

Vermont Forest Health

Insect and Disease Observations—July 2017

Department of Forests, Parks & Recreation
July 2017 vtforest.com

July Weather Summary

July got off to a WET start. After a wet June, saturated soils didn't need much more rain to cause flash flooding. Unfortunately, a long duration storm, from June 29 through July 1, brought more rain and flooding. By 8:00 am on June 30, Washington County and western Chittenden and Addison Counties had received between 2.5 and 4 inches. The rain continued through June 30th with Bennington and Windham Counties recording from 0.5 to 1.5 inches by the morning of July 1. Still it rained. By early on July 2, rain amounts from 0.10 to over 4 inches were recorded statewide. The highest amounts on July 2 were in Addison, Orange, Rutland and Windsor Counties. Some of the higher totals included:

Town	Observation Date	Rainfall in inches	3-day total rainfall*
Huntington	June 30	3.84	4.65
Lincoln	June 30	2.24	4.72
Northfield	June 30	2.45	4.18
Thetford	July 2	4.51	5.71
Norwich	July 2	3.33	4.18
Orwell	July 2	2.94	3.90
Middlebury	July 2	1.50	4.16

*June 29 to July 1

By July 2, several roads were closed or were down to a single lane and the Vermonter Amtrak rail service was interrupted. Homes and businesses, hayfields and corn crops were affected as well. Damage was widespread affecting Addison, Bennington, Caledonia, Lamoille, Orange, Rutland, Washington and Windsor Counties. As of mid-July, 6.5 million in damage to roads, culverts, bridges and municipal buildings was assessed in preparation for a FEMA declaration.

Despite the soggy start, July ended up drier than normal for most of the state except Orange and Windsor Counties. Showers and localized thundershowers occurred at regular intervals through the month. On July 8th, Washington County reported downed trees and powerlines from a severe thunderstorm.

The Ludlow area was hard hit from a storm on July 18. Winds brought down trees and power lines, 1.89 inches of rain caused some flooding and 1" hail fell. One-inch hail was also reported near Killington and both 1 inch and dime sized hail were reported in Cavendish.

The cloudy and showery weather pattern kept the monthly temperatures on the cool side. July finished below normal by 1-2 degrees statewide except for the northwest corner.

Flooded crops, dangerous swimming holes, and treacherous hiking trails in addition to \$6.5 million in infrastructure damage were the downside of so much rain. However, there have been advantages. Soils depleted of moisture from last year's drought have fully recovered. Forests, especially those defoliated by forest tent caterpillar, have a lush understory, helping the trees to recover vigor. No water-stressed trees were observed during aerial surveys, although some sugar maple stands looked chlorotic, which we frequently observe in rainy summers.



Chlorotic sugar maples stands were observed during July aerial surveys. This is common during rainy summers

Good Seed Year

Moist conditions are accompanying a post-drought, heavy seed year for many tree species. Seed production like this is sometimes referred to as a "[distress crop](#)" and it is not unusual for this to occur following significant drought conditions. You have likely noticed that a number of trees, notably basswood, maple and hornbeam, flowered heavily this spring and are producing a bumper crop of seeds. White pine cones, still green but elongated, are abundant. When trees put lots of resources into seed production, leaf production may take a back seat, so trees sometimes look sparser than normal.

Hemlock Woolly Adelgid in the Adirondacks

Hemlock woolly adelgid (HWA) has been [detected just south of Lake George](#) in New York, within 25 miles of Vermont. A reminder, especially to homeowners in southwestern Vermont, to take down or empty birdfeeders and bird baths from April to the end of August, or move them at least 100 feet from hemlocks. Birds are known to carry adelgids.



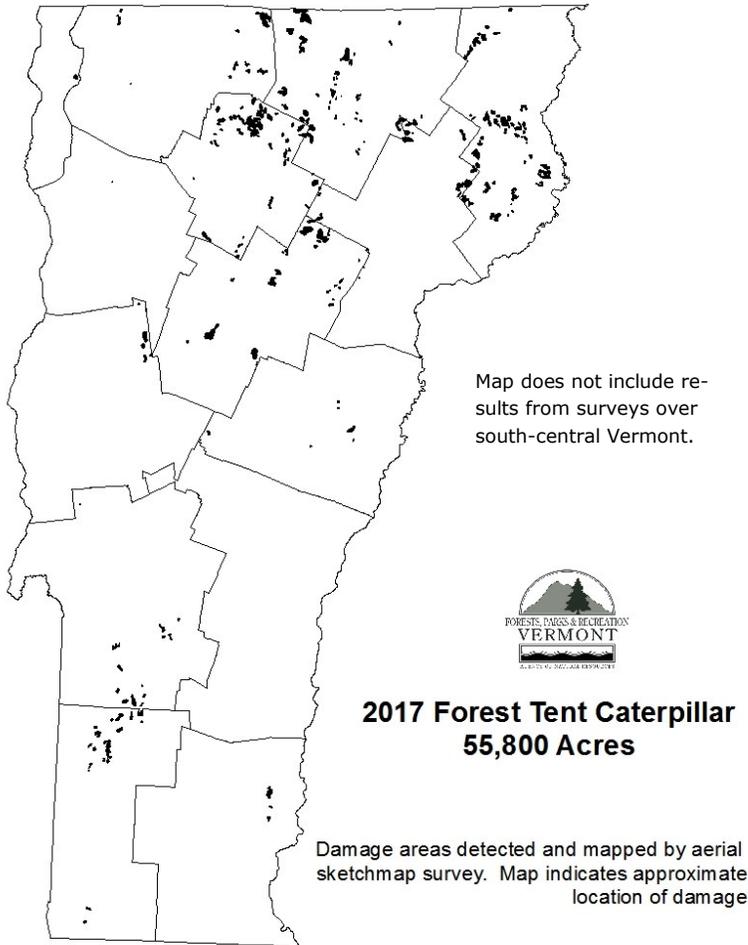
Adult male and female gypsy moths. Since females are flightless, their egg masses often show up near the site where a female caterpillar has pupated and an adult female has emerged. Photo: [John Ghent, Bugwood.org](#)

Gypsy Moth Update

A handful of people reported seeing occasional gypsy moth caterpillars this season, but not defoliation, in Vermont. Sites included Cuttingsville, Brattleboro and Burlington. The light brown male moths, with their large, feathery antennae that pick up the pheromone scent released by the female, were observed in flight in Montpelier on July 23. FPR continues to conduct egg mass surveys in nine locations each year.

Forest Tent Caterpillar

State aerial surveys to detect 2017 forest damage are now complete. We will be obtaining additional data from the USFS so results are not fully analyzed nor ground-truthed. Without the data from South-Central Vermont, approximately 56,000 acres of defoliation by forest tent caterpillar (FTC) were mapped this year. In 2016, 24,500 acres were mapped, with areas of heaviest defoliation in Essex, Lamoille, Orleans, and Caledonia Counties. In 2017, defoliation was mapped in every county except Windsor. FTC feeding has been noticeable in some Windsor County stands, but was not aerially detected.

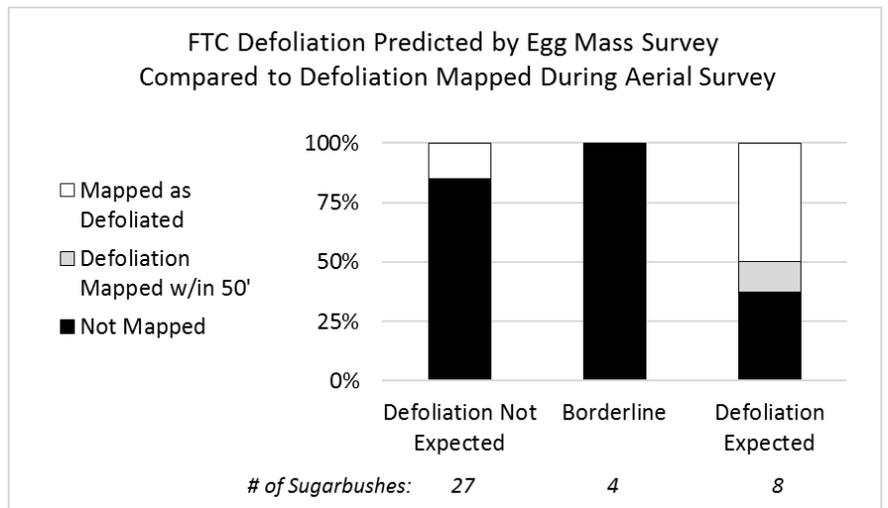


Although the caterpillar stage is over, mortality from caterpillar diseases may continue. Some diseased caterpillars go on to form cocoons, but may die during or after pupation. We have observed pupae that are not viable.

We have reports of refoiliation in some sites in Franklin County that were not defoliated last year. Leaves are small and stunted, but make trees appear green rather than naked.

Where moist and cool temperatures prevailed during refoiliation, we are keeping a lookout for anthracnose development of emerging leaves. Tom Hall, Forest Pathologist in Pennsylvania, commented that they had "extensive sugar maple dieback and mortality following FTC in areas where anthracnose (*Discula campesttris*) was advantaged by on-going cool wet, cloudy conditions. This has happened in 1994-1996; 2006-2008; and to a lesser degree in 2009 – 2010."

During aerial surveys, locations where egg mass surveys had been done over the winter were observed to determine if defoliation was easily visible. Based on these rapid evaluations, there was no significant defoliation in 87% of the sugarbushes where defoliation was not expected based on egg mass surveys. Defoliation was observed in, or close to, 62% of the unsprayed sugarbushes where defoliation was predicted.



Watch list species: Narrow-leaved bitter-cress

Narrow-leaved bitter-cress (*Cardamine impatiens*) is a member of the mustard family (Brassicaceae), and is one of 15 other Cardamine species found throughout New England (some native, some introduced). Native to Europe, in countries like Great Britain and Ireland, it is sometimes grown in gardens there. This herbaceous plant has mysterious beginnings to North America, but was formally recorded for the first time in New Hampshire in 1916.

Narrow-leaved bitter-cress has spread up and down the east coast, and west to Minnesota. Though populations are scattered, it's been observed to form dense stands that exclude native species. This documented behavior, and its continued spread in Vermont, are reasons this species is listed on Vermont's unofficial invasive plant "watchlist". In New England, this plant is prohibited in Massachusetts and Connecticut.

It is moderately shade tolerant, and can be found along forest edges, and even moist soils like along wetlands and stream banks. It can also be found along roadsides, and other disturbed areas.

Narrow-leaved bitter-cress does in fact, have narrow, compound leaves. Basal leaves have lobed leaflets. It can grow as an annual or biennial, up to 6 ft. in height. Small, white flowers and seed pods can appear throughout much of the growing season (May-September). These flowers turn into siliques (long, skinny, seed pods) that hold many little seeds (10-24 per flower), and when ripe, will spray seeds on touch, sticking to most things (like wildlife, humans, pets), or spreading by water. This plant, when mature, is hard to mistake, because of characteristic **pointed auricles** (projections from the base of the leaf that wrap around the stem).

To learn more about Narrow-leaved bitter-cress, check out these resources:

[Dept. Conservation & Natural Resources, Pennsylvania](#), [Minnesota Dept. Agriculture, Midwest Invasive Species Information Network](#) and [VTinvasives.org](#).



(a) *Narrow-leaved bitter-cress*, with characteristic pointed auricles (projections from base of leaf), (b) flowers and leaves, and (c) siliques. Photos: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Oak Tissue Issues

Red oak foliage continues to have symptoms of leaf diseases. Leafspots (most likely caused by the fungus [Tubakia](#), also known as Actinopelte) have been common in lower branches and understory vegetation since leaves emerged in the spring. [Anthracnose](#) is also common. It causes an irregular browning and distortion of oak foliage, and may cause twig dieback as well. Most infections occur in the spring when leaves are expanding, and symptoms are usually most severe in the lower crown.

Although oak wilt has never been detected in Vermont, we are on the lookout, since this disease has been detected in multiple locations in New York. Red oaks with oak wilt have [symptoms that are different from anthracnose](#). Browning from oak wilt starts after the leaf is fully expanded, so leaves are not distorted. Symptoms are caused by a lack of water, so they often show up first in the upper crown. They come on suddenly in mid-summer, and infected red oaks die within weeks, or at most a few months.



(a) All oaks are susceptible to tubakia, but red oak is particularly affected; (b) The development of anthracnose is favored when weather is cool (e.g., 50-55 degrees F) as leaves break bud and emerge; (c) With oak wilt, leaves turn dull green or bronze, appear water-soaked, wilt, and then turn yellow or brown. Damage occurs from the tip and outer edges toward the midrib and base. Photos: Bruce Watt, University of Maine, [Bugwood.org](#), Minnesota Department of Natural Resources, [Bugwood.org](#); N. Pataky

Other potential causes of leaf spots, growths and discoloration on oak include a large series of gall-making insects and mites. Early spring galls tend to develop quickly while leaves are growing. The tissues involved are soft and shrivel after the gall-forming insect (often a gall wasp) escapes in early summer. Fall galls appear in mid-summer on full grown leaves, develop more slowly, and tend to drop to the ground before or with leaves in the fall. Adults emerge the following spring.



*Among the gall-formers on oak are (a) midges, like this *Polystepha* gall, and (b) wasps such as species of *Neuropteris* and other Cynipids. Photos [J.F. Carr](#) and Steven Katovich, USDA Forest Service, [Bugwood.org](#).*

A Picture is Worth 1,000 Words



They're back! *Japanese beetle* adults are showing up a little later than usual, but showing up just the same. With a host list that surpasses 300 species, have they found something tasty on your property? Photo: R. Kelley



A *pandorus sphinx* moth was found resting one morning on a window screen in the Essex State Office complex. Caterpillar hosts include grape, ampe-lopsis and Virginia creeper. Adults will nectar from flowers including petunia, bouncing bet, and white campion. Photo: E. Spinney



Monarch butterflies are more abundant this year than in the recent past. Kent McFarland, who in 2002 initiated a six-year study to document the distribution and abundance of butterflies in Vermont, said "Most I have seen in years and reports indicate same all over Vermont and probably the entire NE. It could be a very good year for this region." Photo: R. Kelley



This leafroller was found on a newly-planted river birch in Norwich, VT. There are a number of species that will roll birch leaves. We think this one may be *Enargia decolor*, known commonly as the pale enargia or straw-eyed tentmaker. Next time you see a rolled leaf, take a peek inside! Photo: Gabe Kellman



For more information, contact the Forest Biology Laboratory at 802-879-5687 or:

Windsor & Windham Counties.....
Bennington & Rutland Counties.....
Addison, Chittenden, Franklin & Grand Isle Counties.....
Lamoille, Orange & Washington Counties.....
Caledonia, Orleans & Essex Counties.....

Springfield (802) 289-0613
Rutland (802) 786-0060
Essex Junction (802) 879-6565
Barre (802) 476-0170
St. Johnsbury (802) 751-0110

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