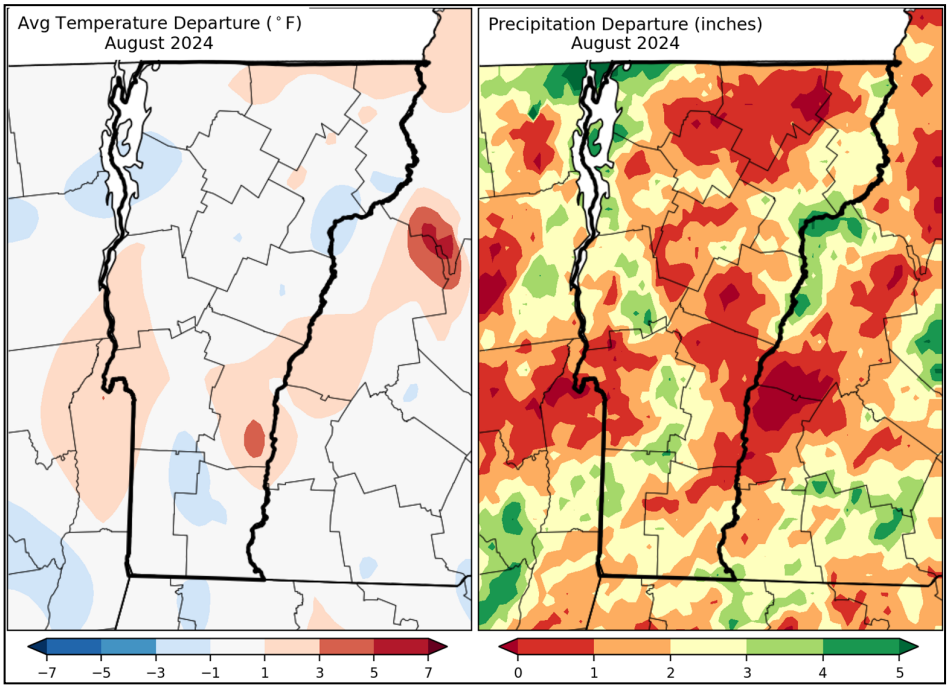
Vermont Forest Health

Insect and Disease Observations

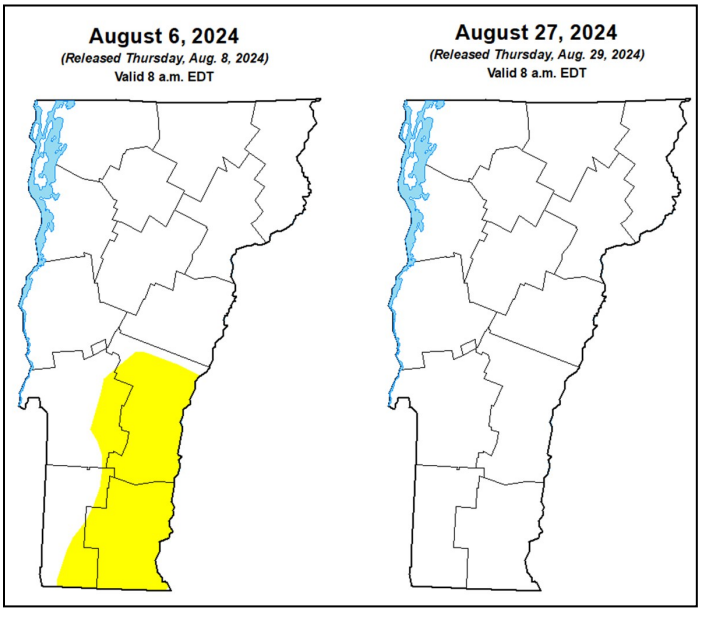
August 2024 | Department of Forests, Parks, and Recreation

Weather

On average, this month was warmer and slightly dryer than last August. Statewide temperatures averaged 65.9°F, which was 2.0 degrees warmer than August of last year. Statewide precipitation averaged 5.58in., which was 0.6in. less than last year.



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



Drought Conditions

Persistent August rainfall has decreased the drought conditions across the state. On August 6th, the U.S. Drought Monitor listed 21.46% as abnormally dry and 78.54% listed as no drought. By August 13th, 100% of the state was listed as having no drought, which continued through the end of the month.

August 6th and Augst 27th drought conditions map. Map and data: U.S. Drought Monitor.

Improper Planting

Improper planting is one of the most common causes of tree decline and mortality our forest health staff has observed this summer. Trees are often planted too deep because the root flare is frequently buried in both container and balled and burlapped tree stock to help stabilize the tree during transport. If the root flare is not excavated prior to planting, the resulting tree is planted too deep. Additionally, it is common for trees to be over-mulched, where mulch is either piled onto and up the main trunk of the tree and/or layered several inches over the root system. Both instances cause the roots to be buried too deep resulting in the roots being in an environment with low oxygen, water and minerals, and for the trunk to be vulnerable to rot. This puts the tree under stress, and in an attempt to have roots in a higher soil layer, the tree will produce epicormic or stress roots.

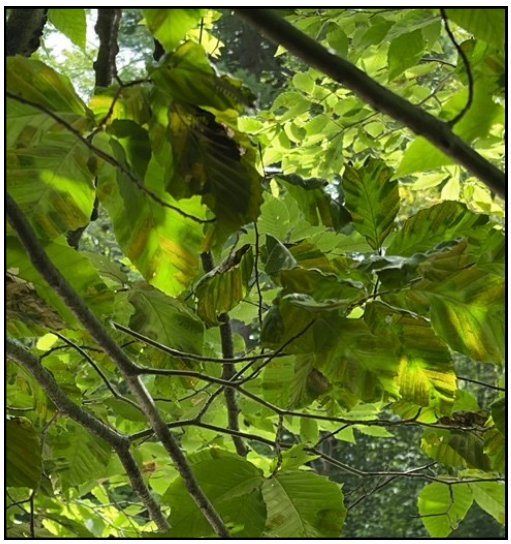
Tree that was planted too deep and has girdling roots. Photo credit: Robert Benjamin, Bugwood.

Similar to epicormic branches, these roots are not well connected to the tree and are produced in clumps sporadically from the trunk and/or other roots. As these epicormic sprouts get larger, they tend to cross and as they grow will girdle other roots and/or the main stem. These girdling roots can cause dieback and mortality independently, but also can make the tree more vulnerable to other pests and diseases. Trees with girdling roots can live many years depending on the size and location of the crossing roots, but can die as a result of this injury.

Top: Tree that has been over-mulched. **Middle:** Epicormic roots. **Bottom:** Correctly exposed root flare. Photo credits: Xanderbuilt Tree Care.

Supplemental Sightings

Beech leaf disease (BLD, causal agent *Litylenchus crenatae mccannii*) was detected for the first time in the towns of Brookline, Dover, Londonderry, Plymouth, Pownal, Reading, Searsburg, Stamford, Stratton, Wardsboro, West Windsor, Windham, and Woodstock. This invasive pest causes dark banding between leaf veins of beech (*Fagus* spp.), and eventually will lead to dieback and mortality of hosts. The current range of BLD in Vermont can be viewed on the Vermont Forest Invasive Pest Status Map.



BLD Leaves. Photo credit: FPR Staff.

Diplodia tip blight (*Diplodia sapinea*) was observed on red pine (*Pinus resinosa*) in Washington County. This opportunistic fungal pathogen typically afflicts pine trees (*Pinus* spp.) with two to three needles per bundle, causing shoot stunting, needle discoloration and dieback. Like many fungal pathogens, this disease spreads when we have periods of frequent rainfall and high humidity. In trees that are otherwise stressed (drought, damaged, etc.) this pathogen can contribute to mortality of hosts.

Diplodia tip blight. Photo credit: Ryan Armbrust, Bugwood.

Elm zigzag sawfly (EZS, *Aproceros leucopoda*) was detected for the first time in the towns of Andover, Banard, Bennington, Berlin, Brattleboro, Castleton, Chester, Danby, Doreset, Grafton, Guilford, Manchester, Middlebury, Middlesex, Mount Tabor, Rockingham, Springfield, Stowe, Sunderland, Warren, Weathersfield, Westminster, Weston expanding the infestation into Addison, Bennington, Rutland, Washington, Windham and Windsor Counties. This invasive hardwood defoliator creates a characteristic zig-sag feeding patterns on elm trees (*Ulmus* spp.) when immature, eventually causing complete defoliation. Successive years of complete defoliation may contribute to dieback and mortality in already stressed or weakened trees.

EZS feeding. Photo credit: Matt Bertone, NC State University.

Orange-humped mapleworm (*Symmerista leucitys*) was reported in Windsor County on American beech (*Fagus grandifolia*). This hardwood defoliator seems to have a preference for beech and sugar maple (*Acer saccharum*), and seldom causes severe defoliation. Larvae mature between August and September, dropping to the leaf litter to pupate. After overwintering as pupae, adults emerge between June and July.

Orange-humped mapleworm. Photo credit: FPR staff.

Bullet Gall Wasp (*Disholcaspis* sp.) was observed on white oak (*Quercus alba*) in Essex County. Species in this genus have two generations annually. In the late summer, adult females emerge from galls on oak (*Quercus* spp.) and lay eggs at the base of leaf buds, one egg per bud. This causes small galls to form on the leaves in spring, where males and females mature. They emerge in the late spring, mate, and eggs are laid on oak twigs, repeating the cycle.

Disholcaspis sp. Photo credit: FPR staff.

Emerald ash borer (EAB, *Agrilus planipennis*) was detected for the first time in the towns of Benson, Essex, West Haven, and Windsor. This invasive wood boring insect creates distinctive serpentine galleries in ash (*Fraxinus* spp.), which will lead to girdling and mortality of infested hosts. Town level infestation maps for these pests can be viewed on the Vermont Forest Invasive Pest Status Map.

EAB. Photo credit: FPR Staff.

Cedar apple rust (*Gymnosporangium juniperus-virginiana*) was observed causing necrotic lesions on apple (*Malus* spp.) leaves in Windsor County. This rust pathogen requires two hosts to complete its lifecycle, the primary host—red cedar (*Juniperus virginiana)* and secondary host — apple. On cedar, this pathogen is more damaging causing galls which can lead to dieback of affected branches.

Lesions on apple. Photo credit: Ohio State University.

Foraging for Fungi

Lobster mushrooms (*Hypomyces lactifluorum*) are typically an edible parasitic fungi in the phylum Ascomycota. This fungi is commonly parasitic on species of *Russula, Lactarius,* and *Lactifluus,* however they may parasitize other potentially toxic mushrooms. This parasite covers its host entirely in a hard, orange-red colored mycelia that resembles a cooked lobster tail. This fungi causes the host to disfigure, and as it matures becomes covered in reddish brown perithecia (spore bearing structure). The perithecia has a white spore sprint. This fungi has chemical reaction with KOH, causing the hyphae to turn dark purple.

Lobster mushrooms. Photo credits: Melissa Kuo, Mushroomexpert.

Various stages of orange-brown ringless amanita. Photo credit: Richard Nadon, Mushroomexpert.

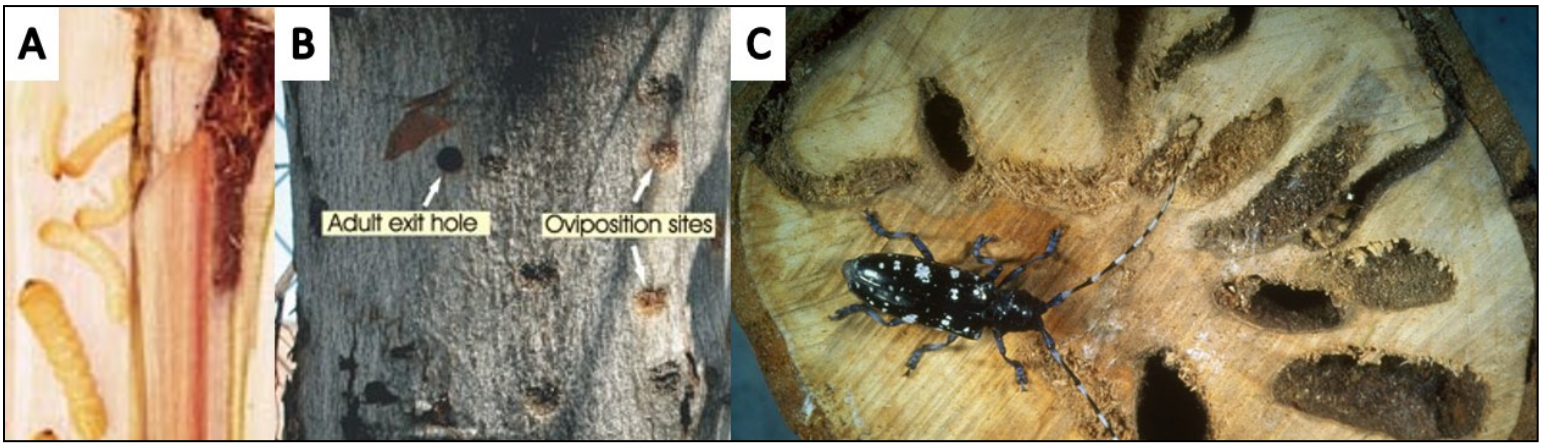
Orange-brown ringless amanita (*Amanita fulva)* is an edible mycorrhizal fungi found in association with numerous hardwood and conifer species. This fungi has a brown oval to convex cap that nearly flattens when mature. Its margins have deep striations and the cap measures 4-20 cm across. The underside of the cap has whitish, mostly free gills that are close to nearly crowded, that gives off a white spore print. Its stem is whiteish to pale brown and is 7-16 cm long and up to 1.5 cm thick. The stem lacks the classic amanita ring, but the white volva is present which may discolor to a tawny brown. These mushrooms have many similar poisonous lookalikes in the Amanita genus with and without rings, therefore care must be taken with proper ID. 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.***

Invasive Pest Spotlight: Asian Longhorned Beetle

Asian longhorned beetle (ALB, *Anoplophora glabripennis*), is an invasive, wood-boring beetle that was first detected in the United States in 1996, and has not yet been detected in Vermont. This insect feeds on 12 hardwood genera including, but not limited to, maple (*Acer* spp.), ash (*Fraxinus* spp.), birch (*Betula* spp.), elm (*Ulmus* spp.), and poplar (*Populus* spp.) trees, making it an insect of high concern to our northern hardwood forests. ALB has been reported in New York (1996), Illinois (1998-eradicated 2008), New Jersey (2002-eradicated 2013), Massachusetts (2008), Ohio (2011), and South Carolina (2020).

The United States Department of Agriculture's Animal and Plant Health Inspection Service conducts ALB inspection surveys and high-risk host removal in regulated infestation areas. Trees infested with ALB cannot be treated and must be removed and either burned or chipped. Since early detection results in the least amount of trees being removed, FPR traps for ALB annually at high-risk locations including campgrounds and welcome centers.

ALB eggs are laid in oviposition (egg laying sites) on the host tree's bole and branches. When larvae emerge, they burrow into and then consume the heartwood of infested trees. Larvae form pupation chambers within the tree during development. Newly emerged adults tunnel out of the tree to reproduce, leaving dime-sized exit holes (3/8-3/4 inches) behind. This burrowing causes girdling and dieback which can lead to mortality of infested trees. Adult ALB are 1-1.5 inches long and approximately 0.5 inches wide, glossy black, with white spots. Their black-and-white striped antennae are 1.3-1.5 times longer than their body. Adults can only fly short distances on their own but travel much farther through infested shipping materials and transported firewood. For more information on ALB, or to report a sighting, visit VTinvasives.



A: ALB Larvae. Photo credit: Kenneth R. Law, USDA APHIS PPQ, Bugwood. **B:** Adult exit holes (left) and Oviposition sites (right). Photo credit: Dudley Conservation Commission. **C:** Adult ALB on a cross section showing internal damage. Photo credit: E. Richard Hoebeke, Cornell University, Bugwood.

Invasive Plant Spotlight: Porcelain berry

Porcelain berry, (*Ampelopsis glandulosa* var. *brevipedunculata*) also commonly known as Amur peppervine, is a deciduous, woody, perennial vine in the grape family (Vitaceae), which closely resembles native species of grape in the genus *Vitis*. Porcelain berry vines can grow to be 15-20 ft long, twining around adjacent trees and structures with the help of non-adhesive tendrils. Its fruit is a distinctive speckled berry that ranges in color from blue, pink, purple, to cream. Porcelain berry is often confused not only with native grapes but also with its closer relatives in the genus *Ampelopsis*, such as native heart-leaved peppervine.

Porcelain berry. Photo credit: Virginia Native Plant Society.

Background

Porcelain berry is native to northeast Asia and was originally introduced in the 1870s as a bedding and landscape plant. It is still cultivated and used in the U.S. horticultural trade, although it was recently declared a plant pest by the Vermont Department of Agriculture, Food and Markets. Under this current designation, the import, sale, or movement of porcelain berry is prohibited without a state permit. The characteristics that make porcelain berry a desirable landscape plant – colorful berries, dense ground coverage, trellis-climbing vines, pest-resistance, and tolerance to adverse conditions – are responsible for the perseverance of this undesirable introduced/invasive weed.

Habitat and Distribution

Porcelain berry grows in a variety of conditions and site types, but flourishes particularly well in moist soils such as forest edges, pond margins, stream banks, thickets, and disturbed areas, where there is full sunlight to partial shade and the ground is not permanently wet. It is less tolerant of heavily shaded areas such as mature forest understories. Porcelain berry is widespread in the eastern U.S. from New England to North Carolina and west to Michigan; it is considered to be invasive in twelve states in the Northeast, including neighboring Massachusetts and New York State. The website iNaturalist.org reports nine locations of porcelain berry in Vermont, three of which are research grade confirmed. Because of the reportedly limited and isolated distribution of this plant in our state, it has been

identified as an early detection species on VTInvasives.org. Observations of porcelain berry are encouraged on the website's Report It! page. Vigilance and reporting of introduced/ invasive weeds is one of the best publicly available tools to promote the ecological health of our landscape.

Ecological Concern

Porcelain berry infestation. Photo credit: Leslie J. Mehrhoff.

Porcelain berry grows vigorously and with rapid speed in open and wooded habitats, in high to moderate light conditions. As it spreads, it climbs over and blankets existing plants and weakens/ kills them by blocking sunlight. By shading out shrubs and young trees, it consumes habitat for native plants and animals. This alteration of habitat can lead to the loss of biodiversity and disrupt crucial ecological processes such as nutrient cycling. Because porcelain berry exhibits a high tolerance to a variety of environmental conditions, a variety of habitats could be threatened by this species. Additionally, the vine's ability to climb and smother trees can interfere with timber production and reduce crop yields, with significant potential economic impacts on the agricultural and forest industries. In the U.S. Forest Service's Eastern Region, porcelain berry is classified as a Category 1 invasive species. Plants in this category are "nonnative, highly invasive plants which invade natural habitats and replace native species".

Biology and Spread

Porcelain berry is a fast-growing liana (a woody, climbing or trailing plant that does not support its own weight), which spreads by seed and through vegetative means. Especially when rainfall is abundant, vines can grow up to 20 ft in a single growing season. Tiny flowers are inconspicuous, greenish white, and appear in June-August. The colorful fruits, each containing two to four seeds, appear in September-October, and are eaten by birds and other small animals that aid in seed dispersal. Seeds readily germinate and start new infestations after being spread by animal droppings. Porcelain berry is often found growing in riparian areas downstream from established patches, which suggests that water and flood events could also aid in dispersal. Porcelain berry plants have vigorous and deep root systems, which readily resprout after above-ground portions have been cut.

Identification

Stems: Perennial woody vine with a white stem pith (grape is brown), the bark has lenticels (grape does not), and the bark does not peel (grape bark peels/shreds). Tendrils grow opposite the leaves and have 2 or 3 branches.

Leaves: White shiny underneath with fine hairs, alternate on the stem, palmate, with coarsely toothed margins. Either heart-shaped or deeply lobed with 3-5 divisions, depending on the location along the stem.

Porcelain berry woody stem with multi-colored berries and visible tendrils growing opposite the deeply lobed leaves. Credit: Christopher Tracey.

Porcelain berry inflorescence in an upward facing cyme of tiny, greenish white flowers and immature fruit. Credit: Virginia Native Plant society

Flowers: Inflorescence is an upward-facing, umbrella-shaped cyme with tiny, greenish white flowers, growing opposite the leaves on the stem. Contrast with grape inflorescence, which is tapered and droops down.

Fruits: 4-8 mm in diameter, circular, containing 2-4 seeds each. May be many colors present on the same plant, including green, blue, purple, pink, or cream, with black or brown speckles. Fruits appear late summer and fall.

Management

Because porcelain berry vines grow rapidly and seeds may be viable in the soil for several years, treatment measures must be repeated during the season and for several years afterwards to fully eradicate the plant. Prevention of flowering, fruiting, and production of mature seeds is a critical step in preventing its spread.

Manual Removal: Hand pulling vines in the fall or spring will prevent flower buds from forming the following season. Where feasible, plants should be pulled up by hand before fruiting to prevent the production and dispersal of seeds. If the plants are pulled after fruits have matured, fruits should be bagged and disposed of in a landfill.

Chemical Removal:

For vines too large to pull out, cut them near the ground and treat cut stems with systemic herbicides such as triclopyr and glyphosate.

For foliar applications, the most effective control has been achieved using triclopyr formulations applied in summer to fall. Smaller infestations can be controlled to some extent with spot applications of glyphosate to leaves. Use herbicides sparingly and minimize drift to avoid contact with desirable plants. Use chemical control as only ONE piece of your prevention and management strategy. The label found on the herbicide container is the law. It indicates the concentrations to use, what PPE to wear, how to apply the product, and what environmental and human health hazards are associated with the chemical.

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, creating both a timely resource for best management options and a historic record of plant behavior. This project aspires to include observations from every county, so observers are still needed in multiple places. If you would like to be involved in this effort please contact Kathy.Decker@vermont.gov. Below are the various plants and phenological phases observed in six different counties. Observations from individuals within counties were combined. These observations when combined over several years may show trends or changes in when certain phenophases are observed. Monthly observations can be found on VTInvasives *Why Monitor Invasive Plant Phenology?*

Observations taken week of August 11-17

	Knotweed (*Fallopia/Reynoutria spp*)	Common Reed (*Phragmites australis*)	Barberry (*Berberis thunberii*)	Bittersweet (*Celastrus orbiculatus*)	Buckthorn, Common (*Rhamnus cathartica*)	Buckthorn, Glossy (*Frangula alnus*)	Honeysuckle (*Lonicera sp.*)
Addison	not observe	Initial Growth, Leaves, Flower Buds/Flower Heads	Leaves	not observe	Leaves, Fruit, Ripe Fruit	Leaves, Fruit	Leaves, Ripe Fruit
Bennington	Leaves, Increasing Leaf Size	not observe	not observe	not observe	not observe	not observe	not observe
Caledonia	Leaves, Increasing Leaf Size	leaves,flower buds	leaves, fruit	leaves, fruit	Leaves, Fruit, Ripe Fruit	Leaves, Fruit, Ripe Fruit	leaves
Chittenden	not observe	not observe	not observe	not observe	Leaves, Ripe Fruit, Fruit or Seed Drop	Leaves, Fruit, Ripe Fruit, Fruit or Seed Drop	Leaves, Fruit, Ripe Fruit, Fruit or Seed Drop
Washington	not observe	not observe	not observe	not observe	not observe	not observe	Leaves, Fruit
Windham	Leaves, Increasing Leaf Size	not observe	not observe	not observe	not observe	not observe	not observe

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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