



BRANCHING OUT

An Integrated Pest Management
NEWSLETTER
For Trees and Shrubs

Volume 28 No. 1 April 23, 2021

Contents...

Scouting Report

Conifers: Rhabdocline/Swiss Needlecast, Eastern Spruce Gall, Adelgid, Hemlock Woolly Adelgid, Larch Casebearer, Norway Spruce Gall Midge, Pine Bark Adelgid, Taxus Mealybug, White Pine Weevil 2

Broad-leaved: Alternaria Leaf Spot, Apple Scab, Azalea Bark Scale, Bacterial Canker, Cedar Apple Rust, Dogwood, Eastern Tent Caterpillar, Gypsy Moth 2

Feature: Beech Leaf Disease in New York Insert

From the Diagnostic Lab: Conifer pests, Emerald Ash Borer, Leafminers on Arborvitae/Boxwood, Rhododendron Borer, Rhododendron Gall Midge, Southern Red Mite, Spotted Lanternfly 2, 3

Miscellany: Insecticide News 4

Phenology 4

Growing Degree Days 4

Scouting Report Notations:

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

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

Thank You to Our Scouts and Diagnosticians

Amy Albam, Lindsey Christianson, Don Gabel, Sandra Jensen, Hillary Jufer, Elizabeth Lamb, Stephanie Radin, Alice Raimondo, Sandra Vultaggio

Welcome!

Thanks for joining us for *Branching Out's* 28th year! A special welcome to new subscribers and "welcome back" to those of you who have been with us in the past.

To begin, keep these things in mind as you read this and future issues of *Branching Out*.

▶ **If you haven't renewed your subscription yet, please do! Enclosed with this issue is a subscription form.**

▶ Scouting Reports list chemicals registered for control of specific pests. Recommendations are taken from the 2021 edition of *Pest Management Guide for Commercial Production and Maintenance of Trees and Shrubs*. Purchase a copy at <https://www.cornellstore.com/books/cornell-cooperative-ext-pmep-guidelines>.

****Recommendations in this guide change yearly and we strongly encourage you to have the newest edition. Recommendations are consistent with New York State pesticide regulations, but are similar to those in most other northeastern states.**

▶ Where a specific product is listed after a recommended pesticide, only that product is labeled for that use. Not all products listed are labeled for all uses, so be certain you are getting the right formulation (with the use(s) you want), before you purchase the pesticide.

▶ Recommendations are not substitutes for pesticide labeling. Changes in pesticide regulations occur constantly; human errors are still possible. Read and follow the label directions before applying any pesticide!

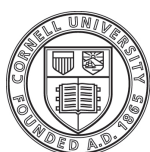
▶ Growing degree days are valuable guides to predict plant development and pest occurrence. They have proven to be better indicators of the progression of the seasons

than just following calendar dates. If you compare our growing degree days with those published by another source, remember that ours are calculated with the 50° threshold.

▶ Our website is and requires a password to access issues. Contact sr369@cornell.edu for details.

New Staff Announcement

We're happy to introduce our new *Branching Out* Managing Editor, Shari Romar! Her first association with Cornell was with the IPM Program, as part of the team that created the Integrated Pest Manager website and database. She also served as an adjunct professor at SUNY Farmingdale. Shari spent several years at Queens Botanical Garden, first as Grant Writer & Manager, then as New Media & Marketing Manager, handling print and online communications. She is a frequent contributor to a variety of newsletters, magazines and newspapers, and often speaks at local libraries and garden clubs. She looks forward to working with everyone! Reach out to her with questions or comments during the growing season at sr369@cornell.edu.



Cornell University
Cooperative Extension

Scouting Report

Conifers

Conifer growth hasn't started upstate or on Long Island. Inoculum for foliar diseases is developing now on 2020 growth. On trees with needlecast, watch carefully for bud development activity that signals the need for protective treatments.

Douglas-fir: Swiss Needlecast (28)—Tiny dark fruiting bodies in rows seen under needles; no budbreak in Central NY or Long Island. Preventive treatments timed before new growth reaches 1/2" with repeat applications around 3-4-week intervals until July 1. No signs of Rhabdocline active in Central NY; spores not yet released from characteristic brown and purple bands on foliage.

Eastern Spruce Gall Adelgid (50)—Pest of Norway, sometimes red, spruces. Look for overwintering stem mothers at base of buds and cottony material produced with egg masses near bud break. Egg masses observed in Westchester and the Bronx last week.

Hemlock Woolly Adelgid (32)—Egg masses seen in the Bronx; crawlers expected soon.

Larch Casebearer (11)—Overwintering larch casebearer damage seen this past week on trees in Westchester and Central NY, where foliage reached 1/4–1/2." Conserve and other options can be used for control.

Norway Spruce Gall Midge (NA)—Several reports around NY on Norway spruce (see Diagnostic Lab report). Note there may be other causes for dieback in Norways, though generally this species is relatively little bothered by diseases and insects.

Pine Bark Adelgid (31)—Signs seen in Westchester, the Bronx and Central NY. Cottony material, eggs and nymphs at base of needles. Watch for infestations on bark later that can build to high levels, leaving trunks with a snowy appearance.

Taxus Mealybug (37)—Immature mealybugs were found overwintering in bark cracks on yew in the Bronx and Hudson Valley; other hosts: maple, rhododendron, dogwood, and *Prunus* species. Heavy yew infestations cause yellowing and honeydew residues then sooty mold. Dormant-stage oil can be used but applications must be thorough and may not provide a high level of control; follow up with summer applications if needed.

White Pine Weevil (2)—Central NY growers report trapped weevils for several weeks.

Adults become active when temperatures reach 50°F. Leader treatments to prevent damage to pine, spruce and sometimes Douglas-fir made as adults emerge. Watch for sap streaks on leaders as early sign of activity. Note: last year for Lorsban applications in NY (allowed up to July 31).

Broad-leaved Trees and Shrubs



Alternaria leaf spot on privet © Margery Daughtrey

Alternaria Leaf Spot (NA)—Leaf spots with fungal sporulation now in leaf litter or on leaves from 2020 still clinging to privet plants on Long Island. Apply protective treatments once leaf growth evident. Treat when new leaves are rapidly expanding with propiconazole for systemic fungicide benefits. Three weeks after propiconazole, applications with chlorothalonil may be made at a 2-week interval through spring rainy period.

Apple Scab—Some areas have already had at least two (wet weather) infection events, which can start as early as "green tip," when first green tissue shows from buds. Preventing initial infections by overwintering inoculum with fungicides is important to avoid leaf spots that produce huge numbers of spores responsible for continuing summer infections.

Azalea Bark Scale (160)—Overwintering immatures seen in twig crotches on azalea and rhododendron bark in Westchester. These "felt scales" produce honeydew and sooty mold that can affect plant appearance. Distance and TriStar are effective treatments targeting crawlers in early summer. Dormant-stage oil may also be used; wet bark well to contact overwintering stages.

Bacterial Canker—Noted on lilac in the Bronx. Prune out this early-season injury as noticed.



Cedar Apple Rust telial horns © Bruce McMaster

Cedar Apple Rust—Telial horns on cedar apple rust galls (eastern redcedars) present but dry across NY. Expect spores to become active and infect apple foliage with one night of rain and some warmth.

Dogwood—*C. florida* growth is underway with bracts up to 50% open this past week in parts of Westchester and Long Island. Start anthracnose control at leaf emergence.

Eastern Tent Caterpillar on *Prunus*, other hosts (76)—Egg masses seen on twigs now across NY; not yet hatched, except in the Bronx, but expected to hatch elsewhere in the coming week. Remove masses encircling twigs or twigs with hatched caterpillars now to prevent web "nests" and defoliation.

Gypsy Moth (61, 62)—Defoliation heavy last year in parts of the Finger Lakes (around Canandaigua Lake, e.g.) and parts of the eastern Adirondacks; problems may reappear in some areas. Some areas south of Rochester had many overwintering egg masses. Winter egg mass surveys can help determine spring infestations to plan for early treatments (<https://www.dec.ny.gov/animals/83118.html>). Eggs should be hatching soon if not already; small larvae most susceptible to treatment. Most products like Conserve, pyrethroids, Acephate/Orthene, Provaunt, Acelepryn (not for LI) work via contact or ingestion; Bt materials (DiPel Pro, Javelin, etc.) only work through ingestion and are most effective for smaller (<5/8") larvae and when conditions are good for caterpillars to feed.

From the Diagnostic Lab

Conifer pests—Newly hatched spruce spider mites observed on Fraser fir Christmas trees (53 GDD) and some eggs present. Very noticeable stippling damage on needles from last season though spring infestation doesn't necessarily follow; check closely for mites or eggs before determining need for treatment. Though nearing season end for dormant-stage oil these trees haven't broken bud yet. Savey (Christmas trees) or Hexygon IQ/generic (nursery/landscape) are alternatives for early season use. Dieback and distorted twigs on Norway spruces from Catskills, Central NY and Mohawk Valley area are due to Norway spruce shoot gall midge, *Piceacecis abietiperda*. A European invasive, first noted in Orange, CT in 1983, is spreading quickly. Norway spruce is the main host though one case was reported in Colorado blue spruce growing near Norways. Insect forms galls at base of twigs beneath old bud scales and along twigs, causing distortion.

Dieback of recent season's growth often but not always associated with infestation. (Note: some dieback on Norways is not from NSSGM). Appears to be one generation a year. Adults (1/16") resemble fungus gnats and are emerging now (4/21) in samples received this week from Fulton Co. We have found no information on control but suggest treating immediately while adults are active. Few insecticides are labeled; Scimitar CS (landscape) and Scimitar GC (nursery) are labeled for "midges" and would have needed residual activity. Carbaryl/Sevin can also be used but will probably have less activity so timing may be even more



Newly hatched spruce spider mites © Dan Gilrein

critical. Some other pyrethroids containing bifenthrin (OnyxPro/Baseline, etc.) are not labeled and can't be used for this pest alone but may provide incidental control when used for other labeled pests. Watch mite populations on treated plants. Factsheet at: <https://tinyurl.com/NSSGMidge>. Several scale insects were seen on conifers recently, including minute cypress on *Chamaecyparis*, cryptomeria on Fraser fir, and Maskell scale on cryptomeria. Minute cypress scale, identical and with a host range similar to juniper scale, is the most common one seen on *chamaecyparis* and *arborvitae*. Controls and timings similar. Cryptomeria scale has been seen more on true firs and spruces; infestation causes foliage to turn yellow or develop yellow spots from the scales feeding beneath needles. Spruces can take on a kind of dusty look from the grayish flat scales on needles. Crawlers active early June (600-800 GDD), with a second generation in August.

Sandra Jensen of the Cornell Plant Disease Diagnostic Clinic examined various conifer disease submissions and reports eriophyid (rust) mites, spider mites, and scale insects appear rather prevalent on a variety of conifers. Eggs and some live spider mites found on spruce, hemlock, and Douglas-fir; live eriophyid mites on hemlock and blue spruce; scale insects on hemlock and

blue and white spruce. In a few cases three different types of scale insects on individual spruce samples. Observed scale insects include elongate and/or circular hemlock, spruce bud, cryptomeria and black pineleaf. No crawlers found. Scout now to determine where to find crawlers later. Check needle undersides of hemlock, true fir, and other flat-needled species. To know exactly which scale species are present on a tree, send a sample to your local or state lab for confirmation.

Emerald Ash Borer (NA) continues expanding its range around the state and is now widespread on Long Island following first sighting in 2018. Woodlot owners might consider selectively harvesting ash before trees are killed; protect amenity and specimen trees within 30 miles of infestations. Trees showing symptoms of infestation – blonding from woodpecker bark removal, D-shaped emergence holes – may be too heavily damaged to survive or retain aesthetic value. Emamectin benzoate injections provide longest-lasting control but other options also effective. See Cornell Guidelines for a list of NY-approved options; helpful details on timing and management found in the Insecticide Options guide at www.emeraldashborer.info. Some promising biocontrols, but may be more effective on younger trees or new growth.

Leafminers on *Arborvitae*, Boxwood—Damage from both looks severe now on their hosts, but now is not the time for control. Control boxwood leafminers when orange adults (flies) are active in late May (foliar sprays: Avid/generic, TriStar SL/generic, imidacloprid) or early summer before early damage shows (imidacloprid or TriStar/generic). Systemic (drench or tablet) treatment with imidacloprid an option but time after spring bloom to minimize impacts on pollinators. For *arborvitae*, time Conserve/Entrust application when moths are active in late June; if missed, Acephate foliar application in early to mid-summer another option.



Arborvitae leaf miner damage © Dan Gilrein

Rhododendron Borer (121)—Branch dieback or declining foliage with brown spotting on large-leaved rhodies may be sign of infestation. This clearwing moth resembles small potter wasp; often attacks branch crotches where established infestation damage may be apparent as holes or galleries revealed as bark sloughs off. Moths active in June. Pheromone traps can help prevent infestation in timing residual insecticide bark treatments; application 10 days after first male moth is captured, usually mid-June.



Rhododendron borer damage © Dan Gilrein

Rhododendron Gall Midge (227)—After near-absence for many years, several cases of damage reported on large-leaved hosts. Last year's leaves appear stunted and distorted; often damage on one side with distinctive stippling. Injury from larvae feeding on undersides of unexpanded developing spring leaves. Find the small yellow-orange larvae by unrolling the tiny leaves to check within. No known control; carbaryl and possibly Scimitar GC (nursery) or CS (landscape) timed for the adults (flies) around budbreak may provide control. Prune off damaged foliage. Removing young unexpanded leaves with larvae may be an option for individual landscape plants where damage is mainly cosmetic and possibly tolerated especially as flowers come on.

Southern Red Mite (229)—Eggs present on recent holly samples. Expect hatching soon. Horticultural oil works well and can control overwintered cottony scale nymphs if coverage is thorough under leaves (for mites) and stems (scales). Mite eggs killed by oil are no longer entirely red, developing a transparent portion as the contents desiccate.

Spotted Lanternfly (NA) infestations are now established in several areas around NY, including Tompkins, Rockland, Orange, Brooklyn and Queens counties; infestation on Staten Island notably widespread. Much of NJ can also be colored in as well as Fairfield Co. in CT. Current range map and list of NY-labeled controls at <https://tinyurl.com/NYSIPM-SLF>. More details soon.

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

Branching Out
Plant Pathology and Plant-Microbe Biology
Cornell University
334 Plant Science Building
Ithaca, NY 14853

Miscellany

Insecticide News—NY has banned the use of chlorpyrifos (Lorsban, Dursban) after 7/31/2021. Some products have already been canceled but a few remain active until then. A list with both is at <https://www.dec.ny.gov/chemical/122311.html>. We await news on NY's final ruling and regulations. Though there are no residential landscape uses for chlorpyrifos, some products are still used in nurseries (borers, white pine weevil e.g.) and non-residential turf which must end by late July in NY. TriStar 8.5SL now has a 2(ee) label in NY for use as a basal bark spray to control aphids and troublesome species like linden (for which imidacloprid products are excluded), tuliptree and crapemyrtle aphids. Application can start at full leaf expansion; see the label on NYSPAD (<https://www.dec.ny.gov/nyspad/products>) for more details and have a copy when making the applications.

Phenology

Schenectady County: Flowering—star and saucer magnolias, *Prunus*, Callery pear

Suffolk County: Flowering—*Amelanchier*, boxwood, forsythia, flowering quince, star and saucer magnolias starting petal fall, *Prunus*, Callery pear, red maple, Norway maple; crabapple in bud

Tompkins County: Flowering—forsythia, flowering quince, star and saucer magnolia

Westchester County: Flowering—*Cornus mas*, *Amelanchier*, bridal wreath spirea, white poplar, star magnolia, Norway maple, Callery pear, flowering quince, PJM rhododendron, crabapple

Growing Degree Days

As of April 20, 2021

Station	GDD ₅₀	Station	GDD ₅₀
Albany.....	65	Ithaca.....	64
Binghamton.....	54	New Brunswick,NJ.....	121
Boston, MA.....	75	Riverhead.....	96
Bridgeport, CT.....	66	Rochester.....	95
Buffalo.....	123	Syracuse.....	111
Central Park.....	178	Watertown.....	63
Farmingdale.....	109	Westchester.....	84
Hartford, CT.....	111	Worcester, MA.....	76

Our Financial Supporters

This issue was made possible with the generous gifts from the following supporters:

- ▶ New York State Turfgrass Association
- ▶ New York State Arborists-ISA Chapter
- ▶ Bartlett Tree Experts
- ▶ Bill DeVos / Treeworks
- ▶ The Orentreich Family Foundation
- ▶ Perennial Charm Nursery
- ▶ Michael T. Sperber / Nature's Guardian
- ▶ Katherine Schaeffer / Atlantic Nurseries, Inc.
- ▶ George LaMay / LaMay's Tree Service
- ▶ James Sollecito / Sollecito Landscaping Nursery, LLC



Beech Leaf Disease in New York

Margery Daughtrey, Section of Plant Pathology and Plant-Microbe Biology, Cornell University, and Mina Vescera, Cornell Cooperative Extension of Suffolk County

Beech Leaf Disease (BLD) is something undreamt of until recently. American beech trees (*Fagus grandifolia*) with odd leaf-stripping symptoms were first noticed in 2012, in a Lake County forest in northeastern Ohio. The symptoms returned the next year and the area where beeches were affected grew larger. Soon forest beeches were showing similar symptoms in southwestern New York's Chautauqua County. No one had an explanation for these unique new symptoms. The syndrome, dubbed Beech Leaf Disease, was described as an emerging forest epidemic in a 2018 paper by Ewing et al. in *Forest Pathology*, which showed that the disease was also present in Pennsylvania and Ontario. The two symptoms associated with this new disease were slightly thickened, dark green or yellow bands between the veins and crinkled (stunted, leathery, deformed) leaves, accompanied by deterioration of tree health over time.

The mystery continued until David McCann from Ohio's Department of Agriculture found nematodes in affected leaves. Nematologists at USDA and Agriculture & Agrifood Canada with collaborators followed up on his discovery, identifying the nematode within the symptomatic leaf tissue (Carta et al, 2020). Researchers showed that the banding symptom could be generated by adding the nematode *Litylenchus crenatae* from diseased beech foliage to healthy seedling buds. This nematode was reported only once before, in 2019, linked to diseased Japanese beech (*F. crenata*) in Japan showing similar symptoms.

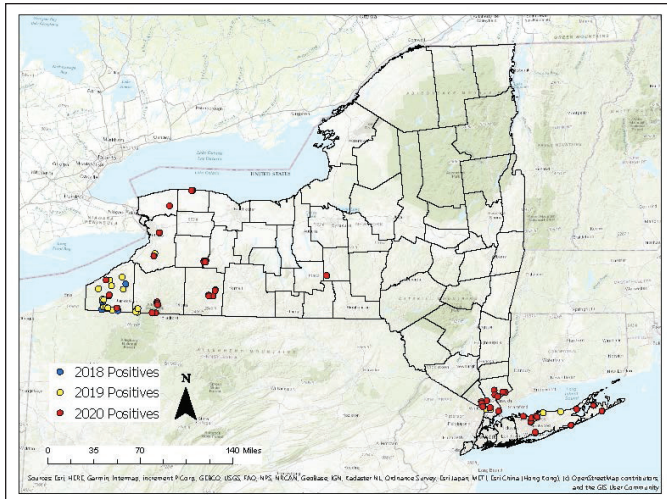


Fig. 1. Beech Leaf Disease Detections in New York 2018-2020 (map courtesy of Kelsey McLaughlin, NYS DEC).

Paying careful attention to the details, the American-Canadian team elected to name the US nematode as a distinct subspecies, after McCann, so that it became *Litylenchus crenatae* subspecies *mccannii*. This was for several reasons: the nematode in Japan affects Japanese beech but does not affect American beech or European beech (*F. sylvatica*) growing there. The *Litylenchus* found here, in contrast, does not affect Japanese beech at the Holden Arboretum in Ohio where the disease has been recorded

since 2015. There are tiny morphological distinctions in the nematodes in the US and Japan, too, as well as a big difference in the impact on infested trees. Thus, recognizing the uniqueness of our American beech-invading nematode with a different name was deemed important.

Since the initial Ohio findings, BLD has been found in more NY counties. In 2019, it showed up clear across the state in Suffolk County, and was confirmed in Westchester and Rockland Counties, as well as a NY-adjacent county in Connecticut. Thus far, there have been no reports from New York City or Nassau County. Extensive surveys by NY Department of Environmental Conservation and NYS Department of Agriculture and Markets have improved our knowledge of the distribution of the disease in NY. Fig. 1 shows the counties where some beech trees have been found to have the disease as we approach the 2021 growing season. The isolated detection in Cortland County is especially intriguing. A possible detection in Livingston County awaits confirmation. On Long Island, the disease was first noticed by Evan Dackow in the Stony Brook area in 2019. During 2020 it was also found further east, on the North and South Forks, plus the south shore in western Suffolk County. BLD was well established in each of these cases; it appears that the symptoms become obvious enough for identification only after the disease has been present for at least a few years.

Also in 2020, there were detections of BLD in both Rhode Island and Massachusetts, and most counties in Connecticut. A detection in West Virginia by molecular methods is awaiting confirmation.

Park staff, state horticultural inspectors and arborists have shown talent for finding the new disease, whereas the general public has largely not been alarmed by the symptoms. Leaves show distinctive thickened bands of darker green or yellow (Fig. 2, 3, 4) or are sometimes stunted and thickened overall (“crinkled”) (Fig. 2 and 3). Beech trees that are affected for several years show thin canopies as buds are killed and fail to open in the



Fig. 2. American beech branch with BLD showing banding, crinkling on 5/13/20.

spring. Leaves with symptoms sometimes may drop from the tree prematurely. Eventually trees that have shown BLD symptoms may die, possibly just from the reduction in leaf area that restricts their starch-making photosynthesis. Based on reports from Ohio, smaller trees are killed faster than the larger ones.



Fig. 3. The same branch showing symptoms of banding and crinkling on 6/18/20.

The disease is a challenge to our native American beech as well as European beech (*F. sylvatica*). Nematode-infested European beech have been seen at the Holden Arboretum and also in two locations on Long Island (Fig. 5). Oriental beech (*F. orientalis*) at a Long Island arboretum also harbor the nematode within galled leaves. We don't know as much about BLD's impact on European beech, particularly if it will be as susceptible as American beech. We have no idea whether there is a vector for the nematode (such as a bird, insect or mite), but we know that infested nursery stock carried the nematode in at least one instance. Leaf movement as beech is transported as firewood can cause long-distance spread, especially if the regulation limiting transport to within 50 miles from origin is ignored.

The NYS DEC has been monitoring BLD across the state and will continue their surveying and mapping efforts in 2021. Fig. 1 shows the counties where BLD has been confirmed to date: the nematode is detected in symptomatic leaves at the Cornell Plant Disease Diagnostic Clinic in Ithaca.



Fig. 4. The same branch showing yellowing of the nematode galls on 10/22/20. Buds for 2021 are adjacent to symptomatic leaves.

Getting control of BLD when we don't understand it well enough is a huge challenge. The nematode genus has been seen in Japan and New Zealand but researchers haven't conducted control trials.



Fig. 5. Dark-green bands on European beech with BLD.

In the US, studies are in place at the Holden Arboretum in collaboration with Bartlett Tree Experts and the Davey Tree Expert Company to examine possible benefits of emamectin benzoate injection and phosphonate drench for tree protection. On Long Island, treatments with emamectin benzoate were tried on a few private properties and at Bayard Cutting Arboretum, collecting data on untreated trees near treated ones for comparison. Cornell's Department of Plant Pathology and Plant-Microbe Biology and Cornell Cooperative Extension of Suffolk County are working with arborists including Jolly Green, Arborjet and Bartlett Tree to plan long-term observational studies on treated and control trees. Wildwood State Park in Wading River, NY has been a very collaborative study site, allowing weekly observations of symptom progression over the 2020 season (Figs. 2, 3, 4). Key to understanding BLD are observations made at Wildwood and elsewhere that show the symptoms are apparent as new foliage expands in spring. Nematodes can be found in buds all fall and winter with the aid of a microscope (Fig. 6).

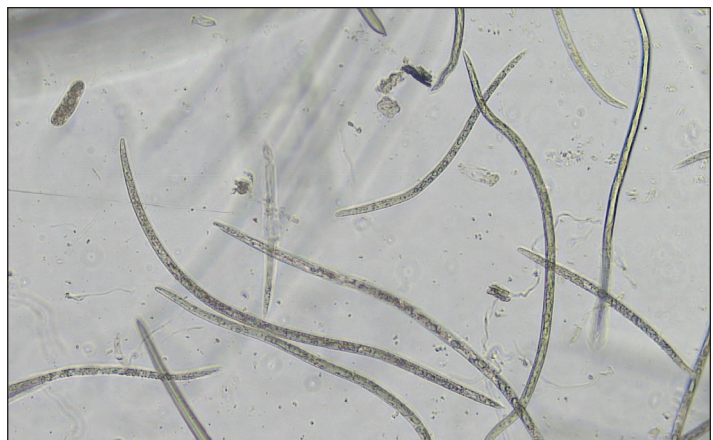


Figure 6. Adult and larval nematodes and an egg found in a bud from an infested beech on 3/21/21, prior to budbreak.

Vigilance is key. If you see what looks like BLD in New York, take photographs and report the GPS coordinates via iMap Invasives, if possible. If the sighting is in a currently unaffected county, submit a sample to the Plant Disease Diagnostic Clinic in Ithaca or Long Island Horticultural Research and Extension Center in Riverhead for confirmation.

Findings can also be reported to the Forest Health info line at (866) 640-0652 or by email to foresthealth@dec.ny.gov