, a characteristic which has resulted in the rapid spread of the pest. Researchers are investigating possible biological control methods, but currently there are no effective methods of control other than removing infested trees. It is sobering that eradication has not been successful in any areas where it has been detected in North America.

Ash is a common component of many hardwood forests in the region and the three species found in Vermont are present in a variety of habitats from swamps to uplands. When considering the

extent of the ecological, cultural and economic implications of the loss of ash from our forests, the value of ash seeds for birds, the use of the wood for baskets, baseball bats and furniture, and the lovely shady sites where grows come to mind.

Hemlock Woolly Adelgid (*Adelges tsugae*)

The hemlock woolly adelgid is a tiny sucking insect that feeds on the twigs of native and ornamental hemlocks. White woolly tufts at the base of needles on the underside of the twigs are a sign of the insect. Over time trees begin to loose twigs and needles and may die in four to six years. Low winter temperatures often kill the adelgids which may help to slow the insect's spread northward. Birds and animals help to spread the insect and Burns notes that most infested hemlock trees in Vermont have so far been found near bird bath or feeders, so state officials advise homeowners to remove bird baths and feeders during the spring and summer when the insects are moving about to reduce the likelihood of spreading the pest.

Since its arrival in the 1950s, HWA is now established in forests extending from southern Maine south to Georgia. Surveys last summer in Vermont confirmed that the insect has spread up the West River corridor to at least four towns, Vernon, Brattleboro, Townsend and Jamaica in Windham County. Hemlock is a much loved tree in the state and the 7th most common. The evergreen is characteristic of a variety of sites including riverside areas where it provides a buffer to streams and important habitat for many of wildlife species. The potential impact of the spread of HWA is tremendous.

Asian Longhorn Beetle –*Anoplophora glabripennis*

The Asian longhorn beetle attacks a variety of hardwood trees including all species of maple, birch, elm and poplar. The insect was first discovered in New York in 1996 and has also been found in New Jersey and Illinois and just last summer the insect was found in Worcester, MA just 45 miles south of Vermont. Dave Mance III writes in Northern Woodlands Magazine that a 62 square mile quarantine zone around Worchester has been established and almost 1700

infected trees have been marked to be removed. It is illegal to move firewood, nursery stock or lumber out of the quarantine zone. Eradication of the insect remains the goal of control efforts, but it will depend largely on people not moving infected wood outside of quarantined areas as the insect spreads very slowly on its own. On an optimistic note, Asian longhorn beetle has been declared successfully eradicated from Chicago where it was first discovered by a citizen in 1998.

The adult Asian Longhorn beetle is a conspicuous, shiny black insect with white spots and long antennae (longer than the body). It is sometimes confused with a native beetle, the white spotted pine sawyer, which unlike the Asian longhorn has a prominent white spot behind its head on its wing covers and generally feeds on dying or recently dead pines. The female Asian longhorn beetle lays numerous eggs on the bark of a tree and when larvae hatch, they burrow into wood disrupting water transport. The larvae spend the winter feeding and after pupating emerge from the tree trunk through emergence holes that are about 3/8 inch in size which are said to resemble the holes made to tap sugar maple trees. The adults feed on the trees twigs and leaves. The adults are poor flyers and often the female will lay her eggs on the same tree where she was born. Because the Asian longhorn beetle attacks so many species of our native hardwood trees the potential impact of an infestation is overwhelming. So here are some important measures to take:

1. Do not move firewood. Buy firewood from areas you are visiting when on vacation.

2. Consider buying nursery stock and lumber locally. When purchasing lumber or nursery stock from other states make sure they are not from areas where there is a quarantine and make sure they are certified free of emerald ash borer, Asian longhorn beetle and hemlock wooly adelgid.

3. Familiarize yourself with the three pests mentioned in this article. Contact the VT Dept of Forests and Parks with any signs of these pests

4. Join or form a citizen forest watch group to survey for the unwanted pests.

5. Consider removing bird feeders/ bird baths around hemlock trees during the spring and summer months.

6. Enjoy our forests and keep a watchful eye out for the most unwanted pests.

On the net
Vermont Department of Forests, Parks and Recreation: vtfpr.org