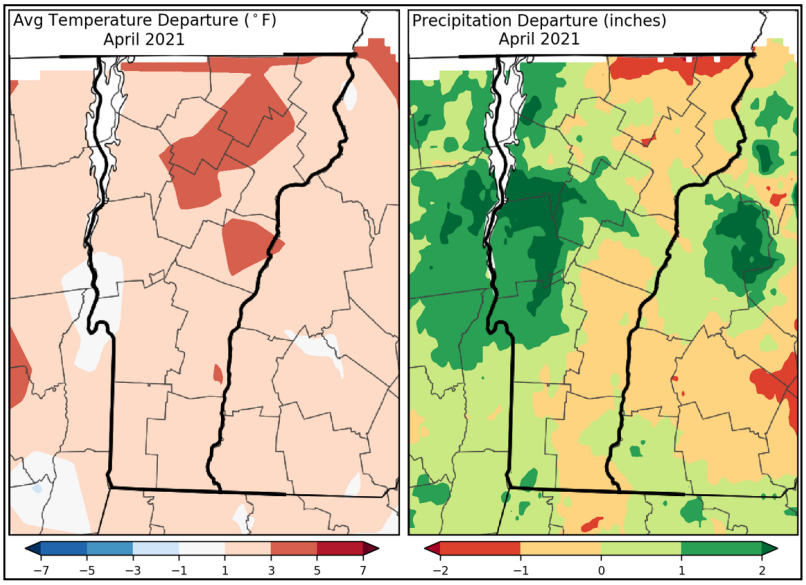
Vermont Forest Health

Insect and Disease Observations — April 2021

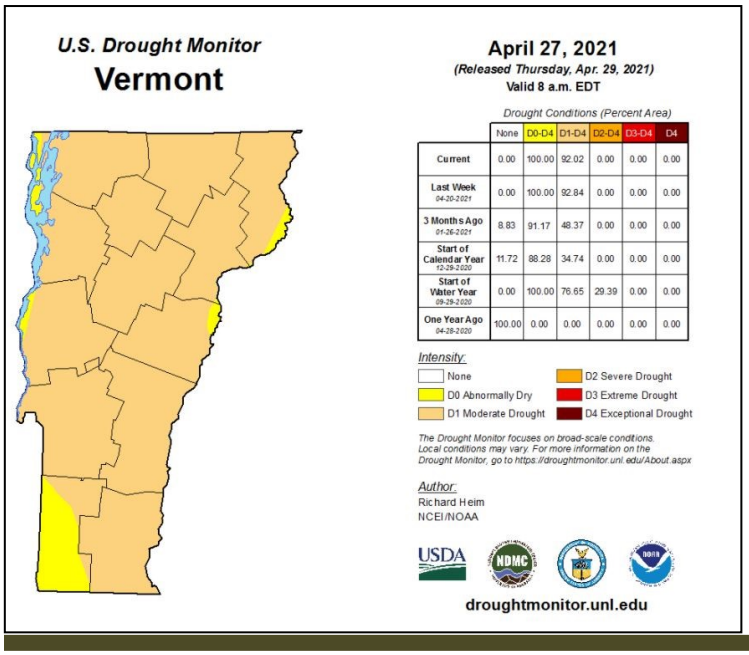
Department of Forests, Parks & Recreation
April 2021 vtforest.com

Weather Recap

April marks the end of the sugaring season in most parts of Vermont. Sugaring requires an alternating pattern of freezing night temperatures and warm days of 40-45 degrees, a trend lost by frequent, mid-April warm snaps. On average, this month was warmer and wetter than April of 2020. State-wide temperatures averaged 43.2°F, which was 4.4 degrees warmer than April of last year. Statewide precipitation averaged 4.03 inches, which was 0.06 inches more than April of last year. Low monthly rainfall has contributed to drought severity across the state. By the end of the month, the U.S. Drought monitor listed 92.02% of the state in moderate drought and 7.98% as abnormally dry.



Temperature and precipitation departure from normal. Maps and data: Northeast Regional Climate Center.



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	92.02	0.00	0.00	0.00
Last Week 04-20-2021	0.00	100.00	92.84	0.00	0.00	0.00
3 Months Ago 01-26-2021	8.83	91.17	48.37	0.00	0.00	0.00
Start of Calendar Year 12-29-2020	11.72	88.28	34.74	0.00	0.00	0.00
Start of Water Year 09-29-2020	0.00	100.00	76.65	29.39	0.00	0.00
One Year Ago 04-28-2020	100.00	0.00	0.00	0.00	0.00	0.00

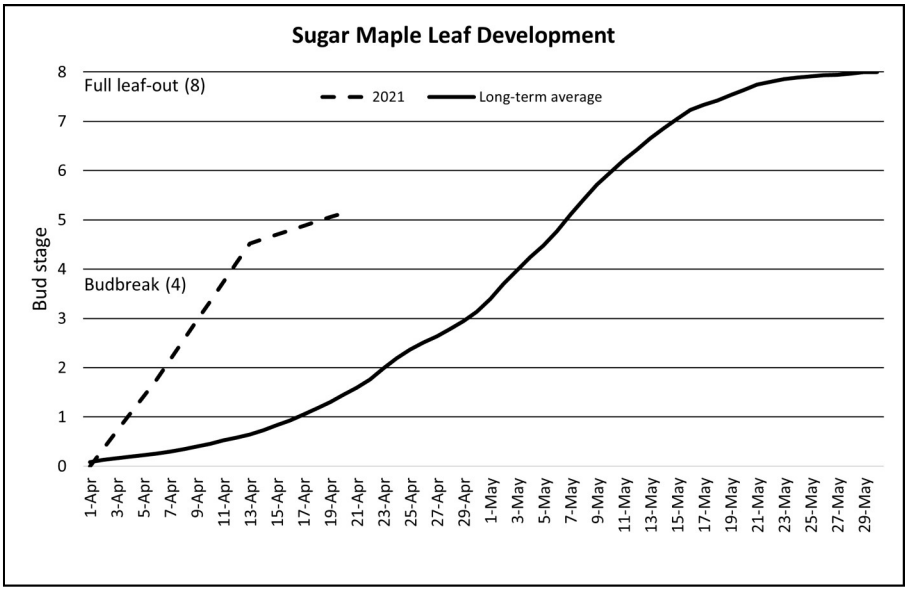
Fire Update

Dry weather and early snowmelt led to an early and active fire season. So far, over 90 acres have burned in escaped wildland fire this year, mostly from burning brush. Spring fire season usually consists of mostly grass fires or fires in small and fine fuels. However, some fires reported this spring have spread to the woods and burned in larger fuels. This uptick in fire activity is likely a result of a combination of the dry conditions in late winter and spring and the recent multiple high wind events.

End of April drought conditions. Map and data: Northeast Regional Climate Center.

Spring Budbreak and Leaf Out

Sugar maple trees were monitored for the timing of budbreak and leaf out in the spring at the Proctor Maple Research Center in Underhill as part of the Forest Ecosystem Monitoring Cooperative. Sugar maple bud expansion was the earliest in our 30-year record, with budbreak occurring on April 12th. Phenology observations are still in progress, but full leaf out is expected to be similarly earlier than the long-term average. Based on emergence, we are predicting a moderate-heavy seed year pending no late frost or snow damage.



Caliciopsis Canker of Eastern White Pine

Resin streaking from Caliciopsis canker. Photo credit: Kyle Lombard, State of New Hampshire.

Caliciopsis canker is caused by *Caliciopsis pinea*, a native fungal pathogen in North America. This opportunistic pathogen is present at low levels in Vermont and increases in population and severity when conditions favor fungal growth and tree stress such as in dense pine stands. In the process of compartmentalizing this pathogen, infected trees attempt to "pitch out" this fungus, causing profuse resin streaking in the mid to upper canopy. This resin streaking often happens between branch nodes, and therefore can be differentiated from white pine blister rust, which causes cankers and resin at branch nodes. If compartmentalization is unsuccessful, this pathogen causes perennial cankers which grow in size and damage every year. The loss of photosynthates due to compartmentalization and damage caused by the presence of cankers can lead to dieback and sometimes mortality in infected hosts. To reduce the presence and severity of this pathogen, eastern white pine stands should be managed at low densities. This will increase individual tree health and vigor while drying out the stand and making the conditions less favorable for fungal growth. For more information and management recommendations, refer to the Field Manual for Managing Eastern White Pine Health in New England.

Incidental Observations

A combination of weather stress, hemlock borers (*Melanophila fulvoguttata*), and woodpeckers (*Picidae*) have been reported causing damage to hemlock trees in northern Vermont. Hemlock trees are vulnerable to drought, and the stress caused by our recent periods of droughts makes them susceptible to hemlock borers, a secondary pest, that feeds on stressed or weakened trees. Woodpeckers cause larger bole damage and bark loss by excavating the tree in search of these hemlock borers. The combination of these stressors causes dieback, thinned and discolored canopies, and reduced growth. Although damaging to specific trees, this is not likely to cause widespread mortality.

A: Exposed inner-bark. **B:** Pile of bark chips. Photo credit: Adam Bouchard.

Smooth patch of ash. Photo credit: Steven Katovich, Bugwood.

Smooth patch of ash (*Aleurodiscus sp*., *Dendrothele sp*.) continues to be reported across the state in conjunction with suspect EAB reports. Smooth patch is caused by a fungus that creates irregular smooth and sunken areas that appear on bole and branches of ash trees. This fungus only consumes dead bark tissue and therefore has minimal effect on the overall health of the infected tree. The presence of smooth patch is not an indicator of an EAB infestation. For more information on EAB or to report a sighting, visit VTinvasives.

Hemlock woolly adelgid (HWA, *Adelges tsugae*) phenology observations reported progredien-stage eggs early this month (April 9th). In North America, HWA have two generations per year, an overwintering generation (sistens) and a spring generation (progrediens). Maturing progredien-stage HWA will develop into winged and non-winged adults. Winged adults will fly off infested hemlock trees in search of a spruce tree required to complete its lifecycle. North American spruce trees are unable to meet the requirements needed for sexual reproduction and winged adults will die before reproducing. The non-winged adults will remain on the hemlock trees and continue to live and reproduce asexually. For more information on HWA, or to report a sighting, visit VTinvasives.

HWA eggs. Photo credit: FPR Staff.

Spider mites (*Tetranychidae*) were observed on hemlock trees during HWA observations. These mites can be found on many plant species, and typically increase in population when the environment is hot and dry. Spider mites cause minimal damage to trees, but some species can cause severe damage to agricultural crops or other small, herbaceous plants.

Spider mites. Photo credit: Frank Peairs, Colorado State University, Bugwood.

Beech scale (*Cryptococcus fagisuga)* can be found across the state, usually in conjunction with fungal pathogens (*Neonectria faginata* and/or *N. ditissima*). Beech scale uses its piercing and sucking mouthparts to consume phloem tissue in infested hosts. This feeding causes small puncture wounds which allow nectria fungi to enter the tree. The combination of beech scale and nectria fungi are commonly referred to as beech bark disease and can cause cankers, dieback, and mortality of infected hosts. When only beech scale is present, the damage is less severe.

Beech scale infested tree. Photo credit: FPR Staff.

Last year's ash flower galls are visible before leaf out and can be identified by greenish–brown clusters hanging from ash trees. Ash flower galls are the physiological response created from the feeding of eriohyid mites, *Eriophyes fraxinivorus.* These mites overwinter in flower buds and during springtime, they will emerge and feed on male ash flowers. As spring progresses, more green galls will be noticeable, and these galls will turn brown as the season progresses. These galls are an aesthetic problem and do not contribute to declining tree health or vigor.

Ash flower galls. Photo credit: FPR Staff.

Red maples (*Acer rubrum*) are one of the first flowering trees in Vermont. Red maples can be either monoecious, with male and female flowers on one tree, or dioecious, with male and female flowers on separate trees. These trees flower before leaf out, allowing for more efficient wind pollination. Periods of heavy snowfall have lead to reports of discarded flowers and flower buds in the northern parts of the state. The loss of flowers can lead to a lower seed year for this species.

Red maple flowers in the snow. Photo credit: FPR Staff.

Foraging For Fungi

A: False morel, *G. esculenta* **B:** True morel, *M. esculenta.* Photo credit: Davide Cassi, University of Parma, Italy.

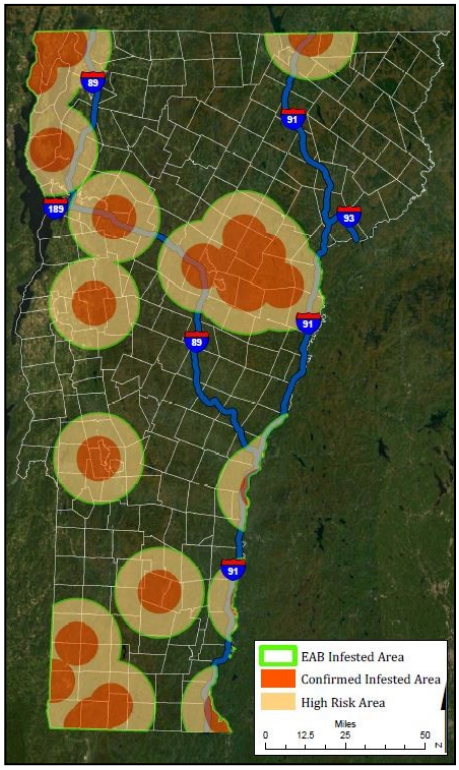
Morels (*Morchella esculenta*) have started to pop up in Mid-April, earlier than usual in Vermont. This highly sought-after edible is a fungus native to the eastern United States and grows in mixed hardwood stands that include apple, ash, aspen, elm, and oak. True morels can be identified by a more uniformly shaped cap that is covered in pits and ridges. This cap is attached directly to the stalk of the mushroom, and when sliced in half, is completely hollow. This mushroom has several look-alikes, including (but not limited to) the false morel *Gyromitra esculenta*. When sliced in half this mushroom is not hallow and has a cauliflower –like internal structure. The cap of this mushroom is brain-shaped and is often described as squished. This species, although consumed in some cultures, can be fatal if eaten raw or uncooked, due to the carcinogenic mycotoxin, gyromitrin. Levels of this toxin can vary between specimens, and unless laboratory work is conducted, actual levels cannot be accurately assessed.

Pheasant back mushrooms. Photo credit: John Dawson.

Pheasant back mushrooms (*Polyporus squamosus*) are another springtime edible that can be found in Vermont. This mushroom is both saprotrophic and parasitic and can be found growing out of hardwood stumps and logs, as well as living hardwood trees. This mushroom is an annual polypore, and is thick and soft when young, and matures into a hard cork-like texture. The cap of this mushroom is pale tan to creamy yellowish with brown to blackish scales. It can grow between 4-30 cm across and between 1-4 cm in thickness. The undersurface of these mushrooms has pores that are creamy-white to yellow with a white spore print. The pore surface is decurrent, meaning it continues partially down the stem of the mushroom. The stem is 2-9 cm long and 1-4 cm thick and is creamy-white on the bottom and dark-brown to black on the top. These mushrooms are edible when young, typically when the cap is less than 6 cm across. They are reported to have a mealy taste and are not highly sought after. These mushrooms have no common look-alikes.

As with all wild mushrooms, there are risks to eating and misidentifying them which can be both dangerous and fatal. Always ensure you have the correct identification before consuming any wild edible. ***The State of Vermont accepts no liability or responsibility for the consumption and/or misidentification of any mushrooms mentioned in this publication.***

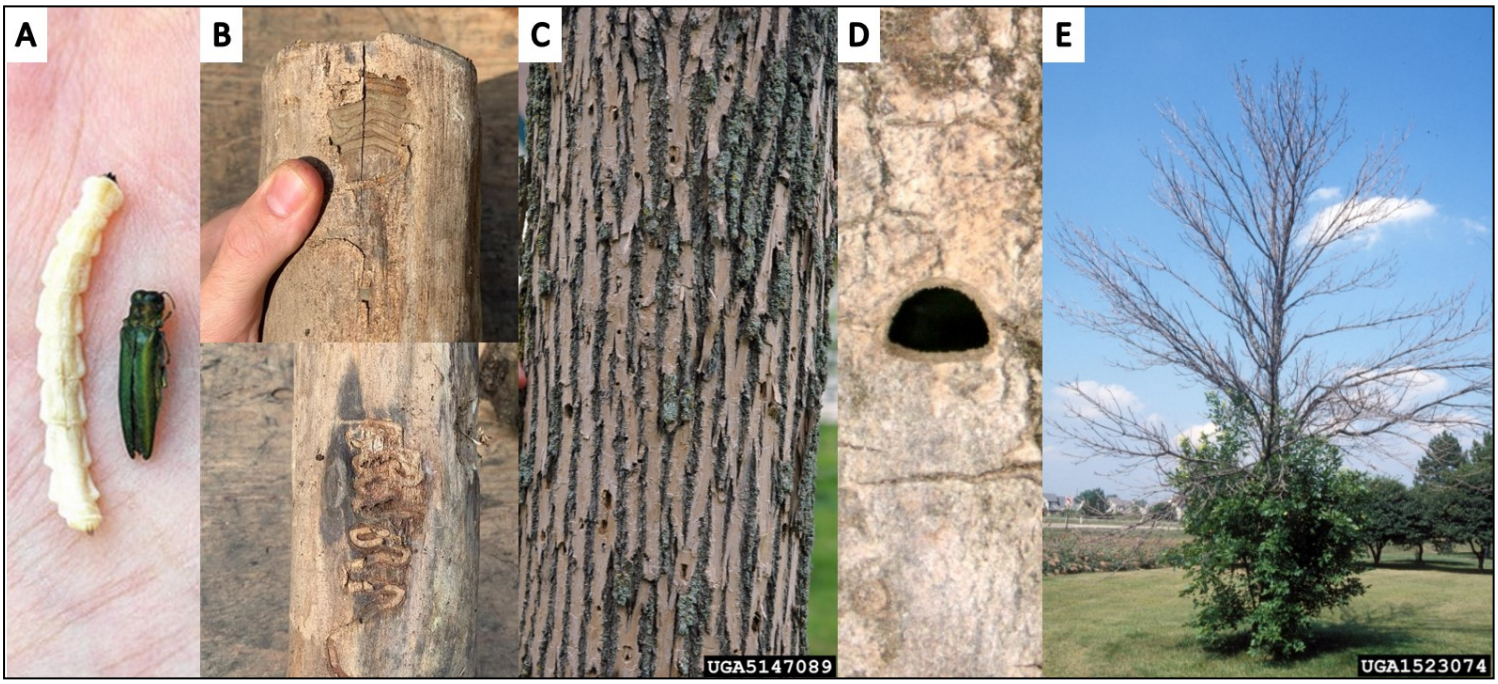
Pests in the Spotlight: Emerald Ash Borer



Emerald ash borer (EAB, *Agrilus planipennis*) is an invasive insect from Asia that was first detected in Vermont in 2018. This insect feeds on all ash species. With an abundant source of food and shelter, this insect has been responsible for decimating more than 25 million ash trees in the country. EAB flies and disseminates locally, but can travel longer distances in firewood. This pest has currently been reported in 35 states, and 5 Canadian providences. In Vermont, EAB has been detected in 9 counties, although high-risk areas include all 12 counties in the state.

The most recent towns confirmed infested and/or high-risk areas include Brattleboro, Vernon, Guilford, Dummerston, Putney, Hartland, Hartford, West Windsor, Windsor, Weathersfield, and Norwich.

Adult emerald ash borers are 1/4 - 1/2 in long, narrow with a flat back. They are green metallic in color with purple/red metallic abdominal segments beneath their wing covers. EAB larvae can get up to 3 cm in length and are a creamy white color. The larvae are made up of flattened, bell-shaped segments, and creates S-shaped galleries when feeding. Trees infested with EAB may show signs and symptoms including bark splitting, S-shaped tunnels behind outer bark, D-shaped exit holes on the bark surface, woodpecker flecking, dieback of fine branches, and epicormic sprouting on the lower bole. For more information or to report a sighting, visit VTinvasives.



A: EAB larvae and adult. Photo credit: M. J. Raupp. **B:** S-shaped galleries. Photo credit: FPR Staff. **C:** Woodpecker flecking. Photo Credit: Art Wagner, Bugwood. **D:** Exit hole. Photo Credit: PA Department of Conservation and Natural Resources, Bugwood. **E:** Dieback and epicormic sprouting. Photo Credit: Daniel Herms, Bugwood.

Early Detection Species: Invasive Lesser Celandine

Overwintering vines and new sprouts of black swallowwort (*Cynanchum louiseae* syn. *Vincetoxicum nigrum*) will be turning vibrant green over the next few weeks. Also known as "dog-strangling vine" ["Cyn" Greek *kynos* meaning **dog**, "anchum" Greek *anchein* meaning **to choke**], this plant is part of a genus of over 300 species found worldwide. Black swallowwort evolved in Europe in Mediterranean regions including Portugal, Spain, France, and Italy. This plant was first noted growing outside cultivation in North America as an escape from a Massachusetts botanical garden in the mid-1800s. Since then, it has spread across 21 states and beyond; throughout New England, the Mid-Atlantic, Mid-West, some eastern Canadian provinces, and recorded in California in 2008. It is part of the Dogbane family (*Apocynaceae*) and related to a genus of plants important to pollinators – milkweeds (*Asclepias spp.*).

Black swallowwort. Photo credit: Minnesota Department of Agriculture.

Black swallowwort is a perennial vine, with oval leaves that are pointed at the tips, dark glossy green in color, oppositely arranged, and smooth along the edges. The flowers are small, "star" shaped, and black-purple in color with little white hairs. Populations can be found along shores of rivers and lakes, forest edges, forests, fields, and disturbed habitats like roads, trails, and urban/suburban landscapes. The invasive nature of this plant is observed by its rapid spread by seed and root, blocking out the sun from the native plants it twines over, creating thickets and overtaking field habitat and woodland understories, and toxicity to mammals and many insect larvae - most notably, being a "trap plant" for monarch butterfly larvae.

Like native milkweeds, the seed is contained in pods that eventually dry and split to release winged seeds that are readily spread by the wind. Photo credit: FPR Staff.

When monarch butterflies arrive in the Northeast, they need milkweed (*Asclepias* spp.) plants for the next generation to survive. The adults lay eggs on milkweed plants, providing a bountiful food source for the larvae when they hatch. The trouble arises when black swallowwort either chokes out the milkweeds or is utilized by the monarchs instead of the milkweeds that evolved with the monarchs. Monarch larvae cannot successfully feed on black swallowwort (either starving or becoming poisoned), and do not survive. Some studies suggest that adult monarchs will lay a portion of eggs on black swallowwort even when milkweeds are present. There is ongoing research in New York and Rhode Island exploring the potential for biocontrol.

This species is listed on the Vermont Noxious Weed Quarantine and is prohibited in many New England states.

This species is well established in southern counties in Vermont, but populations are less well known in central and northern counties, which is why we consider this an early detection species. If you find locations of this plant anywhere in Vermont, please report them using the Report It! Tool on the VTinvasives.org website.

If you are looking out for black swallowwort here are some identification clues:

- The vines can grow over 6 ft.
- The leaves are opposite, lanceolate to ovate, and dark glossy green, 2-4 inches long.
- Flowers can be seen June-September, have 5 petals, and are dark purple.
- Seeds appear in pods in late summer into fall, and are similar to those of milkweeds.

Black-purple flowers of *Cynanchum louiseae* are tiny and have 5 petals, appearing in June or July in Vermont. Photo credit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.

To learn more about black swallowwort, check out VTinvasives and these additional resources:

U.S. Forest Service
CABI
Minnesota Department of Agriculture
New York Invasive Species Information
University of New Hampshire Extension
Cornell University
University of Rhode Island

Invasive Plant Phenology

Volunteers are needed to help keep track of invasive plant phenology in order to time management treatments most effectively. Observations will be made during the growing season from May—September 2021.

If you are interested in taking part in this project, please contact:

pauline.swislocki@vermont.gov.

FORESTS, PARKS & RECREATION VERMONT AGENCY OF NATURAL RESOURCES

For more information, contact the Forest Biology Laboratory at 802-505-8259 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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