Vermont Forest Health

Insect and Disease Observations— April 2018

Department of Forests, Parks & Recreation
April, 2018 vtforest.com

Weather Observations: Year to Date

Despite some wild swings, temperatures for meteorological winter, December 2017 to February 2018 averaged near normal. A bone chilling -30 on January 2 was observed at the Nulhegan fire weather station in Brunswick. Less than two weeks later, 56 degrees was recorded. Back to the deep freeze on February 3 with -12 degrees, and then the temperature soared to 74 degrees on February 21. Similar variations occurred throughout the state during January and February.

An April 16th windstorm in Rutland County broke this aspen which had a mainstem weakened by Hypoxylon canker.

The February 70 degree warmth did not return until April 24. March and April averaged below normal by 4 to 6 degrees. Not only were temperatures chilly, clouds with periods of rain and snow showers were common, keeping the winter in spring through the end of April.

January's snowfall was normal, but accumulation took a hit during the February warm-up. March brought the snowpack back with a series of nor'easters early in the month. By March 15th, over 50 inches of snow had fallen in parts of the state including the top of Mt. Mansfield and in Woodford in southern Vermont.

The delayed spring warm up prolonged the sugar season and helped to melt the snow slowly. This limited the amount of spring flooding, even though flood potential was above normal due to the deep snowpack.

A late season storm on April 30 left a trace to 7 inches of snow across much of the state. The highest amounts were in Caledonia and western Washington Counties.

The chilly April significantly delayed spring development. Budbreak will be later than in 2017 at our phenology monitoring site in Underhill. Last year sugar maple budbreak occurred on April 29, but as of 4/27/18, buds were just beginning to elongate. Average at that location is May 4th.

April wind events made their mark, especially a storm on April 16th. As expected, trees with defects or poor branch unions were most likely to be damaged. Pines were hit pretty hard, including blowdowns, and breakage of large pines with forked tops. There were many reports of trees across roads or on powerlines in Rutland County.

Emerald Ash Borer Detected in Vermont

EAB was reported from Orange, Vermont in February 2018. Photo: N. Siegert

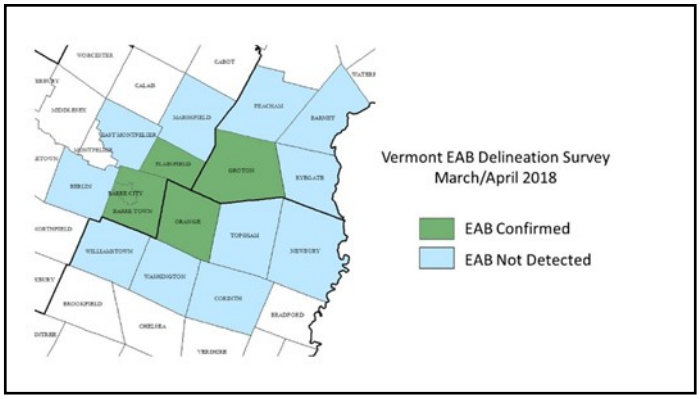
In late February, trees in the town of Orange suspected of being infested with emerald ash borer (EAB) were reported through the vtinvasives.org Report It webpage. The identification was confirmed by the USDA Animal & Plant Health and Inspection Service (APHIS). The source of the infestation is unknown. In mid-March larval samples were collected in Plainfield (Washington County) and Groton (Caledonia County), and also confirmed to be EAB by USDA taxonomists. Vermont became the 32nd state known to be infested. Three Canadian provinces are also known to have EAB.

To determine the extent of the EAB infestation, a multi-agency delineation survey was conducted by the Department of Forests, Parks and Recreation (FPR) the Agency of Agriculture, Food and Markets (AAFM), APHIS, the US Forest Service and UVM Extension. This was a road-based visual survey, covering all towns adjacent to towns where EAB was detected and confirmed. Insect specialists made follow-up visits to suspect trees, peeling them if necessary, to determine whether EAB was present. In all, twelve towns were surveyed, with ash trees examined at 376 locations, and follow-up visits at 35 locations. EAB was found in one additional town (Barre).

Vermont is one of the last states in the east to be confronted with this insect and can learn from what has occurred elsewhere. It's known that EAB kills ash trees, with ash trees close to an infestation at the greatest risk. It's also known that, although EAB will not be contained, the vast majority of ash trees in Vermont will be unaffected for many years.

Slowing the spread of EAB within Vermont is key to slowing ash mortality and will give landowners and communities time to plan. We are now focusing our resources on reducing movement of infested ash wood or bark from the areas where the insect is known to occur, and which therefore poses the greatest risk to forest health.

A map indicating where EAB is known to occur in Vermont is available at vtinvasives.org. All ash from the infested area should be treated as harboring EAB, since the insect is difficult to detect when it first attacks a tree. Recommendations to Slow the Spread of Emerald Ash Borer have been developed for handling logs, firewood, and other ash materials originating from that area. Examples include limiting movement to locations within the infested area, transporting logs during EAB's dormant period, and chipping infested materials so EAB cannot survive. Additional guidelines are under development to identify low-risk practices for disposing of ash wood debris for utilities, tree service contractors, highway maintenance operations, etc.



Infested trees were detected in 3 additional towns during delineation surveys.

Emerald ash borer will impact municipalities and homeowners. Dead trees may become a hazard and a liability. Planning ahead can mitigate the

impact and financial burden of responding to EAB. Vermont Urban and Community Forestry has Emerald Ash Borer Management information available to assist municipalities in preparedness planning and a Homeowner's Guide to Emerald Ash Borer.

Since the detection of EAB in Vermont the Use Value Appraisal Standards for Forest Management Related to Emerald Ash Borer Infestations have been updated. Additional recommendations are being developed for handling wood debris and for forest land managers.

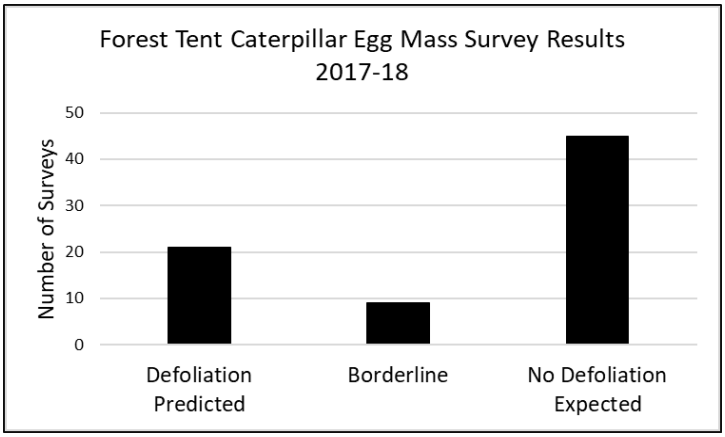
The State of Vermont will not be establishing a state quarantine to regulate the intrastate movement of ash. This means that USDA will be including the entire state within the federal EAB quarantine boundary. The addition of Vermont is expected to be finalized before the end of May. Once the state becomes part of the USDA quarantine, ash trees, logs, chips, and other ash material, and untreated hardwood firewood will be prohibited from being moved from Vermont to non-quarantined areas without a compliance agreement from USDA. In the northeast, non-quarantined areas are currently Maine, Rhode Island and parts of New Hampshire.

In addition, Maine, New York, and New Hampshire, as well as Vermont, have state firewood quarantines to help prevent the introduction of damaging forest pests by prohibiting untreated firewood from entering the state. These firewood quarantines remain in effect.

Adult EAB beetles are not expected to start emerging from infested ash until black locust trees are in bloom. (Not so for the very green six-spotted tiger beetle, an "EAB look-alike" that is already active in much of Vermont.) Look for signs and symptoms of emerald ash borer and report suspicious findings on VTinvasives.org. Photos to assist with identification, as well as detailed information about EAB and links to management information can also be found at that website.

Forest Tent Caterpillar Update

Forest tent caterpillar (FTC) populations have been expected to remain high in 2018, since the moth capture in statewide pheromone traps increased in 2017 from 2016 levels. To assist sugarmakers and other landowners, overwintering egg mass surveys were conducted at 75 sites. No defoliation was predicted in 45 sites; defoliation was predicted, or results were inconclusive (borderline), in 30 sites. Defoliation is predicted in counties throughout the state.



Overwintering egg mass surveys were conducted at 75 sites. Defoliation was predicted or results were borderline in 30 sites.

Thirteen landowners requested assistance in delineating areas to be treated with Foray, a *Btk* product certified for use in organic food production. All blocks were reviewed for drinking water and for proximity to rare, threatened or endangered species. Proposed treatment areas are located in Essex, Franklin, Lamoille, Orleans, and Windham Counties. There are likely to be additional areas treated in Vermont, with landowners working directly with the Agency of Agriculture.

FTC and sugar maple phenology monitoring have been initiated. Caterpillar hatch had occurred by May 9th at some sites, but not others. Results are available at our Forest Tent Caterpillar Phenology Monitoring webpage.

The Forest Tent Caterpillar Update on our website now includes these results, and contains management recommendations. In summary, these are:

- If insect populations are high, postpone cutting until the outbreak is over and use conservative tapping methods.
- If trees have been defoliated, delay thinning for 3-4 years and consider leaving defoliated trees untapped the following spring.
- For active sugarbushes, if defoliation is predicted *and* if trees were defoliated last year or if tree health is at risk due to other factors, consider aerial spraying.

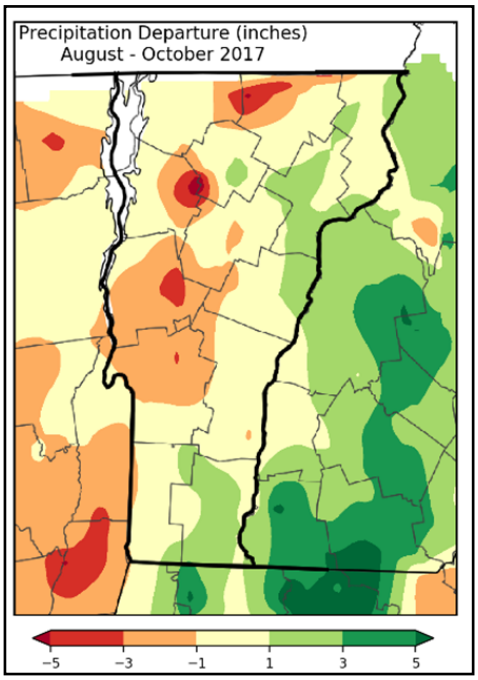
Forest tent caterpillar defoliation is predicted in counties throughout the state.

County	Number of Surveys Completed	Number Where Defoliation was Predicted or Borderline
Addison	1	0
Bennington	2	0
Caledonia	5	0
Essex	7	5
Franklin	8	6
Lamoille	24	6
Orange	3	0
Orleans	13	8
Rutland	5	3
Washington	4	1
Windham	1	1
Windsor	2	0
Total	75	30

Other April Observations

Eastern tent caterpillar (ETC) nests are now quite visible. Homeowner attempts to "burn out" the nests have resulted in at least one situation which required attention by the local fire department. A treatment less likely to cause damage is hand-removal of the webs from tree crotches in the evening or early morning before caterpillars have dispersed from their nests. ETC has a solid white stripe on its back, compared to the "footprint" markings of the forest tent caterpillar.

The eastern tent caterpillar has a solid white stripe on its back, compared to the "footprint" markings of the forest tent caterpillar. Photo: R. Kelley

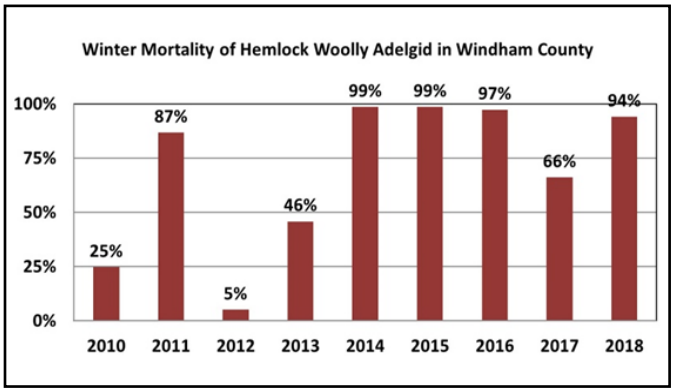


Beech scale crawlers are less likely to survive if there are heavy rains when they are mobile during late summer and fall. In 2017, that period was abnormally dry. Photo: R. Kelley. Map: Northeast Regional Climate Center.

Young beech with very heavy populations of beech scale have been reported from several widely scattered locations. (Feeding by beech scale insects is the first step in the development of beech bark disease.) If this turns out to be a trend, we may attribute it to below normal rainfall from mid-July through late October 2017. Late summer and fall are when the mobile beech scale crawlers are active. Rains can wash them from beech bark before they settle to feed. Record-breaking warm weather during September and October may also have accelerated crawler development.

Winter weather caused substantial hemlock woolly adelgid mortality (HWA) in our Windham County monitoring sites again this year. The mortality is attributed to sudden temperature changes; these prevent the insects from acclimating. So far in 2018, no new towns with HWA have been detected.

Only 6% of hemlock woolly adelgids in Windham County survived last winter, based on our monitoring sites.



Hemlock borer activity is associated with hemlock decline initiated by drought and site conditions. Photo: A. Kennedy

Outside of the area where hemlock woolly adelgid is known to occur, hemlock decline and mortality continue to be reported from widely scattered locations. Trees appear to be declining due to both site conditions and dry periods the last two years. Hemlock borer is often associated with the decline.

By early April, salt damage became noticeable on roadside white pines. While airborne salt spray is deposited all winter, the bright orange discoloration shows up in spring when the weather warms. Direct foliar injury is attributed to the accumulation of chloride ions. When trees are injured by road salt in the soil, both sodium and chloride contribute to the damage. In 2018, damage appeared right on schedule, and generated multiple inquiries.

Bright orange foliage shows up suddenly in the spring where needles have accumulated chloride ions from airborne road salt. Photo: R. Kelley

Watch List Species Highlight: Multiflora Rose (*Rosa multiflora*)

When recalling a drive down a dusty country road, you might remember seeing round green shrubs speckled with small white flowers, in otherwise empty grazing paddocks, or along farm fields. This plant is called multiflora rose (*Rosa multiflora*) and is a perennial shrub within the Rose family, *Rosaceae*. The name "multiflora" means many flowered, and its nickname, "rambler rose", perhaps comes from its tendency to spread from cane or seed.

Originating from eastern Asia, multiflora rose has been introduced to many countries including South Africa, Australia, New Zealand, Canada, and the United States. It is believed this species was first brought to the US in the late-19th century as a rootstock for grafting other rose species. In the mid-20th century, it was widely planted as a conservation plant, and was also used for erosion control and as an economic alternative to wire fences on pastureland and farms. During this time, the plant was championed as a food source and habitat for many wildlife species like deer, songbirds, and cottontail rabbit.

Multiflora rose is now found across much of the eastern United States, from Texas to Maine, and along the West Coast in California, Oregon, and Washington. This plant can be found in meadows and fields, riparian areas, forest edges, and disturbed areas. It has a habit of growing densely, excluding other plants, slowing down forest regeneration, reducing forage area for livestock, and impeding maintenance of trails or fields.

Multiflora rose has a habit of growing densely, overgrowing fields and trees. Photo: N. Dagley, USDI NPS, Bugwood.org

This is a caning plant. Canes can produce upwards of 100 hips, each with several to a couple dozen seeds inside. Those canes can also resprout if the tips touch the ground. The seeds in each hip have a high germination rate, which increases their chance of establishing when spread by wildlife that consume them. The seeds are also viable in the soil for 10-20 years.

The invasive tendencies of multiflora rose have only recently been understood. Since then, the pervasiveness of this plant, and its ability to escape cultivation, has led to it being banned, prohibited, or labeled a noxious weed in 13 states including New Hampshire, Massachusetts, Connecticut, Pennsylvania, and New Jersey. In Vermont this species is listed on Vermont's unofficial invasive plant "watchlist".

Multiflora rose leaves are arranged alternately, are pinnately compound, and have serrated edges. Here you can see the fringed stipule.

Multiflora rose will leaf out in early to mid-April into May. You can look for stout, downward turned thorns, but the most effective way to tell whether you are looking at a multiflora rose plant is to look at the base of the leaf stalk. There will be a pair of "leaf-like" appendages at the base of each leaf stalk, called "stipules". In multiflora rose, the stipules are fringed.

There is a similar, native species—*Rosa blanda* (smooth rose) but the stipules of this species are not fringed, and the flowers are pink.

To learn more about Multiflora rose, check out www.VTinvasives.org and these additional resources:
Maine Department of Agriculture, Conservation, and Forestry
New York Invasive Species
Pennsylvania Department of Conservation and Natural Resources
US Department of Agriculture

FORESTS, PARKS & RECREATION VERMONT AGENCY OF NATURAL RESOURCES

For more information, contact the Forest Biology Laboratory at 802-879-5687 or:		
	Windsor & Windham Counties	Springfield (802) 289-0613
	Bennington & Rutland Counties	Rutland (802) 786-0060
	Addison, Chittenden, Franklin & Grand Isle Counties	Essex Junction (802) 879-6565
	Lamoille, Orange & Washington Counties	Barre (802) 476-0170
	Caledonia, Orleans & Essex Counties	St. Johnsbury (802) 751-0110

Forest health programs in the Vermont Department of Forests, Parks, and Recreation are supported, in part, by the US Forest Service, State and Private Forestry, and conducted in partnership with the Vermont Agency of Agriculture, Food, and Markets, USDA-APHIS, the University of Vermont, cooperating landowners, resource managers, and citizen volunteers. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discrimination on the basis of race, color, national origin, sex, age, or disability.