

Best Management Practices

Reducing Risks of Invasive Forest Insect Pests and Diseases in Urban Trees and Landscapes

Wisconsin Department of Agriculture, Trade and Consumer Protection – Bureau of Plant Industry

In order to be good stewards of the green spaces in our communities, it is important to be aware of invasive forest insect pests and diseases. The following Best Management Practices will help keep Wisconsin's trees and landscapes healthy and thriving.



Buying Trees, Plants and Plant Materials

Plant Health Care Activities

- Purchase trees and plant materials from reputable, licensed nurseries, and get a nursery dealer's license if you plant herbaceous perennials, trees, or shrubs for your clients.
- Make sure plant shipments comply with rules for shipping plant material into or within Wisconsin. Shipments may need a phytosanitary certificate or a compliance agreement between your business and DATCP or USDA APHIS.
- Familiarize yourself with plant and pest movement regulations summarized on the National Plant Board, Wisconsin DATCP, and Wisconsin DNR / NR 40 websites.
- Encourage the planting of a variety of tree, shrub and plant species in the landscape. This reduces the risk that any one introduced forest pest will devastate urban tree canopies or green spaces comprised of a single preferred host species.
- Prevent the spread of harmful introduced, invasive species by not using infested nursery stock. Inspect trees and landscape plants for insects and diseases. Be on the lookout for the following non-native forest pests:
 - ~ **Hemlock woolly adelgid** (HWA) is a small aphid-like insect that has killed hemlock in over 20 eastern states. Females produce white, waxy egg sacs that look like the tips of cotton swabs on the undersides of branches. Wisconsin has a quarantine restricting hemlock nursery stock from infested areas.
 - ~ **Elongate hemlock scale** (EHS) is an armored scale insect whose oval, brown or white scale coverings may be found on the undersides of hemlock, fir or spruce needles. Feeding by EHS causes needle loss and yellowing. Although EHS is not established in Wisconsin, this pest has been introduced into 16 states.
 - ~ **Asian longhorned beetle** (ALB) is an introduced, invasive beetle that feeds on maple, birch, elm, poplar, willow, ash and other hardwood trees. Larvae bore into sapwood and heartwood, and large, 1.5" long shiny black and white adults leave perfectly round pencil-sized holes in trees as they exit trees. APHIS has quarantined parts of MA, NY, OH, and SC to prevent the spread of known ALB infestations.
 - ~ **Gypsy moth** is established in the eastern 2/3 of Wisconsin. Check for gypsy moth larvae, adults, pupae, and egg masses on nursery stock and in containers, and avoid moving plants or logs out of quarantine without proper agreement(s).
 - ~ **Spotted Lanternfly** (SLF) is a red, black and white plant hopper native to Asia, recently found in Pennsylvania and other eastern states. Although it strongly prefers the invasive tree-of-heaven and grapes, SLF feeds on over 65 plant species including apple, willow, oak, and walnut. SLF feeding causes oozing, wilting, leaf

Above Images (from top to bottom):

Gypsy Moth egg mass,
Reba Gruber, DATCP;

Hemlock Woolly Adelgid,
Renee Pinski, DATCP;

Asian longhorned beetle,
USDA NRCS NY

Tree and Landscape Maintenance Operations

curling, sooty mold and mortality. SLF lays its mud-like egg masses on any surface in fall, risking spread to new areas.

- Contact your local nursery inspector to report forest pests or diseases, especially those not known to be established in your area.
- Conduct timely pesticide treatments as warranted. Read and follow the pesticide label and all applicable regulations.
- Closely inspect trees and shrubs during tree trimming or pruning work.
- Look for signs of insect feeding, exit holes and larval galleries that may indicate the presence of invasive insect pests.
- Look for discoloration in leaves, streaking in plant tissue, cracks in bark and other damage that may indicate the presence of a pathogen.
- Sanitize equipment (hand pruners, hand saws, etc.) between job sites, at a minimum. Be aware of contagious disease, which may require more frequent sanitization.
- Prune trees (especially oak and elm) during winter to reduce risks of spreading diseases such as oak wilt and Dutch elm disease.
- Select trees and shrubs with healthy root systems that are well suited to the site. Check the root collar location to ensure proper planting depth.
- Chip wood to the smallest size practical to reduce the likelihood of invasive insects surviving in wood chips.
- Wood suspected of being infested with invasive species should be promptly covered, buried or burned as rules permit to prevent further spread of the pest.

Disposal of Wood, Wood Chips and Plant Materials

Resources

- DATCP nursery inspectors: <https://datcp.wi.gov/Documents/NurseryInspTerritories.pdf>
- National Plant Board: <http://nationalplantboard.org/laws-and-regulations/>
- Elongate hemlock scale facts: plantpests.wi.gov
- Gypsy moth facts: gypsymoth.wi.gov
- Hemlock woolly adelgid facts: plantpests.wi.gov
- Asian longhorned beetle facts: plantpests.wi.gov
- Spotted Lanternfly: slf.wi.gov
- Wisconsin Pest Survey: https://datcp.wi.gov/Pages/Programs_Services/PestSurvey.aspx
- Wisconsin Arborist Association: <http://www.waa-isa.org/>
- WI-DNR urban forestry contacts: <https://dnr.wi.gov/topic/urbanforests/contact.html>
- Wisconsin invasive species rule (NR 40): <https://dnr.wi.gov/topic/Invasives/classification.html>
- UW-Madison Insect Diagnostic Laboratory: <http://labs.russell.wisc.edu/insectlab/>
- UW-Madison Plant Disease Diagnostics Clinic: <https://pddc.wisc.edu/>
- DATCP pesticide program: https://datcp.wi.gov/Pages/Programs_Services/ACMOverview.aspx
- Wisconsin Nursery and Landscape Association: <http://www.wnla.net>



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