Vermont Forest Health

Insect and Disease Observations— July 2018

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

Sizzle in the Summer --- July All-Time Warmest Month on Record

Data from the National Weather Service in Burlington on August 1, 2018, indicate that "July 2018 was the warmest month ALL-TIME in the Champlain Valley (comparable to a typical July in Philadelphia, PA) and amongst the warmest Top 10 elsewhere across Vermont and Northern New York. It all began with a dangerous heatwave that impacted the North Country during the first week of July and although 'not as hot', warmer than normal temperatures continued for the entire month." The National Weather Service in Burlington provided this graphic showing records and/or statistics for Burlington, VT during July 2018.

Date	Record Type	NEW	Previous
JULY	ALL-TIME Warmest Month (MEAN)	76.0°	75.3° in July 1921
JULY	ALL-TIME Warmest Month (Max T)	87.4°	86.5° in July 1949
JULY	Most # Days ≥ 85° (Month)	21 Days	20 Days (July 1999,1975,1955)
JULY	Most # Days ≥ 80° (Month)	29 Days (Tied)	July 1975
July 1st	Daily High	96° (Tied)	96° in 1931
July 2nd	Daily High	97°	96° in 1963
July 2nd	ALL-TIME Highest MIN	80°	78° (8 times, latest 2001)
Date	**Record Type**	**Record Status**	**Current Record**
JULY	Most # Days ≥ 90° (Month)	10 Days (Tied-2nd)	11 Days (1949)
June 30 – July 5	Longest HEAT WAVE - Consecutive Days ≥ 90°	6 Days (Tied-2nd)	8 Days – 8/10-8/17/1944

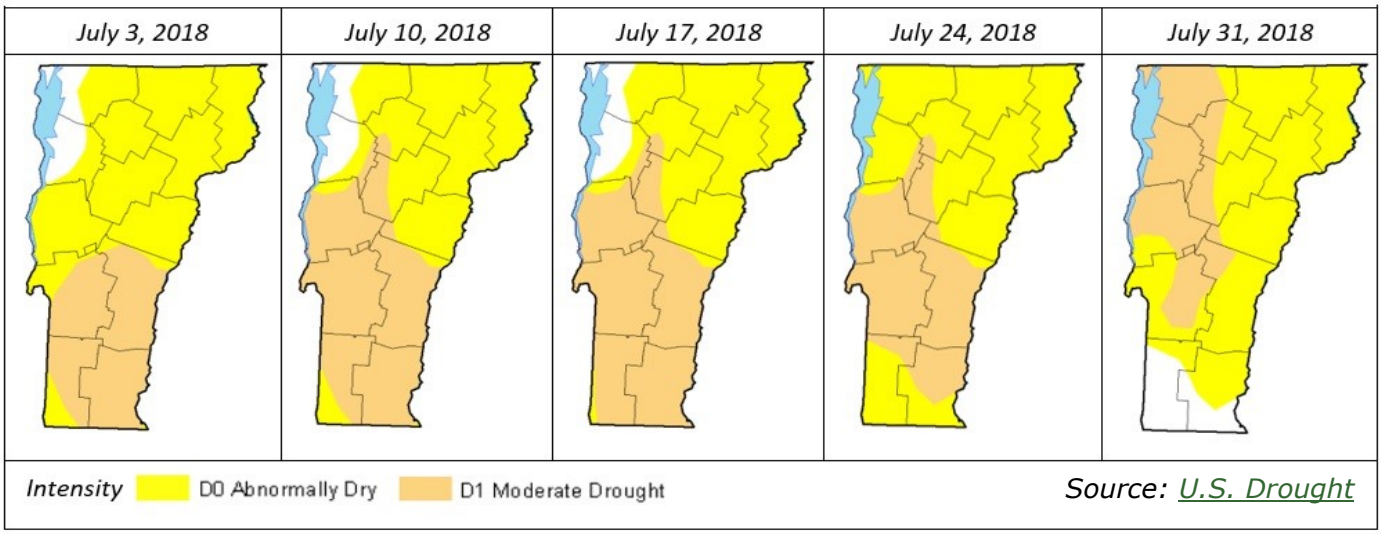
Multiple July highest maximum and highest minimum temperature records were broken or tied around the state as well in Newport, Rochester, South Lincoln, St. Johnsbury, Rutland, Woodstock, Barre-Montpelier and on top of Mt. Mansfield. July was hot worldwide. Heat waves and record high temperatures were recorded across the Northern Hemisphere, including temperatures in the 90's north of the Arctic Circle.

In addition to the high temperatures, high humidity played a role as well (heat index) especially during the heatwave at the beginning of the month. The NWS in Burlington issued their first ever Excessive Heat Warning for the Champlain Valley and Excessive Heat Watch for the rest of the state on June 30. The excessive heat warning lasted for 2 days followed by several days of heat advisories covering the whole state. Temperatures reached 90 or above in many locations across Vermont from June 30 to July 5 and periodically throughout the month. The highest temperature reported in the state during the heatwave was in Charlotte on July 2 with 99 degrees. Four heat-related deaths occurred in the state during the heat wave.

Not only was it hot, most of July was dry as well. Abundant sunshine, lack of rain and plenty of heat accelerated the drying. Crops were stunted, rivers and streams ran well below normal, and soils dried deep in many locations keeping the KBDI (Keetch-Byram Drought Index) above normal and fire danger moderate for much of the month.

The U.S. Drought Monitor listed most of Vermont as abnormally dry starting on June 19. Moderate drought started in the southern four counties on June 26 and shifted through the month of July. Scattered showers and thundershowers mid-month brought some relief to those locations that were lucky enough to receive rain. Most of the state received some light rain here and there but the hit-or-miss nature of the storms left significant rain in southern Vermont and much less in the Champlain Valley. Elsewhere in the state, rainfall was just above normal but remained abnormally dry.

U.S. Drought Monitor – State of Vermont, Progression of Drought through July 2018



On July 27, a strong thundershower hit Springfield causing flash flooding and downed trees. In southern Vermont on July 28, another violent storm with torrential rain and damaging winds estimated at 80 mph brought down thousands of trees and blocked roads. One landed on a moving car near the Putney town line. Westminister was hardest hit.

Drought Effects on Trees

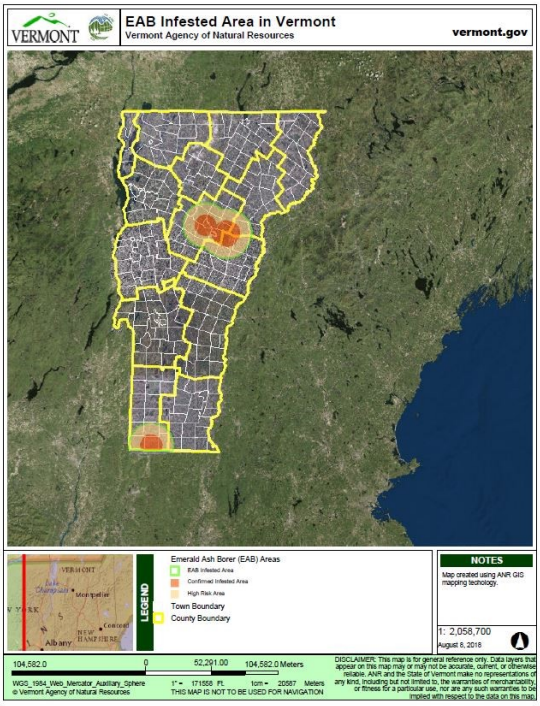
Droughty conditions are causing trees on dry sites to show symptoms of stress. Sugar maples in some North American Maple Project (NAMP) plots showed incipient drought damage, including yellowing of leaves, brown leaf margins and cupping. We also had reports of considerable numbers of green needles being shed by hemlock in Pittsford. Heat stress can accelerate photosynthesis, increasing the need to keep stomates open. A tree may respond by shedding needles so it doesn't lose too much water. Sinclair's book (*Diseases of Trees and Shrubs*) suggests that needle shedding is a response to water stress rather than heat, but the two go hand-in-hand. A tree may shed up to 10% of its foliage with little harm done.

Purple Trap Captures Emerald Ash Borer in Bennington

Emerald ash borer (EAB) was detected for the first time in southwestern Vermont by the USDA Animal and Plant Health Inspection Service when an adult beetle was captured on a purple detection trap in the town of Stamford. The location is within five miles of another recent EAB detection in the town of North Adams, MA. The USDA has 609 purple traps deployed throughout Vermont this year, and will inspect them again in September when they are removed at the end of EAB's flight season.

Beginning in 2004, visual and trap-tree surveys for EAB were conducted routinely in Vermont. The use of purple traps for EAB detection began in Vermont in 2008, and these traps, along with the "upgraded" green traps, have become a familiar sight in Vermont over the past 10 years. The detection in Bennington represents the first time that an adult EAB was captured in a purple trap since these surveys began in the State. The trap pictured here is the one that holds the dubious "honor".

EAB-infested trees are hard to see in recently infested areas, and, to date, no infested trees have been found in Bennington County. However, EAB is likely to be present in other locations within ten miles of known infestations. In southwestern Vermont this includes all of Stamford and Readsboro, as well as parts of Pownal, Woodford, Bennington, Searsburg, Whitingham, and Wilmington. Moving any infested material, especially ash firewood, logs, and pruning debris, can quickly expand the infestation, so it is critical that Vermonters follow the 'slow-the-spread' recommendations, available at vtinvasives.org/land/emerald-ash-borer.



State and federal agencies are planning a delineation survey based on tree symptoms to determine the extent of the newly detected EAB infestation. A public information meeting is being planned in the Bennington County area for early September.

There have been some changes to the EAB information available at vtinvasives.org. The website has been reorganized to make information easier to find. The map of known EAB infestations in Vermont, available on the ANR Atlas through vtinvasives, is now available to download as a pdf document or as a shapefile, KML or spreadsheet. Instructions on how to download these maps can be found here.

Beech Leaf Disease Alert

Keep your eyes open for signs of Beech Leaf Disease. Centered in the Cleveland, OH area, and ranging east to PA and NY, and north to Ontario, beech are experiencing leaf curl, chlorosis, lack of bud formation and other symptoms. Causal agents have not been identified, and very little is known about the disease. Although we haven't seen Beech Leaf Disease in VT, it's worth being aware of. Symptoms will be on the rise this month where present. More information is available here.

Lirula Needlecast on Christmas Trees

Lirula Needlecast seems to be the predominant needlecast on fir Christmas trees lately, showing up on Fraser as well as Canaan and balsam. The fungus that causes Lirula needlecast overwinters in infected needles on the tree. In late spring through midsummer, infected needles release spores that spread by splashing and dripping rain to new needles.

White Pine Needle Damage Acreage Doubles

Preliminary results from this year's aerial surveys indicate that the area of White Pine Needle Damage (WPND) mapped is more than double the acreage observed in 2017. Damage was visible from the air and mapped on over 40,000 acres, or about 10% of the white pine acreage in Vermont. Please keep in mind that these are preliminary data that have not been edited or ground checked. (For more about WPND, see our June Forest Health Update.)

(Left) One symptom of Beech Leaf Disease is raised striped bands between lateral veins of leaves. (Center) Needles killed by Lirula can remain attached for several years. (Right) Over 40,000 acres of White Pine Needle Damage were mapped in 2018, in contrast to 16,413 acres in 2017. Photos: C. Ewing, OSU, R. Kelley, B. Schultz.

Forest Tent Caterpillar Damage Mapped

Preliminary aerial survey results showed approximately 75,000 acres of Forest Tent Caterpillar damage. This includes mortality, and moderate and heavy defoliation. Details will be available after data are edited and ground checked.

Watch list species highlight: Wild Parsnip (*Pastinaca sativa*)

In mid-summer, Vermont starts to see a wave of yellow flowers bloom along roads, fields, meadows, and trails. This plant is called Wild Parsnip (*Pastinaca sativa*), and is similar in appearance to Queen Ann's Lace (*Daucus carota*). Wild Parsnip is a member of the carrot family (Apiaceae) and is currently considered taxonomically indistinct from the common garden parsnip.

The history of this species' introduction to North America is not clear, though some herbarium samples are available from the mid 1800's. It is likely that Wild Parsnip is a garden escape gone wild, spreading to almost all 50 US states, and all Canadian provinces. Exposure to this plant can be hazardous, because when the plant tissue is broken or crushed, and sap that comes in contact with skin is exposed to light, it causes a chemical burn (phytophotodermatitis). The VT Department of Health has more information on the health impacts of Wild Parsnip. This species is listed on Vermont's unofficial invasive plant "watchlist" because of concerns regarding its toxicity and distribution.

Wild Parsnip can reach heights well over 5', has grooved stems, and alternately arranged compound leaves made up of 5-15 leaflets. Most notable when it flowers, Wild Parsnip has a two-stage life cycle. In the first stage, it grows up from seed, and leafs out in its rosette (circular arrangement of leaves) form for one or more years to gather energy stores in its tap root. When conditions are favorable, it will enter the second stage of its life cycle, sending up a tall bolt and flowering. After it flowers and sets seed, the individual plant will die (monocarpic perennial). Seeds can remain viable in the soil for up to 4 years.
There is a similar looking yellow flowered native species, Golden Alexander (*Zizia aurea*), but it is more diminutive, and flowers earlier in the season.

To learn more about Wild Parsnip and options for control, check out www.VTinvasives.org and these additional resources: Pennsylvania Department of Conservation and Natural Resources; Invasive Species Center, Ontario; New York Department of Environmental Conservation Minnesota Department of Agriculture; University of Wisconsin Extension; Iowa State University Extension

First year leaves of Wild Parsnip grow in a basal rosette (left). The following year, an aerial shoot, called a "bolt", produces a flat-topped umbel of clustered yellow flowers (center). Wild Parsnip can reach heights of 5' or more, as evidenced by the concerned faces of our Habitat Restoration Crew members this July (right). Photos: VT FPR

Beetles

Let's start with the scarabs. The Japanese Beetle (*Popillia japonica*), which often becomes most obvious after the 4th of July, had a delayed appearance this year, but made up for it as the summer progressed. The effects of this summer's conditions will be interesting; extremely dry weather during summer can destroy many of the eggs and can kill newly hatched grubs. Wet summers are favorable for their development and may be followed by seasons of increased numbers of beetles.

The Asiatic garden beetle, *Maladera castanea,* has been recorded on more than 100 host plants. Adults can be serious pests, feeding at night and returning to the soil during the day. Unlike Japanese beetle, adults do not skeletonize leaves, but rather strip, shred and notch the foliage. Larvae feed on organic matter, roots and root hairs within the soil.

The Oriental Beetle (*Exomala orientalis*) was reported from Springfield. This scarab feeds on plants in both the larval and adult stages. Adults are minor pests, sometimes causing damage to horticultural species. Larvae are more serious pests, feeding on the roots of important crop and turf species.

Japanese beetles attack the foliage, flowers, or fruits of more than 300 host plants (left). The cinnamon-brown Asiatic garden beetle adults are highly attracted to light (center). Oriental Beetle adults are weak fliers and less damaging than their immature "grub" stage (right). Photos: R. Kelley (left), J.M. Crockwell (center and right).

Other beetles drawing our attention lately include the White Pine Weevil. Terminal shoot mortality of conifers due to WPW started showing up, as always, in July. When regenerating pine, retaining overstory trees helps to reduce damage. The narrow, thin-barked leaders and cooler temperatures under shaded conditions help to reduce weevil success. Recommendations from the State of Maine are available here.

The Oak Twig Pruner, a longhorned beetle that can leave the ground under a tree littered with severed twigs, was also observed in July. Twigs on the ground were examined carefully for the diagnostic presence of a small, oval-shaped plug in the cut end of the branch.

Typical "shepherd's crook" on weevil-infested white pine; severed oak twig showing twig pruner gallery with frass removed. Photos: R. Kelley, Bugwood.org; N. Monteith

Bustling Caterpillars

The Yellow-necked Caterpillar, *Datana ministra,* was observed feeding on red oak in Cambridge. This species will feed on a number of hosts, including apple, oak, birch, and willow. Early instars feed gregariously and skeletonize the leaves of their host plant. Later, they feed on all of the leaf except the leaf stalk. According to Dave Wagner (*Caterpillars of Eastern North America*), this species and other *Datana* appear to be declining. *Compsilura*, a fly parasitoid introduced from Europe to control Gypsy Moth (and also feeds on FTC), may be a factor in its demise.

Maple Leafcutter (MLC) and Maple Trumpet Skeletonizer (MTS) are obvious now. One report from the Hyde park area says that MLC is heavy in the understory and lower crowns, despite poor survival of early instars. In NAMP plots, FPR staff have noted both of these insects. Fall webworm is beginning to show up in some locations.

Yellow-necked caterpillars were observed defoliating a young red oak tree in someone's front yard. There were not a lot of them but they were definitely hungry. The adult is an interesting moth.
Photo: R. Dyer

A Mystery

This photo was one of a series taken of an oak in Bridgewater with brown leaves and unusual leaf petioles. The petioles were still holding the leaves on the trees, but they seemed to be separated into strands, like a rope that has been untwisted. Most of the leaves/petioles so affected were wrapped around the twigs; probably by the wind. A similar situation was observed in Richmond.

One explanation might be that squirrels trying to get at young acorns at the end of twigs caused damage to the petioles in the process.

Frayed petioles observed on an oak tree in Bridgewater. Photo: J. Esden

FORESTS, PARKS & RECREATION VERMONT AGENCY OF NATURAL RESOURCES

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

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