

Vermont Forest Health

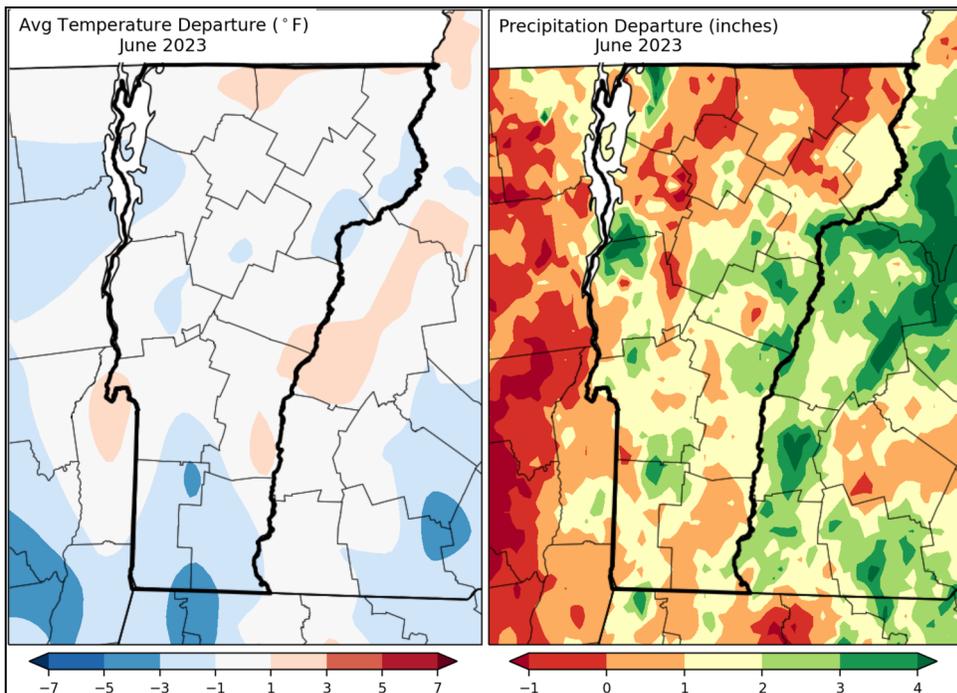
Insect and Disease Observations – June 2023

Department of Forests, Parks & Recreation
June 2023

vtforest.com

Weather

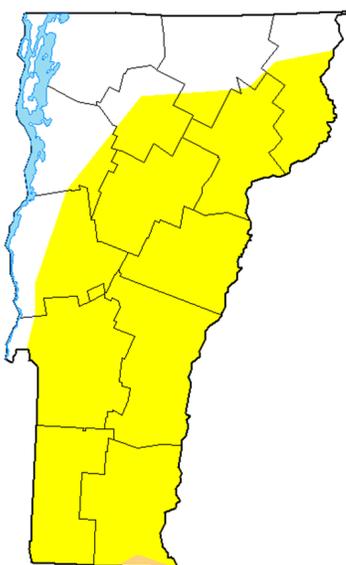
The end of June marks the official start to the summer season. State-wide temperatures averaged 59.6 °F, which was 1.9 degrees cooler than June of last year. Statewide precipitation averaged 3.94 inches, which was 0.62 inches more than June of last year.



Average temperature and precipitation departure from normal. Maps and data: [Northeast Regional Climate Center](#).

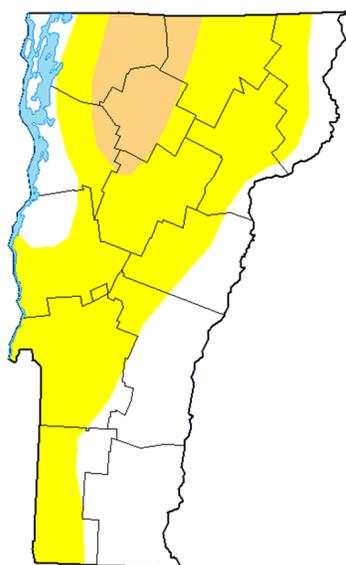
June 28, 2022

(Released Thursday, Jun. 30, 2022)
Valid 8 a.m. EDT



June 27, 2023

(Released Thursday, Jun. 29, 2023)
Valid 8 a.m. EDT



Drought Update

Although most of the state has been receiving persistent rainfall, drought severity increased in many parts of the state. By the end of the month, the U.S. Drought Monitor listed 10.34% of the state in moderate drought, 54.61% as abnormally dry, and 35.05% as no drought. Comparatively, on June 28, 2022, 0.32% of the state was listed in moderate drought, 70.59% as abnormally dry and 29.09% as no drought.

Drought Comparison between June 2022 and 2023. Map and data: [U.S. Drought Monitor](#).

EAB Biocontrol Update

Emerald Ash Borer (EAB, *Agrilus planipennis*) was first confirmed in Vermont in 2018, and has since spread to 13 of Vermont's 14 counties. While EAB cannot be fully eradicated from the landscape, biological controls (aka biocontrols) are one management option for reducing EAB populations in infested areas. In 2007, the United State Department of Agriculture (USDA) began careful research on biocontrols found in EAB's native range and has determined four parasitoid species that are safe to release and effective in reducing numbers of EAB — *Spathius agrili*, *Tetrastichus planipennisi*, and *Oobius agrili* from China and *Spathius galinae* from Russia. In 2020, Vermont began to release three biocontrol species (*T. planipennisi*, *O. agrili*, and *S. galinae*) at two locations (Plainfield and South Hero). A third site in Bennington was added in 2021,



Container with *O. agrili*: EAB egg parasitoid. Photo credit: FPR staff.

and two new sites are being established this year in Swanton and Brookfield. Biocontrols are released over a two-year span at each site to establish a population that can reproduce naturally and continue to parasitize EAB. The goal is to reduce EAB populations to a level where biocontrols can keep EAB numbers low, allowing the next generation of ash trees to reach maturity. The parasitoids were produced and supplied from the USDA's Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) EAB Parasitoid Rearing Facility in Brighton, MI. For parasitoid information please call 866-322-4512.



Section of ash containing EAB larvae parasitoid *T. planipennisi*. Photo credit: FPR staff.



A: *O. agrili*. Photo credit: Houping Liu, Michigan State University, [Bugwood](#). **B:** *T. planipennisi*. Photo credit: David Cappaert, [Bugwood](#). **C:** *S. galinae*. Photo credit: FPR Staff.

Supplemental Sightings

Pine needle rust (*Coleosporium asterum*) was observed on a red pine (*Pinus resinosa*) seedling in Washington County. Rusts are diseases that typically require multiple host species to complete their lifecycles. This foliar pathogen's primary host is 2-3 needle pines, with an alternate host in the Asteraceae family. In the spring, infected pine needles may develop whitish aecia (fruiting bodies) that extrude orange spores that will infect Asteraceae in the summer. Although infected pines have less photosynthetic abilities, this is not a cause of large decline.



Pine Needle Rust. Photo credit: FPR Staff.



Six-spotted tiger beetle (*Cicindela sexguttata*) continues to be misreported as EAB observations across the state. These iridescent green or blue-green beetles are predatory, hunting other arthropods. Larvae dig burrows up to two feet deep, lunging out to capture unsuspecting prey. Adults chase prey on the ground, moving so fast they are rendered temporarily blind. Compare this insect and other common look-alikes with EAB at VTinvasives.org.

Six-spotted tiger beetle. Photo credit: KP McFarland, Vermont Center for Ecostudies, iNaturalist.

Woolly beech aphids (*Phyllaphis fagi*) were reported on a copper beech (*Fagus sylvatica f. purpurea*) in Windham County. This piercing sucking insect feeds on all cultivars of European beech (*F. sylvatica*), and does not infest American beech (*F. grandifolia*). Although mostly observed on the underside of leaves, these aphids also feed on leaf petioles, fruit, and fruit stems.



Woolly beech aphids. Photo credit: Whitney Cranshaw, Colorado State University, Bugwood.



Mountain ash sawfly (*Pristiphora geniculata*) larvae were observed defoliating a mountain ash (*Sorbus aucuparia*) in Chittenden County. These introduced sawflies feed from June to mid-July before dropping from the leaves and pupating in the leaf litter and duff. Adults emerge the next year between May and June to lay eggs, which can be found along leaflet margins. These sawflies can cause extensive localized defoliation, but otherwise healthy trees can typically re-foliate.

Mountain ash sawfly. Photo credit: FPR Staff.

Yellow-bellied sapsucker (*Sphyrapicus varius*) is a native woodpecker that has been reported causing damage in Orange County this month. This woodpecker excavates holes in a linear fashion on both hard and softwood trees, consuming sap that is secreted, as well as arthropods attracted to the wounds. These birds can cause extensive damage, often girdling trees when feeding is vigorous.



Yellow-bellied sap sucker damage. Photo credit: Tim Tigner, Virginia Department of Forestry, Bugwood.



Taphrina confusa is an ascomycete gall fungus that typically forms on chokecherry (*Prunus virginiana*) flowers. This fungus creates large empty pockets (galls) that start out green but eventually turn yellow-brown as it matures. The galls that are formed are distorted fruit that are hollow, not containing any seed. Although this pathogen can lead to reduced fruit production, it does not contribute to large scale decline or tree mortality.

Taphrina confusa galls. Photo credit: FPR Staff.

Maple velvet erineum gall mites (*Aceria aceris*) were reported on sugar maple (*Acer saccharum*) leaves in Orange County. In spring, adult female mites emerge from overwintering locations under bark scales and move to leaves, where they feed and reproduce. Feeding stimulates the formation of distinct velvety patches (erinea), protecting the mites from predators and environmental conditions. These mites do not contribute to large scale decline or tree mortality.



Maple velvet erineum gall mite. Photo credit: FPR Staff.



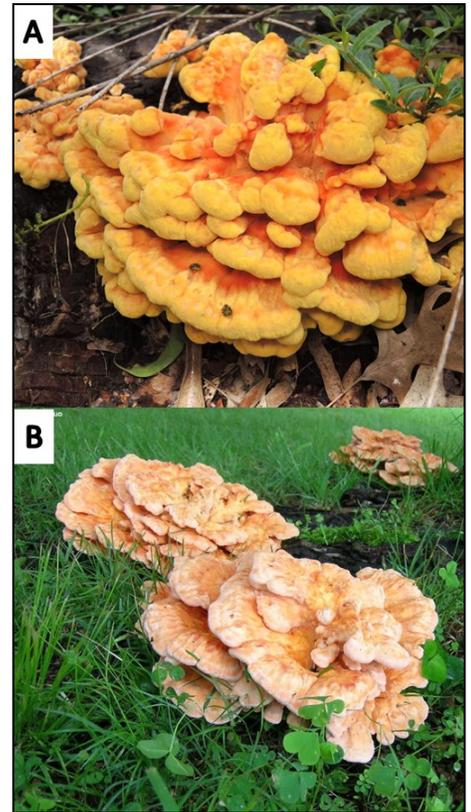
Leptophlebia nebulosa, a type of mayfly, was photographed in Rutland County this month. Although this species has a wide range across North America, there is little information available on its ecology. This mayfly spends its egg, naiad (larval), and subimago (pupal) phases in the water, and only leaves the water in its adult stage to find a mate, lay eggs, and die. While the omnivorous naiads can live for several years before transforming, adults do not have functional mouthparts and cannot feed. The short-lived adults provide an important food source for many birds.

Leptophlebia nebulosa. Photo credit: FPR Staff.

Foraging For Fungi

Chicken of the woods (*Laetiporus* spp.) is a genus that contains several species of edible fungi, including *L. sulphureus* and *L. cincinnatus*. Fungi in this genus are both parasitic and saprotrophic, consuming both living and dead tissue of host trees. *L. sulphureus* is a heartwood rotter, and can be found growing in overlapping shelf-like clusters out of hardwood bores. This fungus is bright orange and yellow and has wavy-edged brackets that are 5-25 cm wide and up to 3 cm thick. The underside of the cap has a pale yellow to white pore surface with circular to angular pores. It has a white spore print. *L. cincinnatus* is a root rotter, and can be found growing in a rosette at the base or roots of hardwood trees. Its cap is semicircular to kidney-shaped and is pale to bright pinkish orange in color. Individual fungi are 4-20 cm wide and up to 2 cm thick, although rosettes can be up to 45 cm across. The underside of the cap has a whitish pore surface with circular to angular pores. It has a white spore print.

A: *Laetiporus sulphureus*. **B:** *L. cincinnatus*. Photo and information credits: Michael Kuo, mushroomexpert.



A: *Pleated pluteus*. **B:** *Deer mushroom*. Photo and information credits: Michael Kuo, mushroomexpert.

Pleated pluteus (*Pluteus longistriatus*) is a non-toxic, rarely foraged edible that is saprotrophic on decaying hardwoods. The cap of this mushroom is 1-2 cm wide, slightly bell shaped when immature and becoming broadly convex at maturity. It is grayish brown in color and develops cracks and fissures that radiate from the center. The underside of the cap has free gills that are white to pink in color, and collapse in hot and humid conditions. It has a pink spore print. Its stem is 3-5 cm long, 1-2 mm thick and white in color. This mushroom has an edible and low prized look-alike, the deer mushroom (*Pluteus cervinus*). This saprotrophic mushroom is found primarily on decaying hardwoods, but has been observed on conifers. Its cap is convex to broadly convex, feels tacky when wet, and is 4.5-10 cm wide. It is dark to pale brown with a bald to finely scaly brown center, and its coloration is radially streaked. The underside of its cap has free gills that are short and crowded and white to pink in color. It has a brownish pink spore print. Its stem is 5-13 cm long and 5-15 mm wide and is primarily white in color, discoloring to brown near the base. 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: Browntail Moth

The brown-tail moth (BTM, *Euproctis chrysorrhoea*) is an invasive hardwood defoliator native to Europe that was introduced into Massachusetts in 1897 and has since spread to coastal Maine and parts of Canada. This pest has currently **not been observed in Vermont**. This invasive pest can defoliate numerous hosts and has a preference for oak (*Quercus* spp.), apple (*Malus* spp.), birch (*Betula* spp.) and cherry (*Prunus* spp.) trees.

In the fall, BTM larvae spin silk nests at the tips of branches around host plant leaves. These nests are 2-5 inches long, contain 25-400 larvae and are used as protection for the overwintering larvae. Larvae are active upon budbreak in the spring, consuming newly flushed leaves before they fully open. After eating, larvae will retreat to their nests for protection. By early summer (June), BTM larvae spin cocoons to prepare for pupation, and emerge as adult moths in July. Adult moths mate, and females lay 200-400 eggs that will hatch in early fall. The newly hatched larvae will feed on host leaves before spinning their overwintering nest. Since feeding is late in the growing season, defoliation causes minimal damage to overall tree health and vigor. BTM larvae are covered in poisonous hairs that can become airborne and cause dermatitis in humans. These hairs are present in the larval and pupal stages, and therefore all stages of the insect and its nest should be handled with caution. Most infested trees will recover, but defoliation stress can incite tree decline if other stressors are present. In addition to drought, consecutive years of defoliation, severe winters, and other disturbances may magnify the impact of BTM and lead to tree mortality. For more information or to report a sighting, visit [VTinvasives](https://www.vt.gov/Invasives).



Early instar BTM larvae and nest. Photo credit: Jan Samanek, Phytosanitary Administration, [Bugwood](https://www.bugwood.org/).



Life stages of BTM. **A:** Egg mass. Photo credit: Jan Samanek, Phytosanitary Administration, [Bugwood](https://www.bugwood.org/). **B:** Larvae. Photo credit: Andrea Battisti, Universita di Padova, [Bugwood](https://www.bugwood.org/). **C:** Pupal cases. Photo credit: Jan Samanek, Phytosanitary Administration, [Bugwood](https://www.bugwood.org/). **D:** Adults. Photo credit: Jan Samanek, Phytosanitary Administration, [Bugwood](https://www.bugwood.org/).

Invasive Plant Phenology

In the second full week of each month, volunteers around the state observe and report invasive plant [phenophases](#). Their observations are compiled here, to create a resource for best management options and a historic record of plant behavior. If you would like to be involved in this effort, please contact pauline.swislocki@vermont.gov or check our [volunteer page](#) for other opportunities to get involved. For more information about the phenology of invasive plants in Vermont, check out [Bud Buds](#), a podcast from the Invasive Plant Program.

Addison – [common buckthorn](#): leaves, fruit/ unripe fruit; [garlic mustard](#): leaves, fruit/unripe fruit; [shrub honeysuckle](#): leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit.

Bennington – [garlic mustard](#): leaves, fruit/unripe fruit.

Caledonia – [burning bush](#): leaves; [common barberry](#): leaves, fruit/ unripe fruit; [common buckthorn](#): leaves, fruit/ unripe fruit; [glossy buckthorn](#): leaves, flowers/ flower buds, open flowers; [goutweed](#): leaves, flowers/ flower buds, open flowers; [Japanese barberry](#): leaves, fruit/ unripe fruit; [knotweed](#): leaves; [round leaf bitter-sweet](#): leaves; [shrub honeysuckle](#): leaves, fruit/ unripe fruit; [wild chervil](#): leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit.

Chittenden – [amur maple](#): leaves, fruit/ unripe fruit; [black swallow-wort](#): leaves, flowers/ flower buds, open flowers; [border privet](#): leaves, flowers/flower buds, open flowers; [common barberry](#): leaves; [common buckthorn](#): leaves, fruit/ unripe fruit; [common reed](#): leaves, evidence of prior infestation; [cypress spurge](#): leaves, fruit/unripe fruit; [dame’s rocket](#): leaves, flowers/flower buds, open flowers; [garlic mustard](#): initial growth, leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit; [glossy buckthorn](#): leaves; fruit/ unripe fruit; [goutweed](#): initial growth, leaves, flowers/ flower buds, open flowers; [Japanese barberry](#): leaves, fruit/ unripe fruit; [knotweed](#): initial growth, leaves, evidence of prior infestation; [multiflora rose](#): leaves, flowers/ flower buds, open flowers, evidence of prior infestation; [Norway maple](#): leaves; [purple loosestrife](#): leaves, flowers/ flower buds, open flowers; [round leaf bitter-sweet](#): leaves, flowers/ flower buds; [shrub honeysuckle](#): leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit, evidence of prior infestation; [wild chervil](#): leaves, flowers/ flower buds, open flowers; [wild parsnip](#): leaves, flowers/ flower buds, evidence of prior infestation.

Franklin – [burning bush](#): leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit; [common buckthorn](#): leaves, fruit/ unripe fruit; [goutweed](#): leaves, flowers/ flower buds; [Japanese barberry](#): leaves; [knotweed](#): leaves; [purple loosestrife](#): leaves.

Orange – [shrub honeysuckle](#): leaves, fruit/unripe fruit.

Washington – [goutweed](#): initial growth, leaves, flowers/ flower buds, open flowers; [knotweed](#): initial growth, leaves; [multiflora rose](#): leaves, flowers/ flower buds, open flowers; [shrub honeysuckle](#): leaves, flowers/ flower buds, open flowers; [wild chervil](#): initial growth, leaves, flowers/ flower buds, open flowers, fruit/ unripe fruit; [wild parsnip](#): initial growth, leaves, flowers/ flower buds, open flowers.



<p>For more information, contact the Forest Biology Laboratory at 802-565-1585 or:</p>	Windsor & Windham Counties.....	Springfield (802) 289-0613
	Bennington & Rutland Counties.....	Rutland (802) 786-0060
Addison, Chittenden, Franklin & Grand Isle Counties.....	Lamoille, Orange & Washington Counties.....	Essex Junction (802) 879-6565
Lamoille, Orange & Washington Counties.....	Caledonia, Orleans & Essex Counties.....	Barre (802) 476-0170
		St. Johnsbury (802) 751-0110

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