Branching Out

An Integrated Pest Management Newsletter For Trees and Shrubs

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Contents...

Thank You to Our Scouts and Diagnosticians

Amy Albam, Lindsey Christianson, Dawn Dailey O'Brien, Don Gabel, Sandra Jensen, Hillary Jufer, Jen Lerner, Karen Klingenberger, Elizabeth Lamb, Zaidee Lucina Powers Rosales, Stephanie and Dave Radin, Mina Vescera, Sandra Vultaggio

Scouting Report Notations:

(#) Numbers in regular type note plate(s) in *Insects that Feed on Trees and Shrubs* (2nd edition) by W.T. Johnson and H.H. Lyon.

(#) Numbers in italics note plate(s) in *Diseases of Trees and Shrubs* (2nd edition) by W.A. Sinclair, H.H. Lyon, and W.T. Johnson.

Scouting Report

Conifers

Arborvitae Leafminer (14)—damage starting to show in Suffolk Co. Symptoms will increase quickly next spring. In one trial we saw 60-70% control with late August treatment using Acephate (2(ee) label in NY). Timing application when adults are active in June with spinosad (Conserve, Entrust) has also been very effective.

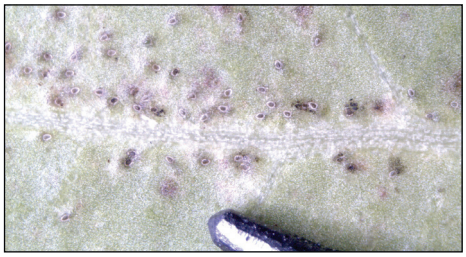
Bagworm (80, 81)—on spruce; some damage to arborvitae and juniper in Suffolk Co. Very cold winters are associated with higher egg mortality: in one study, 4 days at 14°F resulted in 5% mortality but at 24 hrs at 1.4°F that increased to 75% Some asked whether treating this time of year can be effective. We don't know for sure, as feeding has ended for the season. We're hoping to conduct a small trial to determine if wetting agents might overcome the repellency of the bags protecting the insects within.

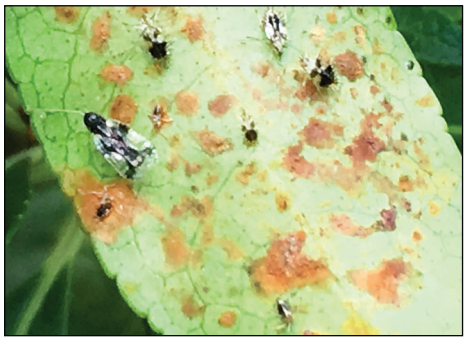
Left: bagworm bags on spruce (courtesy Margery Daughtrey)

Right: bagworm squeezed out of bag (courtesy Margery Daughtrey)

Broad-leaved Trees and Shrubs

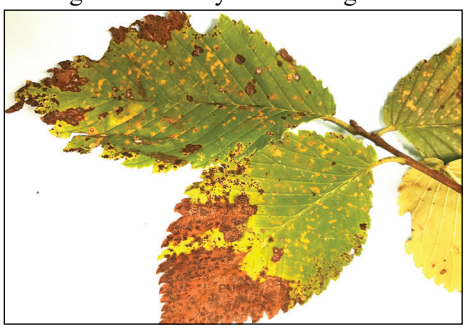
Andromeda Lace Bug—feeding in one landscape was so extensive that plants appeared to be under attack by *Phytophthora*. Assorted insect parts, residue on leaf undersurfaces allowed identification of problem. Lace bugs can be active into early fall. This species overwinters as eggs stuck into the underside of leaves.





Top: Andromeda lace bug eggs in leaf; bottom: adults and nymphs on Pieris *(courtesy Dan Gilrein)*

Black Spot of Elm—spots caused by the anthracnose fungus *Stegophora ulmea* were extensive and coalesced into large necrotic areas during our late summer rainy periods. Ordinarily not so noticeable, but defoliation was significant this year on Long Island.



Black spot on elm (courtesy Margery Daughtrey)

Boxwood Blight—tropical storms stirred up consecutive days of rainy weather at the right temperature for *Calonectria pseudonaviculata*, the causal agent of boxwood blight. Landscapes that previously escaped have seen symptoms of the disease in September. Sprays of chlorothalonil at a 14-day interval with occasional treatments of propiconazole (which gives 3 wks control) are effective for fall protection of boxwood against the disease for now; disease resistant boxwood will gradually take over the landscape.

Cornell University Cooperative Extension

Boxwood blight (courtesy William Logan)

Kermes Scale (174)—on red oak in Tompkins Co. Kermesid scales are in their own "group" similar to soft scales and armored scales, and nearly unique to oaks. Older female scales are nearly globular and relatively large (~3/16" dia.). Infestations are sometimes associated with flagging (brown) terminals, which can be from other causes like cicada oviposition damage or twig beetles.

Kermes scale (courtesy Elizabeth Lamb)

Magnolia-Tuliptree Scale (173)—in NYC. Crawlers should be active in early fall for timing fall treatment; spring applications target overwintered 2nd-instar nymphs. Check for magnolia scale on bark as well.

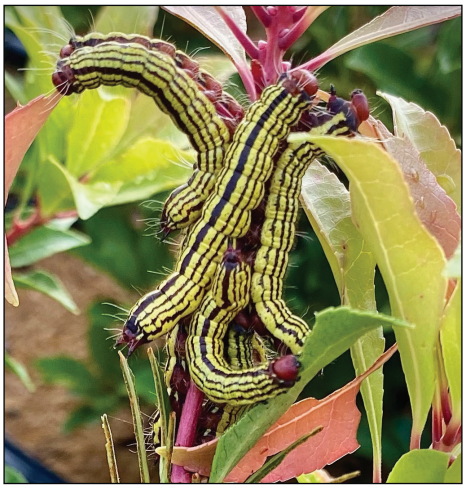
Tuliptree scale on magnolia (courtesy Dan Gilrein)

Powdery Mildew—on witch-hazel and ninebark in Tompkins Co. The wine-colored leaves of some ninebark cultivars contrast sharply with white powdery mildew. Prune out infected tips to remove inoculum and improve ninebark's appearance.

Powdery mildew on ninebark (courtesy Elizabeth Lamb)

Under the Scope:
Reports from Diagnostic Labs

Azalea Caterpillars (69, *Datana major*) defoliating *Pieris*, an unusual host, on Long Is. this week. *Datana* sp. feed in groups and assume a defensive posture when alarmed.



Azalea caterpillars (courtesy Martin Andrews)

European Hornbeam Cankers—severe cankering on main stem and branches observed on *Carpinus betulus* in the landscape on Long Is. Two fungi have been reported from Italy as a factor in decline of hornbeams, an *Endothiella* sp. and *Anthostoma decipiens*—and this disease appears very similar. If you see symptoms with conspicuous fungal sporulation (see photo below), please contact one of Cornell's diagnostic laboratories. Excellent overall cultural care, careful monitoring and careful pruning will likely be the best defenses against this problem.

Cankers on European hornbeam (courtesy Margery Daughtrey)

European Hornet was spotted girdling lilac stems. A fairly common late-summer behavior by this insect, which seems to favor lilac and birch but can damage others. Sometimes mistaken for related "murder hornets," a serious pest under eradication in WA (3rd nest was detected there recently).

Gypsy Moth (61, 62) tore through parts of the Finger Lakes, eastern NY/Saratoga this spring. From reports it appears *Entomophaga maimaiga* biocontrol fungus didn't impact populations significantly, so plan egg mass surveys before green up to determine need for insecticides. Information at https://www.dec.ny.gov/animals/83118.html

Gypsy moths laying eggs on Cornell campus (courtesy Kathie Hodge)

Massaria Disease of London Plane—anyone working in urban or suburban areas with abundant London plane plantings should be aware of this disease, caused by the fungus *Splanchnonema platani*. This disease suffers from a lack of research and an abundance of encounters in European cities as well as NYC. Tree limbs affected by the canker disease will discolor on their upper surface and fall suddenly. London plane should be monitored closely to remove such limbs before they fall.

Massaria disease of London plane (courtesy Mike Miecznickowski)

Oak Sawflies (57), known for occasional "outbreaks," were causing dramatic skeletonization of leaf undersides on the upper 2/3 of a red oak in one case this week. Shiny, slug-like larvae are *Caliroa* sp., (several similar species), possibly scarlet oak sawfly, *C. quercuscoccinea* which feeds on scarlet and pin (some references also include white, black and other) oaks, *C. petiolata* (pin), *C. lobata* (pin and black), and *C. obsoleta* (white). Sawflies are susceptible to several insecticides, e.g., spinosad (Conserve, Entrust), carbaryl, and pyrethroids, but not *Bacillus thuringiensis* materials (like DiPel Pro). Protect trees previously defoliated (say, from gypsy moth) from a 2nd late summer defoliation, which can kill or weaken the tree.

Oak sawflies and damage (courtesy Brandy Mirth)

2021 Index

Scouting Report....Issue#.Page#

Features

Branching Out
Plant Pathology and Plant-Microbe Biology
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Spotted Lanternfly Update

NOT SLF *-- this is Arge tiger moth (courtesy Martin Andrews)*

Adults (mostly single individuals) being found around NY possibly introduced from vehicles, besides established populations around Sloatsburg, Orangeburg, NYC boroughs. Report sightings in new areas to spottedlanternfly@agriculture.ny.gov with clear photos if possible. Adults are skittish and may jump if disturbed. Some moths might be mistaken for SLF such as the Arge tiger moth recently submitted. Penn State has recently posted a management guide: https://extension.psu.edu/spotted-lanternfly-management-guide. Note not all insecticides named are registered for use in NY; for the NY list see the NYS IPM website https://tinyurl.com/NYSIPM-SLF.

2022 Early Bird Special

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Phenology

Queens County: Flowering—rose of Sharon full bloom

Suffolk County: Flowering—*Heptacodium* & crape myrtles late bloom, sweet autumn clematis full bloom, *Baccharis* in bud

Tompkins County: Flowering—sweet autumn clematis

Dan Gilrein, Karen Lynn Snover-Clift, Margery Daughtrey & Shari Romar, editors

Growing Degree Days

As of September 15, 2021

Station	GDD_{50}
Albany	2,245
Binghamton	2,241
Boston, MA	3,072
Bridgeport, CT	2,993
Buffalo	2,774
Central Park	3,392
Farmingdale	3,008
Hartford, CT	2,890

Station	GDD_{50}
Ithaca	2,224
New Brunswick,NJ	3,198
Riverhead	2,996
Rochester	2,578
Syracuse	2,841
Watertown	2,222
Westchester	2,733
Worcester, MA	2,490

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Urban Arboreta: Havens of Biodiversity Provide Important Information on Tree Pests

Michael Bohne and Marc DiGirolomo, USDA Forest Service, Eastern Region, Forest Health

Starting in 2015, the USDA Forest Service entered a partnership with Arnold Arboretum (Boston, MA) and Green-Wood Cemetery (Brooklyn, NY) to sample stressed trees for native and non-native wood boring insect species, specifically targeting potential unknown forest pests that might be lurking in municipality trees. The results, recently summarized in the latest issue of the journal Agricultural and Forest Entomology, provide important data on insect/tree relationships and offer a few surprises.

Background

Invasive forest insects often gain access to North American forests through cities with international trade ports. Major infestations of Asian longhorned beetle (NYC, Chicago, Toronto, Worcester, Hollywood/Savannah), emerald ash borer (Detroit), and laurel wilt (Savannah) are recent examples of forest pests entering North America through port cities. Continued concern regarding future outbreaks of forest pests has driven forest health managers to increase surveillance in urban municipalities across North America, including increased public engagement, trapping, aerial and ground survey. While very important, these methods may be limited to known pests that create obvious damage to trees at specific times of year. Many forest pests live much of their lifespan within host material and are often missed, even by trained forest health specialists. There are also species of forest pests that do not respond to lures and traps. To help augment

Green-Wood Cemetery in Brooklyn, NY. (*Courtesy Michael Bohne, USDA Forest Service*)

these surveys, living tree material can be sampled to look for pest inhabitants.

Why Arboreta?

Urban arboreta located near major trade ports offer opportunities to monitor for non-native pests. The green oases offer great tree diversity and refuge for insects in areas where true forests are limited. Located less than 10 km from the port along Boston's Emerald Necklace, the Arnold Arboretum of Harvard University has one of the largest collections of living plants in the world with over 2,000 species. Green-Wood Cemetery (Green-Wood) is a National Historic Landmark containing 8,000 trees of 725 unique cultivars and is located just 1 km from several marine terminals of the Port of New York and New Jersey. Both sites showed promise for a survey of living trees that may be harboring damaging insects.

The Work

Arborists sampled living branches from trees showing signs of stress or trees that were downed or damaged by storm events. Tree samples were placed in fiber drums fitted with collection jars. Jars were collected periodically for at least two years, after which the branch material was removed, and the drums were swept for any wayward insects that didn't make it to the cup. The insects from the samples were sorted and identified. At least 117 trees representing 67 species have been sampled from the two arboreta.

Sample drums and collection material after drums were swept for wayward beetles. (*Courtesy Michael Bohne, USDA Forest Service*)

Meet the Beetles

An impressive 15,370 individual beetles were collected and identified over the first four years of the survey, including 96 species of important pest families of wood boring, bark and ambrosia beetles. There were 46 species of bark and ambrosia beetles (*Scolytinae*), 29 species of longhorned beetles (*Cerambycidae*), and 21 species of jewel beetles (*Buprestidae*). Of these, 17 new state records were documented for Massachusetts and New York. Most importantly, one buprestid species found feeding on European beech, not native to North America and new to science, was detected and described from Green-Wood in Brooklyn.

New Species

The survey was designed to locate new non-native pests but finding an entirely new species was surprising and presented a new challenge. An international team of entomologists helped describe the species, giving the beetle the temporary name *Agrilus* sp. 9895. The team determined that the beetle was most likely from the Mediterranean region of Europe and Africa. Since most trees at arboreta are mapped and accessioned, the original beech was located, and other trees infested with *Agrilus* sp. 9895 were quickly found and mapped. Additional survey and evaluations are ongoing to learn more about the new species.

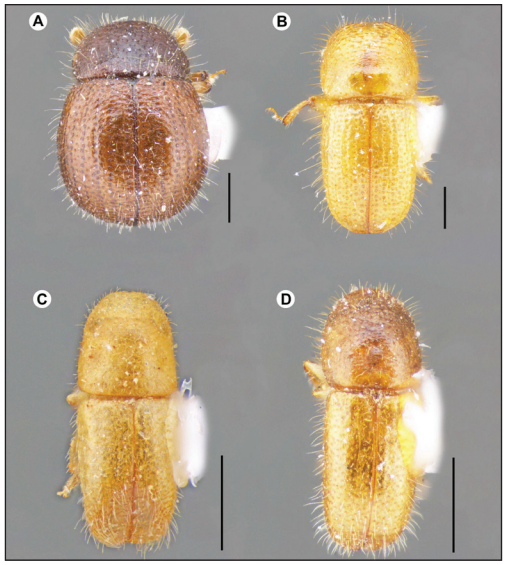
Top: a new species to science, *Agrilus* sp. 9895 was discovered in European beech in Brooklyn, NY. Bottom: the European beech that produced the new *Agrilus* species. (*Courtesy Michael Bohne, USDA Forest Service*)

New State Records

It is important to monitor populations of potential pest species for range expansion. Most of the new state records detected from this survey filled in known distributions from neighboring states. However, four records represented the northern most collection for each species, indicating potential range expansion. Eight of the 17 new state records documented from this survey were collected from Green-Wood in Brooklyn, including *Pseudopityophthorus pubescens*; the nearest previous record of this bark beetle is in Delaware.

Rare Finds

Some ambrosia beetles undergo sib mating, which produces abnormal wingless males. These male beetles look nothing like the females and are impossible to identify without the associated female. Being wingless, the males are never collected in traps and are very rare in collections. Wingless males from four different species of ambrosia beetles were identified through this survey.



Male ambrosia beetles emerged from woody material from Arnold Arboretum and Green-Wood. A: *Ambrosiodmus tachygraphus*; B: *Euwallacea validus*; C: *Dryoxylon onohaerense*; D: *Xyleborinus saxesenii*. Scale bars represent 0.5. *(Courtesy Marc DiGirolomo, USDA Forest Service)*

Insect/Tree Relationships

While the goal was to detect new non-native beetles, there was also an opportunity to better understand host associations for beetles already known to occur in North America. 143 new host associations were documented, including 22 new host associations of non-native beetles on native host trees and 51 new host associations of native beetles on non-native hosts. Highlights for native trees include 11 new beetle associations with pin oak and 10 new beetle associations with downy serviceberry (five of which were non-native bark beetles).

Data collected on non-native trees act as important sentinel information for the country of origin of the plants by helping to predict the potential damage from invasive beetles from North America. There were 80 new beetle associations for 24 species of non-native trees. Highlights include native North American ash beetles detected in Japanese and manna ash trees and eight new beetle associations with dragon spruce, a vulnerable tree species native to Western China.

Expansion Plans

Based on the success of this effort, the Forest Service has entered into agreements with Cornell University and Morton Arboretum to expand the survey to include arboreta in Ithaca, NY and Chicago, IL. The Forest Service is also working with New York State Department of Environmental Conservation to expand the survey to municipal trees in Schenectady and Albany, NY. The surveys in Green-Wood and Arnold continue and are still producing exciting results.

For more information on arboreta surveys contact Michael Bohne, michael.bohne@usda.gov or Marc DiGirolomo, Marc.F.DiGirolomo@usda.gov.

References

DiGirolomo, M.F., Bohne, M.J., Dodds, K.J., Gapinski, A.T., DelRosso, J.S., Charap, J.G. and Evans, S.C. (2021), Utilizing urban arboreta for detection of native and non-native wood-inhabiting beetles. Agr Forest Entomol. https://doi.org/10.1111/afe.12470

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