

# Exotic Insects Invading Nevada's Trees!

## Be a Citizen Monitor for Urban and Native Forests

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### Introduction

If you have a landscape with a tree in it, your yard is part of an urban forest. There are also natural forests of native trees throughout Nevada. Invasive insects coming in from other countries now threaten both our urban and natural forests. Some states have already lost significant numbers of native and landscape trees due to these insect invaders. Anyone with a tree in their yard needs to be aware of these potentially devastating insects in order to protect not only the trees in their yard, but also the trees in our forests.

Why should we worry about exotic invasive insects? Trees are the backbone of a landscape. They are a valuable investment in a home landscape, park or as community trees. They provide shade, cooling, beauty, erosion control and wildlife habitat. They clean the air. They uplift our spirits and give a

community an identity. They may have historic value as well (USDA Forest Service, 1993). When trees are lost, it reduces property values and curb appeal, eliminates shade, creates heat islands, causes hazards when dying limbs and dead trees break or fall and it destroys the beauty of our landscapes. Dead and dying trees can be significant wildfire hazards. Replacing trees, particularly mature trees, can be expensive and, in Nevada, trees take a long time to grow.

### Purpose of this Publication

The USDA Forest Service, Nevada Division of Forestry, Nevada Department of Agriculture and University of Nevada Cooperative Extension are working together to raise awareness of a number of destructive exotic insects that could destroy our urban and native trees if these insects become established in Nevada.

So far, few, if any, are present in Nevada, so we want to keep them out or spot them early when they arrive. Finding these pests early

and treating them immediately is critical to eradicating these invaders before they kill our trees. We want you to join our Citizens' Monitoring Program in which we are encouraging the public to be on the lookout for the exotic invasive insects listed in this publication.

### The Insects of Greatest Concern Include:

- Asian longhorned beetle (*Anoplophora glabripennis*)
- Emerald ash borer (*Agrilus planipennis*)
- Goldspotted oak borer (*Agrilus coxalis*)
- Honeylocust borer (*Agrilus diffilis*)
- Oak splendour beetle (*Agrilus biguttatus*)
- Redhaired pine bark beetle (*Hylurgus ligniperda*)
- Red palm weevil (*Rhynchophorus ferrugineus*)
- Sirex wood wasp (*Sirex noctilio*)
- Whitesatin moth (*Leucoma salicis*)

See Table 1 (pages 3 – 7) for details on these pests.



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## What Can You Do to Prevent These Pests?

**Keep trees healthy.** This is the best defense. Trees need water, air in the soil, nutrients, sunlight and proper maintenance to thrive. Rainfall is rarely sufficient moisture, so trees must be watered regularly, even through the winter. Keep a minimum of a 12-inch area around trees free of lawn and weeds so there is no competition for water or nutrients and so lawnmowers can't damage trunks. Avoid damaging trunks with power string trimmers. Most trees will need a balanced fertilizer at least once per year. Prune at the time of year appropriate for the type of tree using proper pruning cuts. Your local University of Nevada Extension office can help with this information or go to [www.unr.edu](http://www.unr.edu) for publications on tree care.

**Don't move or import firewood.** Firewood often carries invasive insects and diseases that kill native and ornamental trees. New infestations of these insects destroy our native and urban forests, reduce property values and cost a great deal to monitor, manage and control. Even if you don't see any visible signs of

infestation, insect eggs can be very tiny and yet hatch into larvae and then adults that can destroy an entire ecosystem. Never assume that firewood that "looks safe" is safe to move. Buy firewood from local sources where you burn it. ([www.dontmovefirewood.org](http://www.dontmovefirewood.org)).

**Be on the lookout for invasive insects.** If you think an insect looks suspicious, or you see D-shaped holes in ash, honeylocust or oak trees, call **Jeff Knight**, State Entomologist with the Nevada Department of Agriculture, **775.353.3767**, or the Forest Health Specialist with Nevada Division of Forestry, **775.849.2500, ext 241**.

**Be aware of which trees could be victims.** Learn to identify the ornamental and native trees in your yard, your neighborhood and your area. If they look like they are suffering, find out why.

For more information in the northern part of Nevada, contact **JoAnne Skelly**, Extension Educator, **775.887.2252**, [skellyj@unr.edu](mailto:skellyj@unr.edu). For the southern area, contact **Ange O'Callaghan**, Social Horticulture Specialist, **702.257.5581**, [ocallaghana@unr.edu](mailto:ocallaghana@unr.edu).

## Conclusion

Each of us can play a significant role in protecting our native and urban forests from exotic invasive insects that can do great ecological, aesthetic and economical damage to our trees.

Please, be on the lookout for these pests in Table 1. Be aware of some of the lookalike insects that are not invaders (Figure 1). Note, before using pesticides, identify the pest, read and follow the label.

**Be a Citizen Monitor  
for insects  
invading trees.**







# Exotic InSEcts Invading nEvada's trEEs

**Table 1: Exotic Invasive Insects to Look Out For**

Name of Insect	Trees Invaded	Symptoms	Control	In	In	Comments
<b>Asian longhorned beetle (ALB)</b>  <b>ALB adult <math>\frac{3}{4}</math>" to <math>1\frac{1}{4}</math>"</b>   <small>Photo: K.r. Law, usda aPhis PPQ, Bugwood.org</small>	<b>Partial list*:</b> <ul style="list-style-type: none"> <li>• Ash**</li> <li>• Birch</li> <li>• Elm</li> <li>• Horsechestnut</li> <li>• Maple, including boxelder, Norway, red and silver</li> <li>• Mountain ash**</li> <li>• Sycamore**</li> <li>• Mimosa**</li> <li>• Poplar**</li> <li>• Willows</li> </ul> <p>* Complete host list not yet determined</p> <p>** Occasional to rare hosts</p>	<ul style="list-style-type: none"> <li>• Dying branches or whole trees</li> <li>• Large black beetles with white spots and long antennae <math>1\frac{1}{2}</math> to <math>2\frac{1}{2}</math> times the body length. Feet have bluish tinge</li> <li>• Oval to round pits in the bark</li> <li>• Oozing sap in summer</li> <li>• Accumulation of coarse sawdust around the base of tree or where branches join trunk</li> <li>• Round holes on trunks <math>\frac{3}{8}</math> inch or larger in diameter</li> </ul>	<ul style="list-style-type: none"> <li>• Remove infested trees and destroy by chipping or burning</li> </ul> <b>ALB exit hole</b>   <small>Photo: d.a.haugEn, usda ForEst SErvice, Bugwood.org</small>	IL MA NJ NY OH	No	<ul style="list-style-type: none"> <li>• Probably arrived in U.S. in wood packing material from China.</li> <li>• To prevent further spread avoid transporting infested wood from area.</li> <li>• Could cause more damage than Dutch elm disease, chestnut blight and gypsy moth combined (USDA APHIS 2001).</li> </ul>
<b>Emerald ash borer (EAB)</b>  <b>EAB adult <math>\frac{1}{4}</math>" - <math>\frac{1}{2}</math>"</b>   <small>Photo: h. russELL, Michigan State UnivErsity, Bugwood.org</small>	<ul style="list-style-type: none"> <li>• Ash only, particularly green ash</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of leaves may thin by 30% to 50%, gradually</li> <li>• Dense shoots on trunk</li> <li>• D-shaped holes on trunks and branches</li> <li>• Dead branches at top</li> <li>• Woodpecker damage</li> <li>• S-shaped tunnels under the bark</li> </ul>	<ul style="list-style-type: none"> <li>• Insecticides containing the ingredient imidacloprid may work if tree is still relatively healthy (Hermes et al. 2009).</li> <li>• Remove trees with more than 50% of their tops dying or dead and destroy wood by chipping or burning</li> </ul>	IL IN KY MD MI MN MO NY OH PA TN VA WV WI	No	<ul style="list-style-type: none"> <li>• Often moved in firewood</li> <li>• Strong fliers</li> </ul> <b>EAB D-shaped exit hole</b>   <small>Photo: ny State dEPT of ag and MarKEts, Bugwood.org</small>

# Exotic InSEcts Invading nEvada's trEEs



**Table 1: Exotic Invasive Insects to Look Out For**

Name of Insect	Trees Invaded	Symptoms	Control	In	In	Comments
<b>Goldspotted oak borer (GSOB)</b>  <b>GSOB adult, 13/16"</b>    <small>Photo: M. LEwis, CEntEr For InvasivE SPECiEs REsEarch, Bugwood.org</small>	<ul style="list-style-type: none"> <li>• Oak</li> </ul>  <b>GSOB bark staining</b>    <small>Photo: t.W. CoLEMan, USdA ForEst SErVICe</small>	<ul style="list-style-type: none"> <li>• Six golden yellow spots on dark green back of beetle</li> <li>• Extensive black or red staining with sap oozing from under the bark</li> <li>• Top of tree thins and branches die back</li> <li>• D-shaped holes on trunks, branches</li> <li>• Woodpecker damage</li> </ul>	<ul style="list-style-type: none"> <li>• Insecticides containing the ingredient imidacloprid may work if tree is still relatively healthy (Hermes et al. 2009)</li> <li>• Remove dead or dying trees and handle infested materials carefully</li> <li>• Tarp the wood with thick clear plastic; expose cut wood to direct sunlight after removing bark; or chip-infested material</li> </ul>	AZ CA	No	<ul style="list-style-type: none"> <li>• Readily moved in firewood and wood packing material</li> <li>• Related to EAB and HB</li> </ul>
<b>Honeylocust Borer (HB)</b>  <b>HB adult female 1/2"</b>    <small>Photo: J.P. BashaM, TEnnEsSEE StatE UnivErsity, Otis L. Floyd NursEry REsEarch CEntEr</small>	<ul style="list-style-type: none"> <li>• Honeylocust</li> </ul>	<ul style="list-style-type: none"> <li>• Yellowish-white bands on sides</li> <li>• Notches along leaf margins</li> <li>• Weeping at wounds</li> <li>• Top and branches die back</li> <li>• D-shaped holes</li> <li>• Tree may die</li> </ul>	<ul style="list-style-type: none"> <li>• Keep the tree healthy and watered well to prevent attacks: avoid drought stress, wounds to the tree, prune at the proper time of year</li> </ul>	AL AR CO GA IA IL IN KS KY LA MI MO NC NE NJ NM OH OK SC SD TN UT	Yes, in Reno and Las Vegas	<b>HB exit hole, D-shaped</b>    <small>Photo: J. Knight, nEvada DEPartMEnt oF aGRiculTurE</small>







# Exotic Insects Invading Nevada's Trees

**Table 1: Exotic Invasive Insects to Look Out For**

Name of Insect	Trees Invaded	Symptoms	Control	In	In	Comments
<b>Oak splendor beetle (OSB)</b>  <b>OSB adult, 1/3" to 1/2"</b>    <small>Photo: g. Csoka, Hungary ForEst REsearch InstitutE, Bugwood.org</small>	<ul style="list-style-type: none"> <li>• Oak</li> <li>• Chestnut</li> <li>• Beech</li> </ul>	<ul style="list-style-type: none"> <li>• Adults metallic green with white spots on sides</li> <li>• Branches dieback, top thins, tree dies</li> <li>• D-shaped holes</li> <li>• Zig-zag galleries under the bark</li> </ul>	<ul style="list-style-type: none"> <li>• Insecticides containing the ingredient imidacloprid may work if tree is still relatively healthy (Herms et al. 2009).</li> </ul>	No	No	<ul style="list-style-type: none"> <li>• Strong fliers</li> <li>• Related to EAB, GSOB, HB</li> <li>• Readily moved in firewood and wood packing material</li> <li>• Poses substantial risk to natural and urban environments if it were to be introduced</li> </ul>
<b>Redhaired pine bark beetle (RPBB)</b>  <b>RPBB adults, 3/16"</b>    <small>Photo: W.M. Ciesla, ForEst HEalth ManagEMEnt IntErnational, Bugwood.org</small>	<ul style="list-style-type: none"> <li>• Pine</li> <li>• Spruce</li> <li>• True fir</li> <li>• Douglas Fir</li> <li>• Larch</li> </ul>	<ul style="list-style-type: none"> <li>• Reddish hairs visible on beetle with magnifying glass</li> <li>• Small holes on trunk may have reddish boring dust around them</li> </ul>	<ul style="list-style-type: none"> <li>• Keep the tree healthy to prevent attacks: avoid drought stress, wounds to the tree, prune at the proper time of year</li> <li>• Remove dead or dying trees and handle infested materials carefully</li> <li>• Tarp the wood with thick clear plastic; expose cut wood to direct sunlight after removing bark; or chip infested material</li> </ul>	CA NY	No	<ul style="list-style-type: none"> <li>• Strong fliers</li> <li>• Kills healthy trees and seedlings</li> <li>• Transmits black-stain root disease in pines</li> <li>• Comes in on firewood and wood packing materials</li> <li>• Do not move wood from infested locations to uninfested locations</li> <li>• Do not store infested wood near live trees</li> </ul>


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**Table 1: Exotic Invasive Insects to Look Out For**

Name of Insect	Trees Invaded	Symptoms	Control	In CA	In NV	Comments
<b>Red palm weevil (RPW)</b>  <b>RPW adult male, 1½"</b>    <small>Photo: M. Lewis, Center for Invasive Species Research, U.C. Riverside</small>	<ul style="list-style-type: none"> <li>• Palm</li> </ul>	<ul style="list-style-type: none"> <li>• Long snout, red stripe on back of head</li> <li>• Tunnels occur on trunk or base of fronds</li> <li>• May hear larvae feeding</li> <li>• Oozing sap and sawdust comes out of tunnel entrances and smells fermented</li> <li>• May see dead weevils at base of tree</li> <li>• Newest leaves may die back</li> <li>• Trunk may break or top may fall</li> </ul>	<ul style="list-style-type: none"> <li>• Keep the tree healthy to reduce attacks: avoid drought stress, wounds to the tree, clean the tree's top</li> <li>• Trap and destroy the weevil</li> <li>• Some insecticides available</li> <li>• Chip, burn or deeply bury infested material</li> </ul>	CA	No	<ul style="list-style-type: none"> <li>• Strong fliers</li> <li>• Considered one of the most damaging palm insects in the world (Center for Invasive Species, 2012)</li> </ul> <b>RPW damage</b>    <small>Photo: M. Lewis, Center for Invasive Species Research, Bugwood.org</small>
<b>Sirex woodwasp (SWW)</b>  <b>SWW adult, 1 to 1½"</b>    <small>Photo: S. Valley, Oregon Department of Agriculture, Bugwood.org</small>	<ul style="list-style-type: none"> <li>• Pine</li> </ul>	<ul style="list-style-type: none"> <li>• Dark metallic blue or black body, legs reddish yellow</li> <li>• Foliage of infested trees wilts, changes color from dark green to light green to yellow, then red</li> <li>• May have sap dribbles on trunk</li> <li>• Round holes on trunk 1/8 to 3/8" in diameter</li> </ul>	<ul style="list-style-type: none"> <li>• Keep the tree healthy to prevent attacks: avoid drought stress, wounds to the tree, prune at the proper time of year</li> </ul>	NY	No	<ul style="list-style-type: none"> <li>• Wood packing materials easily introduce and spread pest</li> </ul> <b>SWW sap dribbles</b>    <small>Photo: d. Haugen, Bugwood.org</small>

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**Table 1: Exotic Invasive Insects to Look Out For**

Name of Insect	Trees Invaded	Symptoms	Control	In	In	Comments
<b>White satin moth (WSM)</b>  <b>WSM caterpillar</b>   <p>Photo: g. Csoka, Hungary Forest Research Institute, Bugwood.org</p>	<ul style="list-style-type: none"> <li>Aspen</li> <li>Poplar</li> <li>Willow</li> </ul>	<ul style="list-style-type: none"> <li>Silvery-white adults</li> <li>Will defoliate a tree. Trees defoliated year after year susceptible to other insect attack and disease. They may die</li> </ul>	<ul style="list-style-type: none"> <li>Keep the tree healthy: avoid drought stress, wounds to the tree, prune at the proper time of year</li> <li>Spray foliage with microbial insecticide—<i>Bacillus thuringiensis</i> var. <i>kurstaki</i></li> <li>Chemical insecticides available</li> </ul>	CA ID MA MT NY OR WA WY & NE US	Yes	<ul style="list-style-type: none"> <li>Males are active but females rarely fly</li> </ul>

**Figure 1: Native Lookalike Insects**

**Figure 2: Other Invasive Insects**



Photo: W. Cranshaw, Colorado State University, Bugwood.org

**Native cactus longhorned beetle**  
1 to 2"



Photo: W. Cranshaw, Colorado State University, Bugwood.org

**Native western cedar borer**  
5/8"



Photo: S. Valley, Oregon Department of Agriculture, Bugwood.org

**Native fir/pine sawyers**  
This is a spotted pine sawyer, 3/4 to 1"



Photo: A. Wagner, USDA APHIS PPQ, Bugwood.org

**Invasive Citrus longhorned beetle**  
1 to 1 1/2"

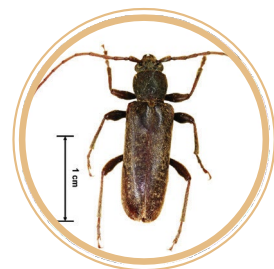


Photo: C. Pierce, USDA APHIS PPQ, Bugwood.org

**Invasive Chinese longhorned beetle**  
7/16" to 3/4"

# Exotic Insects Invading Nevada's Trees

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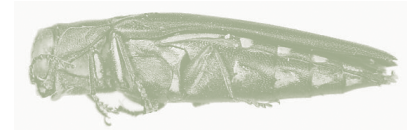
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