

Vermont Forest Health

Insect and Disease Observations— September 2018

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

September: Long Summer, Late Fall Color

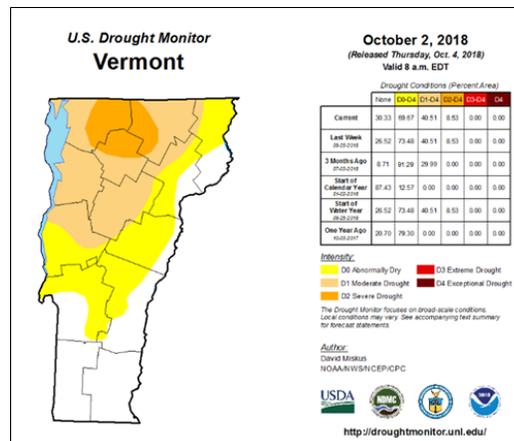
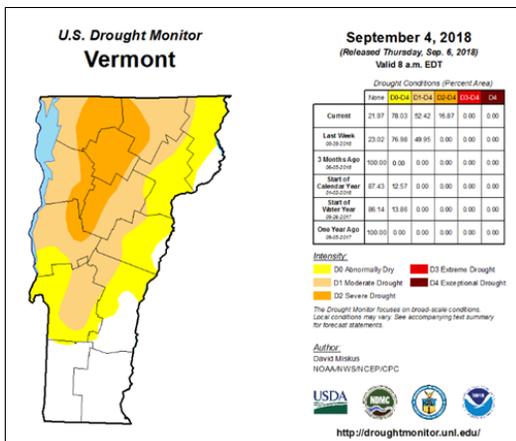
Summerlike weather continued into September but fall arrived before the month's end. September was the 2nd warmest on record at the National Weather Service in Burlington following a trend of warmest Septembers for the last four years.

The first half of the month was well above average, setting multiple highest maximum and minimum temperature records. On September 3rd and 5th, maximum temperatures reached the upper 80's and low 90's across the state. Burlington reached 93° on the 3rd, setting a new record. On September 5th, an advisory for heat indices in the mid 90's to lower 100's was issued for the Champlain Valley and southern Connecticut River valley. Burlington set a new record that day with 93° and Woodstock tied the record with 91°.

A first round of fall-like temperatures arrived during the weekend of September 7th and 8th. High dewpoints from earlier in the week finally broke, bringing down the humidity and more comfortable, though chilly, temperatures. A frost advisory, the first of the season, was issued on September 8th. Some of the colder spots in northern Vermont, especially in Essex County, dropped below freezing as did Morrisville with 31°.

Temperatures warmed up again following this first scattered frost with highs in the low to mid 80's and lows in the 60's until mid-month, when more normal September temperatures were observed. The next scattered frost occurred on the first day of Autumn, September 22nd. No widespread killing frost occurred in September.

Drought conditions continued, but improved through the month for much of Vermont. Reports of springs and wells drying up were common and kept well drillers exceptionally busy.



Drought conditions improved somewhat over the past month.

Maps: [US Drought Monitor](http://droughtmonitor.unl.edu/).

Additional information about current drought conditions and impacts is available at the [Northeast DEWS Dashboard Prototype](#). The Drought Early Warning System ([DEWS pages](#)) provides in-depth coverage by region, including information about forecasts, impacts, water supply, soil moisture, drought planning, stakeholder lists, events and more. A [new drought reporting tool](#) has been created for Vermont.

North central Vermont missed out on several rain events that helped to alleviate drought conditions in other parts of the state. On September 4th, scattered storms with damaging winds brought down numerous trees in Irasburg and other locations in the area. This same storm brought isolated spots of torrential rain. Gilman received 2.35 inches, a new one-day highest precipitation record, and 1.67 inches were recorded in Lyndonville. Statewide rain events occurred on September 11th and 27th.

Early fall color reports started in August, but the annual show progressed slowly. Despite leaf loss from drought, areas of heavy maple leafcutter defoliation and other miscellaneous leaf ailments, widespread color change arrived. It was about two weeks late in some locations. Peak in the northeast and higher elevations wasn't until Columbus Day weekend. Although late, Vermonters and out-of-state visitors have not been disappointed.

Positive Effects of Drought? One notable observation is the low incidence of many foliage diseases in 2018. There was no significant maple or ash anthracnose, diseases that thrive under wet regimes.

While drought can have a devastating effect on the ecosystem and the economy, there may be some positive spin-off effects. [Deer tick encounters](#), for example, were less frequent in some locations. Ticks thrive in moist, humid conditions, and the dry spell was thought to have killed some ticks and caused others to be less active and enter hibernation-like states. Regardless, [tick surveillance and protective practices](#) remain vital. [Mouse populations have skyrocketed in some locations](#), and this will affect tick occurrence. [Squirrel populations are erupting as well](#). These animals feed on beechnuts and other seeds and fruits known as "masts," many of which also had a banner season in 2017.

There have been fewer reports of blacklegged (deer) ticks in Vermont and nearby states this summer, but that doesn't mean you should let down your guard. Continue to protect and inspect yourself!

Photo: [URI Tick Encounter Resource Center](#)



Input Wanted From Users of Aerial Insect and Disease Survey Data

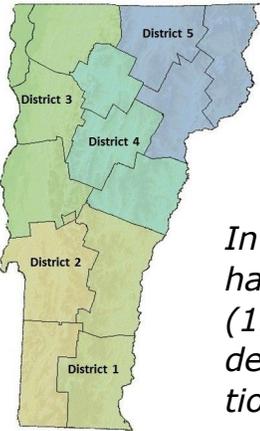
The Aerial Survey Working Group (ASWG) of the US Forest Service is examining ways to incorporate new technology, clarify customer needs, and better meet user expectations. They have asked partners to forward the link, below, for a national survey about the uses and delivery of aerial survey data, which is largely coordinated by the USFS. If you use or reference aerial survey data, and especially if you have thoughts on improvements or the like, it would be great if you could take the time to provide your input.

The ASWG Subcommittee has developed the survey "Evaluating Services and Products from Forest Health Protection" to help answer these questions. The survey is now open through October 15th, has 37 questions and should take about 20 minutes to complete. Please answer all questions and be patient as they sometimes take a few seconds to load. Find this survey on the Web at: <https://www.surveymonkey.com/r/ZDD8WWB>.

Maple Leafcutter Defoliation

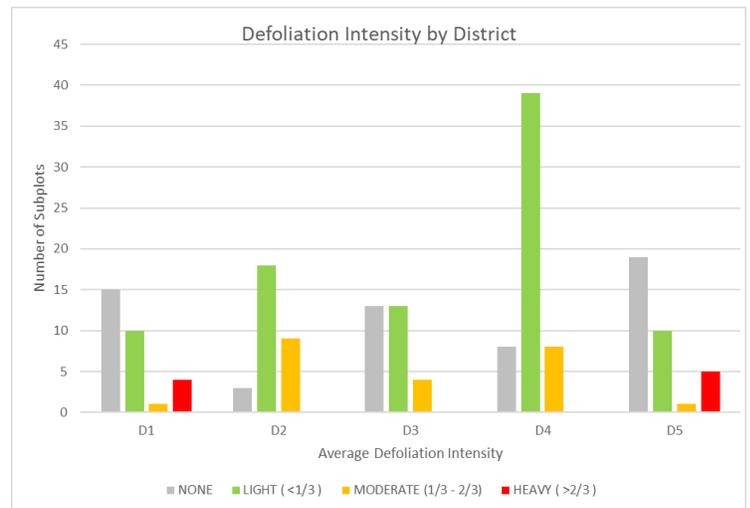
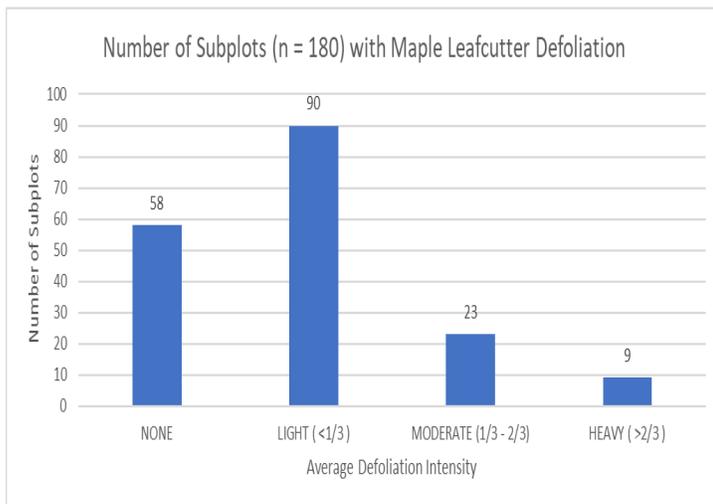
In our [August update](#), we reported on noticeable browning of sugar maple leaves that were being devoured by [maple leafcutter](#) (MLC) and likely enhanced by drought. Infestations at that time were heavy in lower crowns, but usually did not reach the upper crowns. By the end of September, that pattern had changed somewhat, with upper crown defoliation by MLC obvious in many locations.

Given the widespread MLC damage affecting maples, Forests, Parks and Recreation staff conducted late-season surveys of North American Maple Project (NAMP) plots to assess MLC damage. Average defoliation data were collected from 180 NAMP subplots.



It was difficult to determine if there was any pattern of MLC distribution within the state, when summarizing the data by region (as delineated by FPR's Forestry Districts). Heavy defoliation was only reported from plots in southeastern and northeastern Vermont, but moderate defoliation was observed throughout the state.

In late-season sugar maple plot surveys, 58 subplots (32%) were rated as having no/trace defoliation by MLC, 90 (50%) had light defoliation, 23 (13%) had moderate defoliation, and 9 (5%) were rated as having heavy defoliation (below left). There was no clear regional pattern to the defoliation observed within the state (below right, see map to locate districts).



Maple leafcutter was observed on birch (left) and beech (center) as well as maple (right). MLC feeding progressed from lower toward upper crowns as the active feeding period progressed. Photos: M. Parisio (left), L. Lund (center and right).

Emerald Ash Borer Found in Grand Isle County

The USDA has confirmed the identification of Emerald Ash Borer (EAB) larvae recovered from symptomatic ash trees in South Hero. EAB is likely to have travelled to the area via firewood. The infestation was found and reported by an "off-duty" forester. More information is in a recent [press release](#).

The infested area map on [vtinvasives](#) has been updated. Because EAB is likely to be present in other sites within ten miles of known infestations, the infested area map now includes the towns of South Hero and Grand Isle, most of Colchester and Milton, and parts of Burlington, Essex, Georgia, North Hero, the Town of St Albans, Westford, and Winooski. The map has also been updated with a new location in Plainfield. When leaves have dropped, we will be conducting additional detection surveys in towns adjacent to South Hero and Stamford.



EAB has been found infesting trees in South Hero.

Photo: J. Rosovsky

Further east, EAB has been detected in a second location in Maine, near the New Hampshire border in York County. Maine now has an internal state quarantine. Find more info at [here](#). EAB has also been recently detected in Nova Scotia. The latest information about EAB in Canada can be found [here](#).

As of October 1st, the State of NH has deregulated EAB. You can read more [here](#). (USDA maps may not yet reflect this change.) New Hampshire's firewood quarantine is still in effect, and covers firewood from out-of-state of all lengths "destined for use as fuel".

Forest Tent Caterpillar Defoliation Maps Available

Are you seeking information on this year's Forest Tent Caterpillar defoliation? The polygons mapped from our aerial survey are now available on the [ANR Atlas](#). To view data, select "Layers", then "Forests, Parks and Recreation", then "Forest Tent Caterpillar Damage".



Lirula fruiting bodies along underside midribs of fir needles.

Photo: R. Kelley

Christmas Tree Notes

Moderate to heavy [balsam gall midge](#) was observed by retired Forest Health Specialist, Ron Kelley, on balsam fir Christmas trees in Hyde Park. Ron also reported heavy [Lirula needlecast](#) on Canaan fir in some locations and noted that the disease has devastated some Fraser fir farms in Quebec. Canadian researchers apply fungicides in June. This is when the Lirula fruiting bodies open on three-year-old needles. (These fruiting bodies are called "hysterothecia"). Ron commented that some Vermont growers may have sprayed too early in the season, with poor results.

Sirococcus Blight on Hemlock Regeneration

Results from a regional survey on the impact of [Sirococcus shoot blight](#) on eastern hemlock regeneration has been published and can be accessed [here](#). Several stand attributes were correlated with the severity of shoot blight and other damaging agents.

Noxious Weed Quarantine Species Spotlight: Amur Maple

Amur Maple, *Acer ginnala*, belongs to the [Sapindaceae family](#), which now includes previous members of Aceraceae (maple family). It is native to northern China and Japan, and was introduced into North America in 1860. Beginning in the 1950s, Amur Maple was reported as “locally established”. Its cold hardiness has led to it being widely used as an ornamental tree in colder North American regions. This species is now documented in the Northeast, North Central US, and the Canadian Provinces of Ontario, Manitoba, New Brunswick, and Saskatchewan.

You can identify Amur Maple by its distinctive fire red foliage in the fall. The leaves are simple, oppositely arranged, have a doubly toothed margin, and three lobes. Amur Maple’s leaves are longer than wide, with a prominent central lobe. This small tree (~20 ft in height) also leafs out early in the spring, and then produces fragrant yellow-white flowers. The fruit are paired samaras that are nearly parallel to each other, and persist on the tree long into the fall.



*An Amur Maple (*Acer ginnala*) sapling found in the woods (left). The paired samaras are nearly parallel (center). The leaf has three distinct lobes; the center lobe is quite prominent (right). Photos: [L. Mehrhoff, UCONN](#) (left), [E. Spinney](#), (center, right)*

Red Maple (*Acer rubrum*) can look similar to Amur Maple, with a longer central lobe, and doubly serrate margins. A few distinguishing characteristics include the much more prominent central lobe on *A. ginnala*, and the reddish in color of *A. rubrum* flowers .

[New research published this year from Schuster and Reich in Minnesota](#) suggests that Amur Maple can establish dense canopies, reducing understory cover diversity. It can be found in forests, forest edges, meadows, fields and disturbed habitats. This documented behavior, and its continued spread in Vermont, are reasons this species is listed on [Vermont’s Noxious Weed quarantine](#).

To learn more about Amur Maple, check out [VTinvasives.org](#) and these additional resources: [Early Detection and Distribution Maps](#), the [USDA Plants Database](#), the [eXtension Foundation](#), and the [Center for Invasive Species and Ecosystem Health](#).

Elongate Hemlock Scale

Elongate Hemlock Scale (EHS) has had a spotty history in Vermont. Our first records date back to August 1999, when now-retired county forester Bill Guenther found suspect EHS on balsam fir in Westminster. Jon Turmel, former state entomologist with the Agency of Agriculture, confirmed the identification.

The following year, EHS was found on hemlock at box store nurseries in Rutland and Williston. Trees from those sites were destroyed, but there was no way to track any infested trees that might have been sold prior to the discovery of the scale.

Fast forward to 2013, when an astute groundskeeper found vigorous populations of EHS on several conifers on a property in Charlotte. An eradication plan was quickly developed.

In 2014, elongate hemlock scale was found by an arborist at two sites in Brattleboro, and species confirmation was made by the UMass plant diagnostic lab. Follow-up surveys by FPR staff confirmed that EHS was established in southeastern Windham County.

Recently, a second EHS infestation popped up in Charlotte on balsam fir in an ornamental planting. In response, a delineation survey of ¼ mile concentric circles was conducted. No additional EHS suspects were found. However, a visit to the initial 2013 site in Charlotte, about 5 miles away, seemed prudent, and active EHS populations were found on a Korean fir and on an eastern hemlock. Management approaches are being discussed.

EHS can develop and reproduce on 43 species, including various fir species. In fact, despite the name, fir and spruce tend to be more susceptible than hemlock. EHS also has a reputation of teaming up with hemlock woolly adelgid to cause more severe damage to hemlocks.



Look for EHS on transplanted and forest trees, including hemlock, fir, spruce and other conifers, especially in southeastern VT. The covering of the female scale, which is variegated brown, smooth, and waxy, has parallel sides and is present throughout the year. Males, with their covering of white woolly fluff, are visible during the growing season.

Elongate hemlock scale females have a brown covering, while the males are covered with white fluff. They feed on a variety of conifers, including hemlock, fir, and spruce.

Photo: J.A. Davidson, Univ. Md, College Pk, Bugwood.org

Various and Sundry

Hickory Tussock Moth caterpillars have continued to make appearances into the fall, but they will eventually pupate and spend the winter in cocoons in the leaf litter or bark crevices.

Hickory tussock moth caterpillars feed on a wide variety of hardwoods. Photo: J. Ghent, Bugwood.org



Damage by [birch leaf folder](#) (photos of the adult can be found [here](#)) and [birch skeletonizer](#) has been heavy in some locations. The trees seem most affected in the upper canopies and some were totally bare from premature leaf drop at the top. Birch can fall victim to a whole suite of insects working in tandem including, as observed this year, [maple leafcutter](#).



Yellow birch can fall victim to a number of leaf feeders, including birch leaf folder (left), skeletonizers, leaf miners, leaf rollers, and tiers, sawflies, lace bugs, aphids, and leaf hoppers. This year, maple leaf cutter also fed on yellow birch (center & right). Photos: M. Parisio.



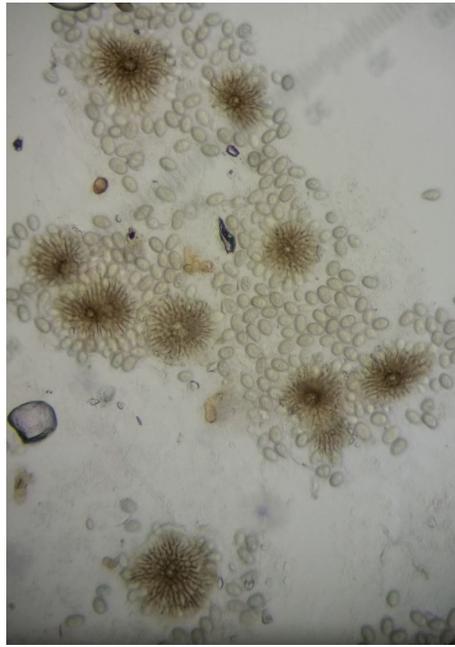
The so-called "Slug Caterpillars" (family Limacodidae), were described by Dave Wagner in [Caterpillars of Eastern North America](#) as "more fantasy than reality." This year, several people observed the [spiny oak-slug](#), a particularly ornate and beautiful slug caterpillar. Food plants include apple, ash, basswood, beech, birch, blueberry, cherry, chestnut, hackberry, hickory, maple, oak, poplar, sycamore, willow and many other woody plants.

The spiny oak-slug caterpillar can feed on older leaves of a variety of deciduous trees. Photo: A. George

These caterpillars, found on the underside of a poplar leaf, were parasitized by ichneumonid wasps in the Campopleginae subfamily. The wasps had spun their cocoons inside the caterpillar remains, but the adult wasps have already exited. Look closely and you will see the leaf mines of the [aspen leafroller](#), *Phyllocnistis populiella*, mentioned in last month's update. (Thanks to [Charley Eiseman](#) for diagnostic assistance.)

*These unidentified caterpillar cadavers were parasitized by an ichneumonid wasp.
Photo: C. Mettey*





Tubakia leaf spot showed up on pin oak planted this spring in Morristown. Scientists at the UVM Plant Diagnostic Lab were able to confirm the cause after culturing the fungus. Raking up the leaves will help reduce the inoculum (spores of the fungus) for next year.

Tubakia leaf spot rarely produces symptoms on oak before mid summer. Leaf symptoms (left), spores and fruiting bodies in culture (right) are shown here. Photos: S. Severinghaus (left), G. Maya and A. Hazelrigg (right).



We've received increasing numbers of inquiries over the past few years about deer keds, parasitic flies that some describe as large, flat and somewhat tick-like, but with just three pairs of legs. Both female and male keds lose their wings after they settle on an appropriate host. Several folks have submitted deer ked specimens after finding them on deer or themselves, or have reported seeing keds in the field. More than one person has reported numerous specimens in flight, and, according to at least one of them, all heading in his direction.

Deer keds are native to Europe, but have been observed in the region for over 100 years. Photo: C. Mettey

A number of species of red insects form aggregations at one time of year or another. The one pictured here is the white-margined burrower bug (*Sehirus cinctus*) in the immature stage. These nymphs will reach adulthood and overwinter as shiny black adults beneath leaf litter. Eggs are deposited in holes in the soil in spring, and adult females care for the young and provision the nest with seeds of the mint family.



White-margined burrower bug nymphs will mature into adults before the winter. Photo: G. Garrison



Another showy immature insect is the [green stink bug](#), *Chinavia halaris*. The nymphs pictured here are in the 4th instar. Favorite hosts are black cherry and elderberry, flowering dogwood, evergreen blackberry, basswood, and pine.

Green stink bug nymphs will mature into bright green adults. Photo: Nancy Kovaleff

The caterpillar shown here, *Magusa divaricata*, was observed feeding on glossy buckthorn in New Hampshire. According to a report from Wisconsin, these caterpillars have been “targeting buckthorn and eating the shrubs bare.” The adult moth is known as the [Orbed or Divaricate Narrow-wing](#).



Although native to North America, the Orbed Narrow-wing’s caterpillar will feed on buckthorn. Photo: Jen Weimer



This photo of a [blister beetle](#) was submitted to [vtinvasives](#) as a potential invasive insect. Blister beetles lay their eggs near the nests of wild bees and the [beetle larvae become parasites of the bees](#).

Adult blister beetles are often obvious in late summer and early fall. Photo: L. Michl

How many caterpillars can a fish eat? Here are the stomach contents from a couple of brook trout (fish length not disclosed). Inchworms and larger fleshy caterpillars float only short distances before they sink. Gypsy moths, woolly bears and tent caterpillars, with their hairy exteriors, float on the surface for long distances. It looks like these trout took advantage of a food source that was abundant and easy to eat.



The trout that ate these caterpillars didn’t have to worry about finding a hair in their food. Photo: M. Parisio



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

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