Vermont Forest Health

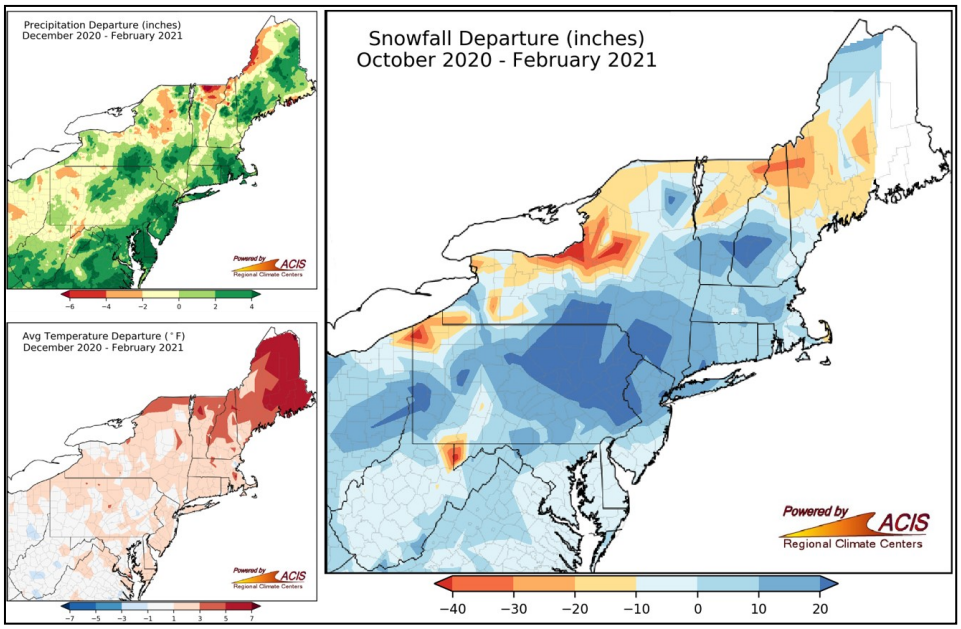
Insect and Disease Observations — March 2021

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

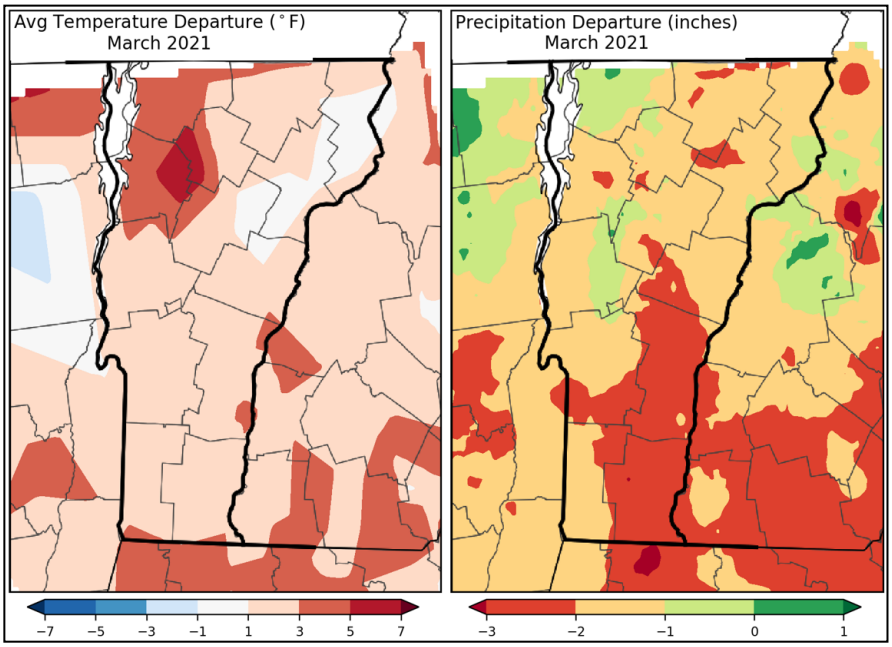
Winter Recap: Weather

Vermonters faced another short and mild winter of 2020-2021, compared to years past. From December 1 to February 28, state-wide temperatures averaged 22.1°F, which was 0.9 degrees colder than the winter of 2019–2020. Average precipitation across the state was 7.87 inches, which averaged 1.7 inches less than last year's average.

Winter snowfall ranged from 40 inches below normal (dark orange) to 20 inches above normal (dark blue).

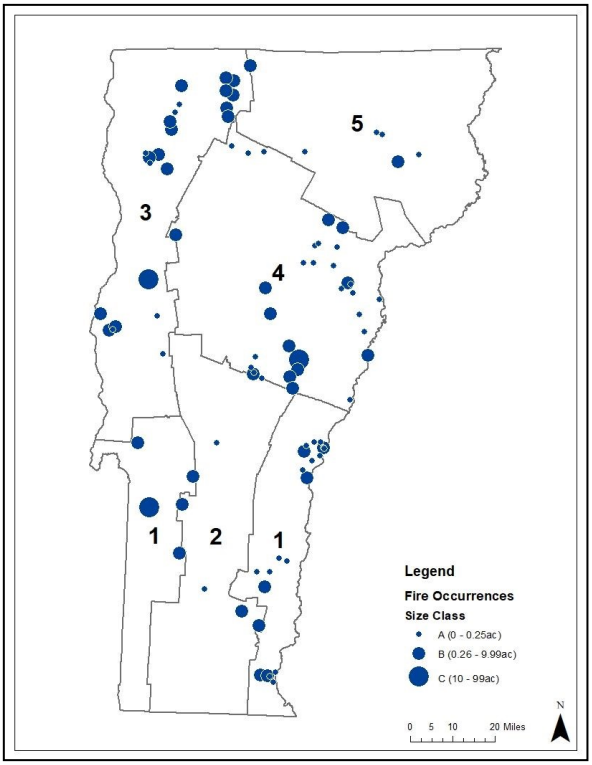


Average temperature, precipitation and snowfall departure from normal. Maps and data: Northeast Regional Climate Center.



March of 2021 was colder and dryer than March of 2020. State-wide temperatures averaged 28.1°F, which was five degrees colder than March of last year. Statewide precipitation averaged 1.43 inches, which was 1.48 inches less than March of last year.

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

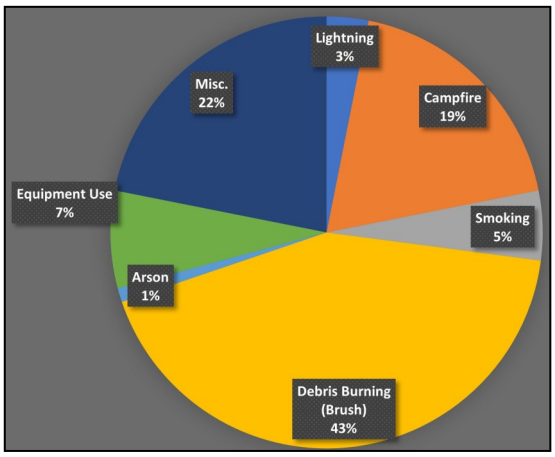


Distribution of reported escaped fires across the state by size in 2020. Map and data: FPR Staff.

Vermont Wildland Fire Season in Review

In 2020, 96 reported fires escaped in Vermont that burned a total of 133 acres. Compared to the state's 10-year average, there were 21% more escaped fires reported in 2020. The number of reported fires that escaped from debris burning, campfires, smoking, and lightning strikes were abnormally high due to very dry ground fuel conditions. Several fires throughout the summer and fall burned below the surface in the ground and took extra care and labor to completely extinguish.

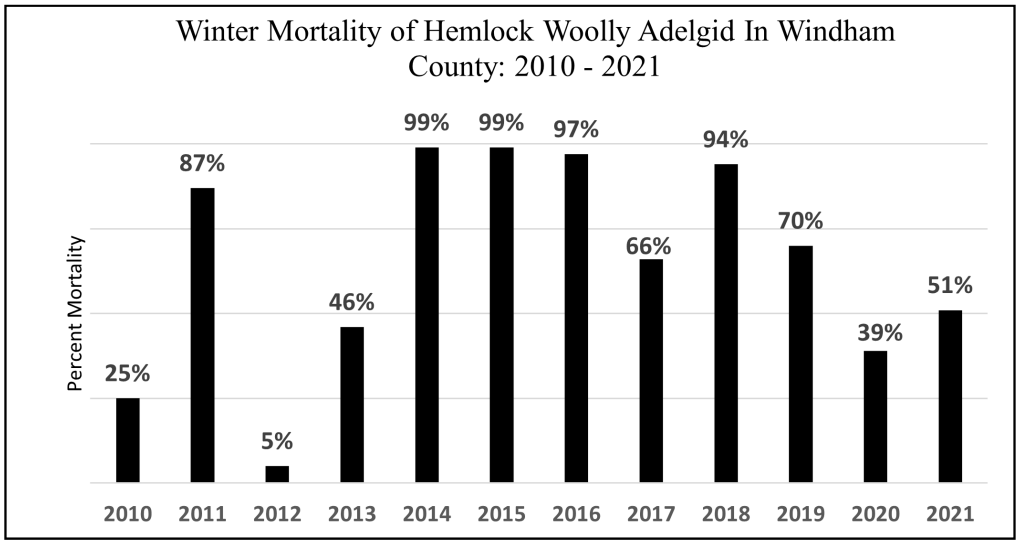
Debris burning was the most common cause of escaped fires in 2020 (right) which is consistent with historical data.



Hemlock Woolly Adelgid Overwintering Mortality

Fifty-one percent of the hemlock woolly adelgids (HWA) examined during the annual winter mortality survey were dead. Although winter temperatures were only slightly colder than last year, in March we experienced periods of warming temperatures followed by successive days of deep freezes. This temperature fluctuation could have contributed to winter mortality by killing otherwise surviving HWA before they could reproduce. In the past, we have often found infestations in new locations following years with mild winters and low levels of HWA mortality. Currently, HWA is primarily found in Windham County, however, it has also been observed in Springfield and Pownal. 2020 surveys observed the spread of HWA within the state, with a new infestation being identified in Weathersfield. Similar to past years, Vermont as well as nearby states continue to find HWA occasionally mixed with elongate hemlock scale.

Assessments of overwintering mortality in hemlock woolly adelgid conducted on March 16, 2021, indicated that 51% of the adelgids had died.



Incidental Observations

Springtails, also known as snow fleas (*Collembola*), have been observed emerging in large masses throughout the state. These arthropods are detritivores and microbivores and generally spend their life in moist soil or litter. Springtails get their name by "springing " across the snow using a forked appendage at the end of their abdomen known as the "furcula". Although common and generally unnoticed, during winter months, they can be more easily spotted as jumping black dots against the white snow.

Springtails on flagging tape. Photo credit: FPR Staff.

Many species of spiders overwinter in the leaf litter below the snow. The snow pack acts like insulation, which can allow spiders to maintain a livable body temperature (above 25°F) without entering hibernation or dying from the cold. Although less active during the winter months, spiders will continue to feed when food such as springtails, are available.

Cheiracanthium mildei, an overwintering spider in Vermont. Photo credit: John R. Maxwell, BugGuide.

The willow bracket polypore (*Phellinus igniarius*) is a saprotrophic fungus that degrades lignin and cellulose leading to the white-rot of hardwood trees. The fruiting body that is produced is a bracket polypore that is hard and wood-like in texture. Unlike most polypores, this fruiting body is perennial, meaning the polypore will continue to grow every year. Trees with this polypore are often favored by woodpeckers because decaying wood is easier to excavate.

Phellinus igniarius fruiting body. Photo credit: FPR Staff.

Another sure sign of spring is the emergence of boxelder bugs (*Boisea trivittata*). These insects have piercing/sucking mouthparts that feed on and cause minimal damage to leaves, branches, and seeds of boxelders, maples, and ash. Although damage is minimal, this common nuisance pest can be managed by raking up fallen leaves and seeds around buildings and homes. If already in your home, use a vacuum instead of squishing them to prevent staining your floors.

Boxelder bug. Photo credit: Larry McDaniel, BugGuide.

Winter fireflies (*Ellychnia corrusca)* have been reported in sap buckets in the northern parts of the state in late March. As larvae, this insect feeds on rotting wood and overwinters as adults in bark grooves. In early spring, adults emerge to feed on flowers and sap, often falling in sap buckets and becoming a nuisance pest to sugar makers. Although not a significant stressor to the forest, this insect has historically been used as a predictor of the end of sugaring season.

Winter firefly. Photo credit: JPiolain, BugGuide.

Unusual amounts of conifer branch tips on the ground in the winter are a sign of red squirrels (*Sciurus vulgaris*). They do not hibernate, therefore they need a steady food supply throughout the winter. Red squirrels prefer coniferous forests utilizing seeds, cones, and buds from spruce, fir, and hemlock. When food sources become scarce, they will utilize conifer buds. The squirrels will "prune" off branch tips, eat the buds and discard the tips on the ground. As a result of this feeding, the forest floor can become littered with branch tips.

Pile of discarded branch tips. Photo credit: FPR Staff.

Blister beetles (*Meloe americanus*) were observed in northern Vermont towards the end of March. These beetles can be hazardous to livestock and humans and should always be handled with care. These beetles have a defense mechanism where they can excrete toxins through their joints which can cause dermal irritation and blistering of the skin.

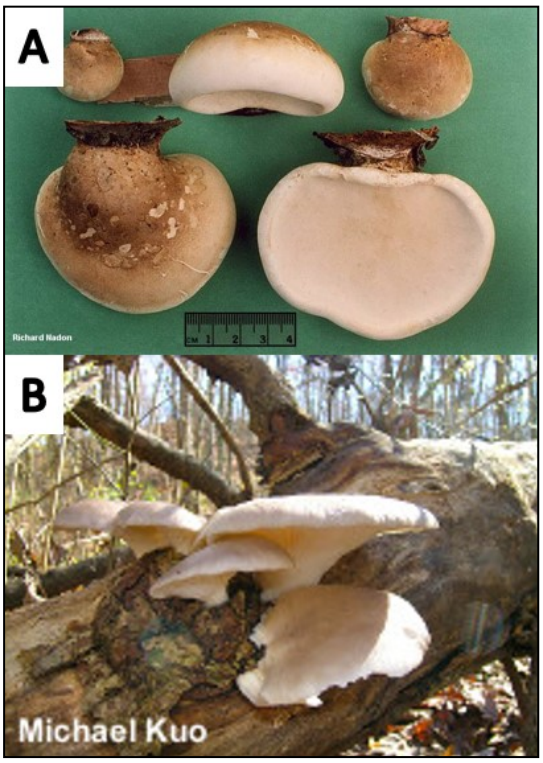
Blister Beetle. Photo credit: Nate Walton, MSU Extension.

Bot canker of oak (*Diplodia corticola*) was observed in the state for the first time in Windsor county. This fungal pathogen causes stem and bole cankers, dieback, and mortality of infected oaks. In severe infections, cankers can be identified by sooty lesions and extruded amber-colored sap. *Diplodia* spp. are typically opportunistic, and symptoms may be reduced by improving individual tree health and vigor such as pruning infected branches and properly mulching urban trees. If you observe these symptoms, please report them to savannah.ferreira@vermont.gov.

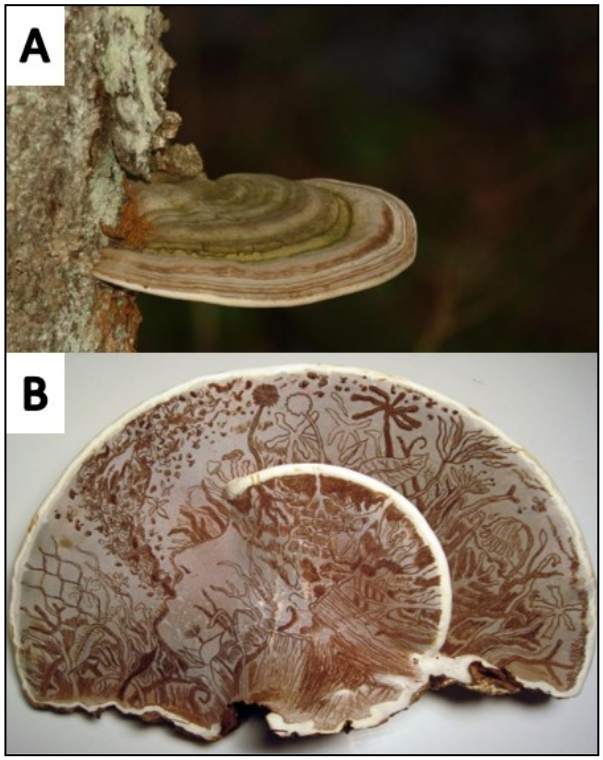
Oak infected with *Diplodia corticola,* showing symptoms of dieback. Photo credit: FPR Staff.

Foraging For Fungi

Birch polypores (*Fomitopsis betulina*) are a historically sought-after medicinal and edible polypore. This polypore matures and sporulates in the fall and persists on dead and dying birch trees in the winter. This fungus can be identified by its white to brownish-colored cap with a creamy white pore surface and white spore print. When ripe, this polypore is soft and leathery, and becomes corky and hard with age. This mushroom is highly host-specific to birch species. In the fall, it is possible to confuse this polypore with oyster mushrooms (*Pleurotus ostreatus*) another native edible fungus. This fungus is a saprotroph and can be found growing in clumps out of dead or decaying hardwood trees during the fall and winter months. Its cap is large and wide, often resembling a fan or oyster shell shape, and ranges from white to yellow-brown. This mushroom has gills (not pores) that are decurrent (gills are attached to and run down the stalk) and gives off a grey to light purple-grey spore print.



A: Birch polypores. Photo Credit: Richard Nadon, MushroomExpert. **B:** Pearl oyster mushrooms. Photo credit: Michael Kuo, MushroomExpert.



A: Artist's conk. Photo Credit: Becca MacDonald, Bugwood. **B:** Bottom of artist's conk after impressions. Photo Credit: Corey Coreoran.

Artist's conks (*Ganoderma applanatum*) are another commonly foraged polypore that can be found throughout the state on hardwood trees. This mushroom can be both parasitic and saprotrophic, decaying living sapwood as well as degrading lignin and cellulose. The cap of this fruiting body is furrowed dull-brown to red-brown with a whitish grey pore surface. It can range in size between 3-30cm wide and 5-50cm long. This polypore is a perennial fruiting body and therefore is hard and wood-like in texture. When fresh, artists can make impressions on the white pore surface under the cap that will turn dark brown when the fungus dries out. Although not a common edible, this mushroom has historically been utilized in eastern herbal medicine.

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.***

Early Detection Species: Invasive Lesser Celandine

An early growing season standout to watch for is lesser celandine (*Ficaria verna*). Also known as "fig buttercup" and "fig-crowfoot", lesser celandine was introduced to North America as an ornamental plant. An herbarium sample from the 1860s in Pennsylvania indicates its first recorded escape from the garden. The popularity of this perennial plant as an ornamental perhaps came from the showy yellow flowers that come up in March and April in New England as a harbinger of spring. A native plant in Europe, the English poet William Wordsworth even demonstrates a fondness for lesser celandine in several of his poems.

Lesser celandine can be found in floodplain forests, along rivers and lakes, and in disturbed habitats. The primary way this plant moves is from the underground growth being spread accidentally by erosion, digging in the area by humans or wildlife, flooding events, or on purpose through cultivation. This plant is a particular threat to Vermont's rare natural community of floodplain forests. Once established, lesser celandine creates dense mats, excluding all other vegetation. Its tendency to grow up and flower in the early spring puts native spring ephemeral wildflowers up against a tough competitor for space and resources, and its habit of dying back after flowering makes the window for control extremely short each season.

Infestation of lesser celandine on a forest edge. Photo credit: FPR Staff.

The roots of lesser celandine are tuberous and easily separate, aiding in the spread of this plant. Photo credit: FPR Staff.

Although the common name might suggest it, lesser celandine (buttercup family: *Ranunculaceae*) is not related to greater celandine (poppy family: *Papaveraceae*). The most common look-alike for lesser celandine is marsh-marigold (*Caltha palustris*), which is a native plant to Vermont and can be distinguished most easily by only having 5 petals on its flowers. If there aren't flowers present, look at the roots – lesser celandine will have tuberous roots and marsh-marigold does not. The best time to identify lesser celandine in Vermont is in early to mid-April, when the flowers appear.

Lesser celandine has dark green, shiny basal leaves that are heart or kidney-shaped, and variable in size but small (1.5-3.5" across). The small flowers have 7-11 petals born on grooved stalks that stick up above the leaves. Once flowered, the aboveground growth dies back, and it persists underground as thick tubers.

While still available as an ornamental plant in some places, lesser celandine has only been formally recorded as an escape in Vermont in 2014, with populations now being found scattered across the state. It is present in 27 states, and several Canadian provinces. If you find lesser celandine growing outside of an ornamental planting in Vermont, please report it to VTinvasives. Although this species is not on the Vermont Noxious Weed Quarantine, nor the watchlist, its invasive tendencies, and prohibition in other states are concerning for the health of sensitive natural communities in Vermont and is why we consider this an early detection species.

Bright yellow flowers of lesser celandine appear above the leaves in early to mid-April in Vermont. Photo credit: Leslie J. Mehrhoff, University of Connecticut, Bugwood.

To learn more about Lesser Celandine, check out these additional resources:
New York Invasive Species Information
National Park Service
Texas Invasive Species Institute
GoBotany – Native Plant Trust
National Invasive Species Information Center

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:

elizabeth.spinney@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

Forest health programs in the Vermont Department of Forests, Parks, and Recreation are supported, in part, by the US Forest Service, State and Private Forestry, and conducted in partnership with the Vermont Agency of Agriculture, Food, and Markets, USDA-APHIS, the University of Vermont, cooperating landowners, resource managers, and citizen volunteers. In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discrimination on the basis of race, color, national origin, sex, age, or disability.