Vermont Forest Health

Insect and Disease Observations — August 2019

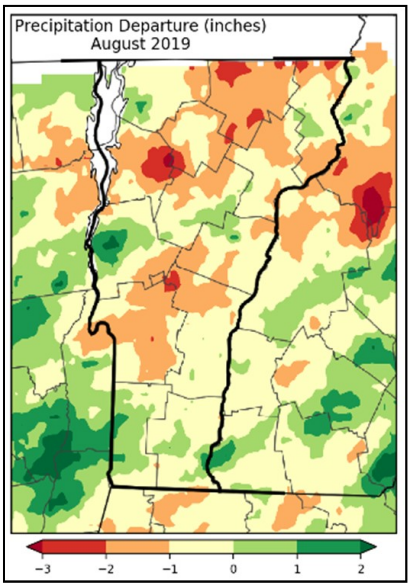
Department of Forests, Parks & Recreation
August 2019 vtforest.com

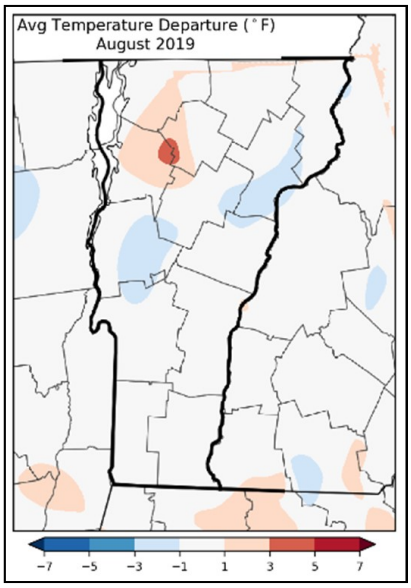
End of August: Dry with a Twist

The growing season of 2019 has provided a much-needed reprieve from recent years, during which conditions have frequently ranged from abnormally dry to severe drought. August also had generally good growing conditions with normal temperatures and adequate soil moisture.

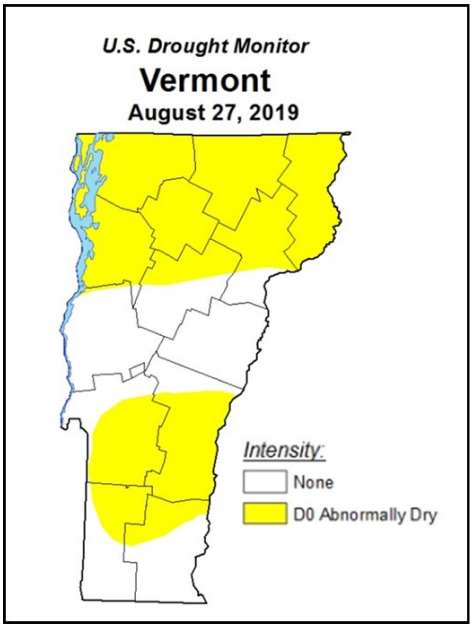
By the end of the month, parts of northern and central Vermont were abnormally dry, but no signs of drought stress have been reported.

On August 21st, a tornado touched down in the town of Windham on the east side of Glebe Mountain. With windspeeds up to 110 mph, and covering a swath of nearly 100 acres, dozens of trees were uprooted or broken.





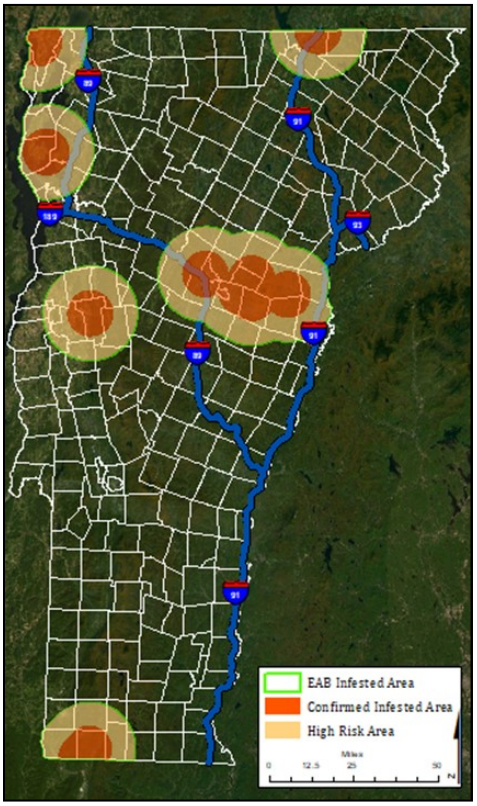
August precipitation and temperature departure from normal. Maps: Northeast Regional Climate Center



Vermont drought conditions at the end of August. Map: National Drought Mitigation Center

Weather Slows the Spread of HWA, but Not EAB

In early August, **emerald ash borer** (EAB) adults were found on two different traps in Alburgh, VT. This is the second town in Grand Isle County with confirmed EAB detections. EAB is known to occur due north of Alburgh in the Regional County Municipality of Haut-Richelieu in Quebec. Because of this detection, the mapped area in Vermont to which "Slow-the-Spread" recommendations apply now covers nearly all of Grand Isle County, and extends into the western edge of Highgate, Swanton, and St. Albans.



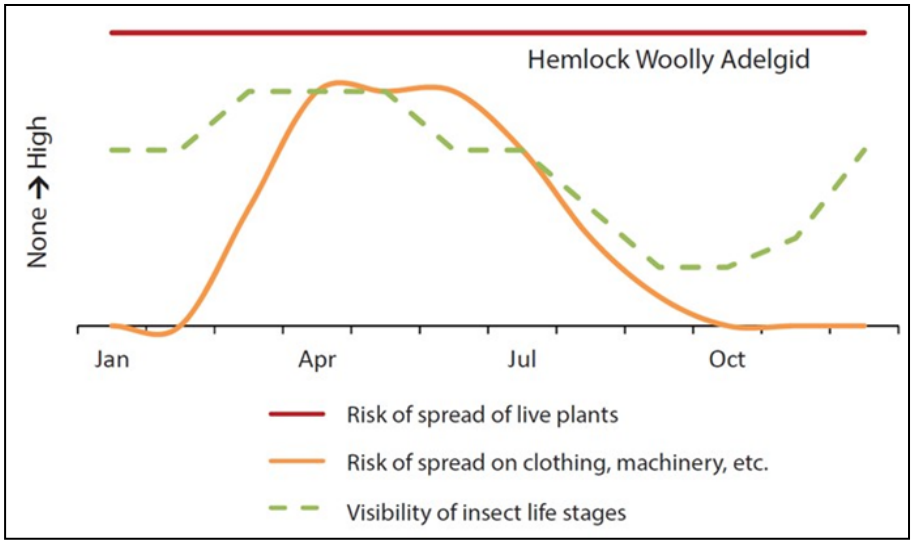
In spite of these finds, the vast majority of the state remains outside the known infested areas**.** A goal is to be "all in" to slow the spread and protect the ash resource across the state, giving landowners, utilities and municipalities time to prepare for ash tree mortality.

Purple traps have been deployed by Vermont's Forest Pest First Detectors, volunteers trained to assist in surveying, in locations throughout Vermont to help monitor EAB. The project is coordinated by UVM Extension, with traps donated by USDA. Traps will be checked again after the flight season has ended on September 30th.

In early August, EAB was confirmed in the town of Alburgh. Because EAB can rarely be found at low population densities, the infested area map indicates the likelihood of EAB based on where it has actually been observed. Applying slow-the-spread recommendations to this area reduces the risk of spreading EAB and provides time to conduct management activities.

Hemlock woolly adelgid (HWA) has not been detected in any new towns since 2016. It is established in most of Vermont's Plant Hardiness Zone 5b but spread into colder zones has been limited. Due to changes in Vermont's rules concerning neonicotinoid pesticides, and our developing understanding of the insect, the leaflet Hemlock Woolly Adelgid in Vermont: Recommendations for Landowner Response has been recently updated.

HWA is harder to detect in late summer, but the nymph stage can be found on shoots at the base of needles. We continue to encourage reports of EAB and HWA suspects through the vtinvasives Report It webpage.



Hemlock woolly adelgid is more difficult to detect in late summer when it is in the nymph stage. Photo: Elizabeth McCarty, University of Georgia, Bugwood.org

Graph showing risk of spread and visibility throughout the year from: Managing Hemlock in Northern New England Forests Threatened by Hemlock Woolly Adelgid and Elongate Hemlock Scale

A Lot of Green in the Green Mountain State (Except Here and There)

Aerial forest health surveys were completed in August. No **forest tent caterpillar** defoliation was observed, confirming ground observations that the recent outbreak has ended.

Aerial surveys confirmed that the Green Mountains were mostly green in 2019. No forest tent caterpillar defoliation was detected. Photo: B. Schultz

While the landscape was mostly covered in green, thin-crowned hardwoods were mapped in scattered locations throughout the state. A lot of this was from a variety of local factors affecting sugar maple and other hardwoods.

Where crowns look thin or tinged with brown, check for seeds. There's been a heavy crop on sugar maple and other species. Elsewhere, where hardwood foliage has been chewed or thin, or if it's turning prematurely brown as summer comes to a close, it's likely to be from one of the following:

Most saddled prominent caterpillars are green, but a variety of colors can be found when populations are high (top left). Greenstriped mapleworms (top right) are often seen in association with saddled prominent. Apparently the hairless saddled prominent caterpillars are tasty to frogs! Photos: R. Kelley, J. Russo, D. Crocker

In early August, we continued to receive reports of **saddled prominent** sightings as the caterpillars were coming down from tree crowns to pupate in the litter. They have been seen causing only light damage this year in sugarbushes and northern hardwood stands, as reported in the July forest health update. On cue, the **greenstriped mapleworm**, which often shows up with saddled prominent, has been observed as well. As an adult, this insect is the appropriately named rosy maple moth**.**

Maple leaf cutter populations are high again this year. They are responsible for some brown patches of maple at mid-elevations that began to show up in late August. While damage is most common on sugar maple, we've also been seeing the characteristic circular holes on yellow birch and beech.

While maple leaf cutter is most common on sugar maple, it can feed on other species, including yellow birch. Photos: J. Esden

Some hardwood browning is due to fungi that infected leaves emerging during wet periods. **Anthracnose** continues to be reported on widely scattered maple and oak, thanks to wet spring conditions. **Marssonina leaf spot** on poplar has become more noticeable, particularly on balsam poplar and quaking aspen. Poplar leaf growth is indeterminate, and moist periods any time in the growing season can intensify the disease.

The foliage of riparian willows commonly turns brown by late summer thanks to a combination of willow scab and willow leaf beetle. Another insect that has been observed causing damage in northwestern Vermont this year is likely the **willow weevil leafminer**, *Isochnus sequensi*. This "flea weevil" is native to Europe but established in the northeast.

The Marssonina leaf spot fungus continues to infect poplar foliage throughout the growing season. Willow weevil leafminer larvae feed and pupate within blotch mines. Photos: J. Halman

Fall webworm caterpillars feed inside their webbing at the end of branches (top left and center). Eastern tent caterpillars are active in the spring and leave their tents, in branch crotches, to feed.

Locust leafminer adults skeletonize black locust leaves (right). The larvae feed within mines. With two generations per year, feeding can result in brown foliage by late summer (top right). Photos: R. Kelley

Fall webworms have been locally very heavy along road edges and open areas. Although there are many hosts, cherries and ash have the most dramatic evidence of feeding. Entire trees defoliated and covered with webs have been described as looking "like cotton candy".

Locust leafminer has also been locally heavy along road edges, leading to patches of brown foliage on black locust.

We only had a few reports of **gypsy moth** caterpillar feeding this summer, but egg masses are more noticeable than normal. We will be conducting egg mass surveys after leaf drop. This should help determine whether population levels are of concern for 2020.

The flightless female gypsy moth lays hundreds of eggs in a single egg mass. Egg masses were more frequently observed than normal in August, suggesting populations may be higher in 2020. Photo: Adam Wild

Red humped caterpillars feeding on apple leaves were reported from several locations. This species is distinct from its relative, the red humped oakworm, which is not spiny and feeds on… oaks.

Red humped caterpillars have been observed feeding on apple. Photo: T. Navarro

Gall Wasps Go Nutty

As what appears to be a good crop of acorns and beechnuts is ripening, we're glad that New Hampshire's forest health newsletter alerted us to **acorn pip galls**, which we've also been seeing in Vermont this year. The dropped acorns have a small white "tooth-like" gall protruding just below the cap. The gall contains the larva of a cynipid gall wasp, *Callirhytis operator*. The gall will fall out of the acorn and the insect inside will complete its development. The next generation (all females) will cause a different gall, the woolly catkin gall, on oak flowers.

We also received a report of the **plum apple gall**, initiated by *Amphibolips quercusjuglans*, which can be attached to acorns as well as separated. Trish Hanson reports that, "There are scads of cynipid gall wasps associated with oaks, and a number of them initiate spherical galls. I've played ping pong with the so-called "oak apples" (there are several species with that common name) and also tried the oak apple gall magic trick. While tilting your head back or lying flat on the ground, hold the gall above your lips while gently blowing."

Tooth-like acorn pip galls protrude from the cap and then drop out. The larva completes its development inside the gall on the ground. Photos: J. Esden (above), G. Kellman

The plum apple gall is another oak gall caused by a cynipid wasp. Photo: G. Kellman

Gall wasps aren't the only gall makers with complicated life-cycles. **Cedar apple rust** causes galls on red cedar or other junipers, but leaf spots on apple. Related fungi alternate between juniper and hawthorns. Rust levels are unusually high on apple foliage this year.

Cedar apple rust is unusually common on apple leaves. The galls on its alternate host, red cedar, produce spore horns in the spring. Photos: James Chatfield, Ohio State University, Bugwood.org; R. Kelley

Also Observed in August…..

Black locust sap suckers attracted attention this month.

*The **black treehopper**, Acutalis tartaria (top), feeds on many plants including black locust and members of the Compositae like ragweed, sunflowers, and goldenrods. Photo: T. Murray*

*Some birds immediately "eject" the plant bug **Lopidea robiniae** (bottom) from their mouth after a single bite, indicating a chemical feeding deterrent. Photo: Whitney Cranshaw, Colorado State University, Bugwood.org*

*The moth of the **elm spanworm**, Ennomos subsignaria, lays eggs in late summer. Larvae hatch at budbreak. Despite their name, the list of favored hosts is large. Photo: G. Anderson*

*The **short-winged blister beetle**, Meloe angusticollis, is often seen in the fall. Common hosts for the adults include alfalfa, legumes, potatoes, and various ornamental plants. The beetle secretes a fluid from its leg-joint which causes blistering. Newly-hatched larvae hitchhike on bees to hives, where they feed on gathered nectar and bee larvae. Photo: L. Masterson*

*The larva of the **black swallowtail butterfly** feeds on the invasive wild parsnip, but also cultivated plants like dill, parsley, and fennel. (How many black swallowtail butterfly larvae can you find in this picture?) Photo: M. Gold*

*The **Saturniids** include showy adults like the Luna and Polyphemus moths.*

This Saturniid caterpillar was responsible for ravaging the foliage of a blueberry planting. Photo: J. Hills

*An evening spent "UV flashlighting" in Rockingham also resulted in observations of Saturniids, including caterpillars of the **Polyphemus moth**, Antherea polyphemus (top left), the **Virginia creeper sphinx**, Darapsa myron (below left), and the **blinded sphinx**, Paonias excaecata (top right)…*

*...plus a **katydid** emerging from the nymph stage. Photos: J. Russo*

Federal Noxious Weed List Spotlight: *Emex spinosa*, Devil's Thorn

Vermont's Noxious Weed Quarantine includes species listed as Class A (not native to Vermont, not known to occur in Vermont, and pose a serious threat), Class B (not native to Vermont, known to occur in Vermont and pose a serious threat), as well as those listed on the Federal Noxious Weed List. While many of these species on the Federal Noxious Weed List likely won't occur in Vermont, there are a few that have the potential. The objective of this series of articles is to draw attention to lesser known invasive species from the Federal Noxious Weed List, that can be found in the Northeast, and are, in fact, part of Vermont's Noxious Weed Quarantine.

This month's focal quarantine species is **devil's thorn** (*Emex spinosa*), also known as spiny threecorner-jack, prickly doc, and spiny emex. It is an annual plant, and a member of the buckwheat family (Polygonaceae). The most notable member of this family, perhaps, is *Fallopia japonica* (Japanese knotweed).

Devil's thorn has round ribbed stems, sometimes with a reddish tint towards the base. The leaves are alternately arranged and can be triangular to oblong in shape. Flowers are inconspicuous and green. Photo: Forest & Kim Starr, Starr Environmental, CC by 3.0.

Devil's thorn, the only member of the genus *Emex* noted to be found in New England, is native to the Mediterranean region of Africa. The known location of devil's thorn in New England is a waste area in Suffolk County, Massachusetts.

One of its common names, spiny threecorner-jack, hints at one mode of spread—the fruits have three spines which readily catch on animal fur or clothing on people. Devil's thorn is thought to have been accidentally introduced in grass seed, to Hawaii, in the mid-20th century. By 1962, it had spread to over 11,000 hectares across four different islands, with a huge impact on the available pastureland. It has covered hillsides, drying up in early summer and leaving those hillsides exposed, devoid of vegetation, and susceptible to erosion.

Devil's thorn can generally be found in disturbed areas adjacent to human activity. It can tolerate a variety of growing conditions and spreads easily on agricultural and horticulturally managed lands. Where it grows outside of its native range, devil's thorn shades out and displaces native vegetation by forming dense vegetative mats. This plant has a strong drought tolerance and grows rapidly. Seeds remain viable for multiple years.

It is because of this invasive behavior, potential for spread, and impacts to agriculture and native vegetation, that the United States added devil's thorn to the Federal Noxious Weed List.

The hard fruits (achenes) have three spiny corners. Each fruit contains one seed and can grow in two forms, one aboveground and one below. Photo: Julia Scher, USDA APHIS PPQ, Bugwood.org.

To learn more about devil's thorn, check out these resources:

Go Botany – Native Plant Society

California Invasive Plant Council

Invasive Plant Atlas

USDA Plants Database

Centre for Agriculture and Bioscience International

California Native Plant Society

August Invasive Plant Phenology

In a pilot project started this year, volunteers are keeping track of invasive plant phenology in order to time management treatments most effectively. Below is a summary of observations made from August 5-9th, 2019.

Addison County— Flowering: Purple Loosestrife, Phragmites; Flower buds: Japanese Knotweed; Fruit ripening: Common Buckthorn; Seeded: Wild Parsnip, Honeysuckle.

Chittenden County— Flowering: Purple Loosestrife, Phragmites, Wild Parsnip, Wall Lettuce; Flower buds: Japanese Knotweed; Fruit ripening: Wall Lettuce; Seeded: Wild Parsnip, Honeysuckle, Reed Canary Grass; Leafed out: Multiflora Rose.

Franklin County— Flowering: Wild Parsnip, Japanese Knotweed; Seeded: Wild Parsnip.

Lamoille County — Flowering: Purple Loosestrife, Phragmites, Japanese Knotweed, Wild Parsnip; Seeded: Wild Parsnip; Leafed out: Common Buckthorn.

Rutland County— Flowering: Purple Loosestrife, Phragmites, Japanese Knotweed, Garlic Mustard; Fruit ripening: Common Buckthorn; Seeded: Wild Parsnip, Honeysuckle, Garlic Mustard; Leafed out: Japanese Knotweed, Garlic Mustard (basal rosettes).

Windsor County— Flowering: Purple Loosestrife; Seeded: Honeysuckle; Leafed out: Goutweed.

If you are interested in taking part in the project, please contact: elizabeth.spinney@vermont.gov.

FORESTS, PARKS & RECREATION VERMONT AGENCY OF NATURAL RESOURCES

For more information, contact the Forest Biology Laboratory at 802-565-1585 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

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