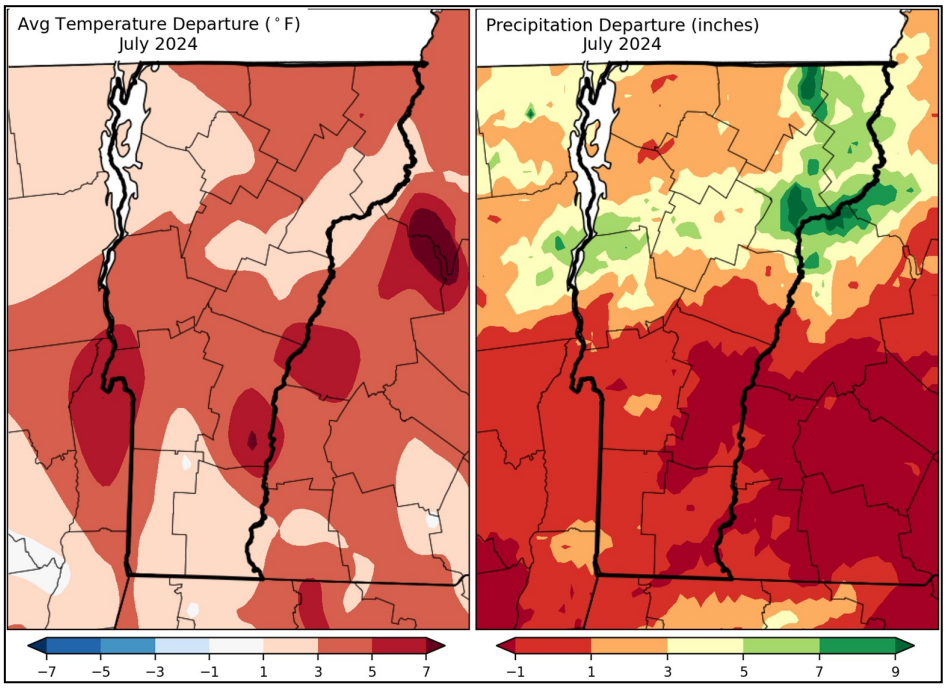
Vermont Forest Health

Insect and Disease Observations

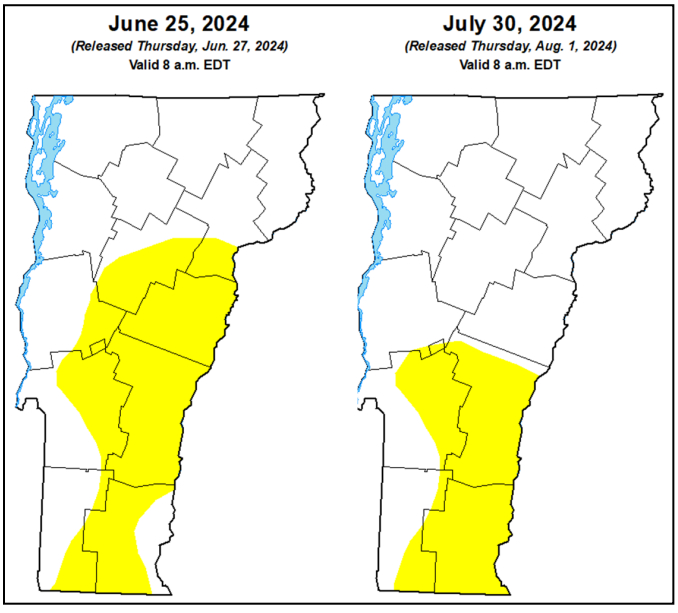
July 2024 | Department of Forests, Parks, and Recreation

Weather

On average, this month was warmer and much dryer than last July. Statewide temperatures averaged 70.6°F, which was 0.9 degrees warmer than July of last year. Statewide precipitation averaged 6.15in., which was 3.51in. less than last year.



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



Drought Conditions

Late July storms decreased drought severity in central VT. On July 30th, the U.S. Drought Monitor listed 24.82% as abnormally dry and 75.18% listed as no drought. This is a reduction of 13.55% of the state compared to the end of June. Compared to this time last year on June 25, 2023, 100% of the state was listed as no drought.

End of June and July drought conditions. Map and data: U.S. Drought Monitor.

Invasive Pest Update

Beech leaf disease (BLD, causal agent *Litylenchus crenatae mccannii*) was detected for the first time in the towns of Andover, Athens, Cavendish, Chester, Ludlow, Sharon, and Strafford, expanding the infested area in Windham and Windsor Counties and now including Orange County. This invasive pest causes dark banding in between leaf veins of beech (*Fagus* spp.). BLD infestations will lead to severe dieback and mortality of hosts.

Dark banding of BLD infested leaves. Photo credit: FPR Staff.

Elm zigzag sawfly (EZS, *Aproceros leucopoda*) was detected for the first time in the town of Richmond and Williston this month, expanding the infestation area within Chittenden County. This hardwood defoliator creates 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.

Later instar EZS larvae. Photo credit: FPR Staff.

Emerald ash borer (EAB, *Agrilus planipennis*) was detected for the first time in the towns of Burlington, Fairfax, Manchester and Strafford this month. This wood boring insect creates distinctive serpentine galleries in ash (*Fraxinus* spp.), which will lead to girdling and mortality of infested hosts. These new towns expanded the infestation severity into neighboring towns, and also increased the infestation severity of already affected towns. Town level infestation maps for these pests can be viewed on the Vermont Forest Invasive Pest Status Map.

EAB galleries. Photo credits: FPR Staff.

Supplemental Sightings

Chocolate tube slime mold (*Stemonitis splendens*) was observed on white ash (*Fraxinus americana*) in Bennington County. This is a plasmodial slime mold, a free living Eukaryote organism that exists as an individual celled organism and joins together with other individuals to form a “super cell” to reproduce. This species feeds on bacteria and fungi that occurs on decaying wood.

Chocolate tube slime mold. Photo credit: FPR Staff.

Red-shouldered pine borer (*Stictoleptura canadensis*) was observed in Washington County. As larvae, this species typically feeds on dead or decaying wood but sometimes can be found in stressed living fir (*Abies* spp.), pine (*Pinus* spp.), and hemlock (*Tsuga* spp.) trees. As adults, these beetles feed primarily on flower nectar but also may consume sap, leaves and fungi.

Red-shouldered pine borer. Photo credit: Joseph Berger, Bugwood.

Luna moth caterpillar (*Actias luna*) was reported in Windsor County on a gray birch (*Betula populifolia*). The lime green larvae have pinkish spots and a subspiracular stripe on the abdomen. Caterpillars feed on a number of deciduous trees over the summer months then overwinter as pupae in the leaflitter. Adults emerge in the spring and do not feed, merely reproducing and then dying.

Luna moth caterpillar. Photo credit: FPR Staff.

Early instar fall webworm (*Hyphantria cunea*) were reported in Windsor County. Unlike eastern tent caterpillars, the nests of these caterpillars are formed in late summer/early fall near the tips of branches of various hardwoods. Since these caterpillars feed later in the growing season, most of the photosynthates have been produced by the tree, and therefore the defoliation has a minimal impact on overall health and vigor.

Fall webworm larvae. Photo credit: FPR Staff.

Dogwood sawfly (*Macremphytus tarsatus*) was reported on dogwood (*Cornus* sp.) in Lamoille County. This species overwinters in its larval state, pupating in the spring and emerging as adults between May and July. Adults lay eggs on the underside of leaves and larvae emerge from eggs in July. These larvae initially skeletonize leaves, then eat all but the midvein in later instars.

Dogwood sawflies. Photo credit: FPR Staff.

Oak apple gall wasp (*Amphibolips quercusinanis*) was observed on red oak (*Quercus rubra*) in Windsor County. In the spring, wasp eggs are laid in the young buds of oak trees. In addition to eggs, the female wasp injects the buds with venom that causes the emerging leaf tissue to deform and swell. Upon hatching, the larvae feed on the leaf tissue and secrete enzymes that creates a gall that is used as a protective habitat for the larvae to mature in.

Oak apple gall wasp. Photo credit: FPR staff.

Black knot (*Apiosporina morbosa*) was reported on black cherry (*Prunus serotina*) in Washington County. This fungal pathogen infects species in the *Prunus* genus. Infected trees develop stem galls that grow and girdle branches. When possible, galls should be pruned out of the tree 3-4 inches below infected tissue and clippers sanitized between cuts to reduce spread.

Black knot. Photo credit: Joseph OBrien, USDA Forest Service, Bugwood.

Ash bead gall mite (*Aceria fraxini*) was reported on ash (*Fraxinus spp.*) in Addison County. This species is also known as a an eriophyid mite, and these galls are the host plant's response to their feeding damage. Ash bead galls form along lateral veins across leaflets and are usually more severe on terminal leaflets. While unsightly, this species does not cause significant damage to host trees.

Ash bead gall mite. Photo credit: FPR staff.

Foraging for Fungi

Amethyst deceiver (*Laccaria amethystine*) is an edible mushroom that has mycorrhizal associations with hardwoods, especially members of the Fagaceae family. This small fruiting body has bright purple to greyish purple cap that measures 0.5-3.5 cm across and is convex to flat in shape. Its color can change to a buff greyish white when mature or when drying out. The underside of the cap has gills that are widely spaced with shorter gills interspersed that vary in color from deep purple to white with a white spore print. Its stem is a similar color to the cap, is 1-7cm long and 1-7mm thick and hairy. When this mushroom is purple, it has no reasonable lookalikes, however, when its color fades it can be mistaken for a variety of other deceivers (*Laccaira* spp.).

Various colorations of amethyst deceivers. Photo credits: (A) Michael Kuo, (B) Richard Nadon, Mushroomexpert.

(A) *L. sulphureus.* Photo credit: Melissa Kuo, Mushroomexpert. (B) *L. cincinnatus*. Photo credit: Michael Kuo, Mushroomexpert.

Chicken of the woods (*Laetiporus* spp.) is a genus that contains several species of edible bracket 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, that is bright orange and yellow and has wavy-edges 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 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. 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.***

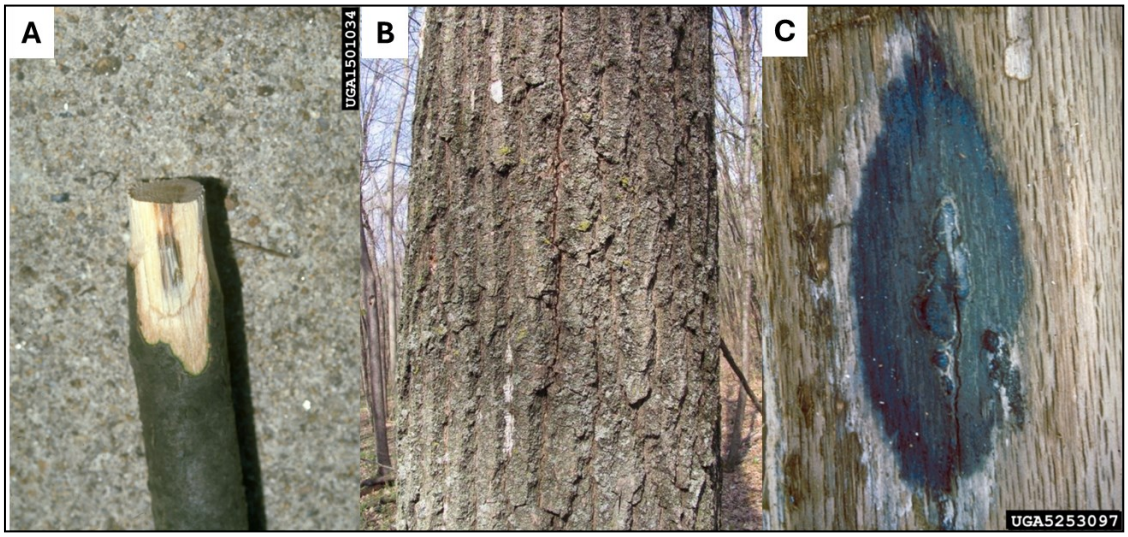
Invasive Pest Spotlight: Oak Wilt

Symptomatic leaf. Paul M Mistretta. Photo credit: USDA Forest Service, Bugwood.

Oak wilt (causal agent *Bretziella fagacearum*) is a fungal vascular disease of oak trees, which causes rapid decline and mortality in infected hosts. Due to the fast progression of this disease, it is thought to be introduced to the United States, however, its exact origin is unknown. This pathogen was first documented in Wisconsin in 1944 and has since been reported in 24 states and Ontario Canada. **This invasive pathogen has not been observed in Vermont.**

Oak wilt can infect all species of true oaks (*Quercus* spp.), however white oak family members have tyloses that aid in compartmentalization that slows the progression of the disease. In all oak families, early symptoms of infection include wilted and discolored leaf margins that will continue to brown toward the center and base of the leaf. This can lead to leaf drop during the growing season which gives infected trees a “fall-like” appearance. Infected trees will experience dieback that will start at the branch tips and progress inward. In white oak family members, cutting into the infected tree will show symptoms of xylem streaking. In red oak family members, sporulating mycelial mats with pressure pads may develop under the bark of infected trees, which can lead to bark splitting. Over time, dieback and mortality will progress with red oak family members having rapid onset and mortality which can happen over a single growing season, while white oak family members have a slower decline.

This pathogen spreads large distances through a variety of bark and sap-feeding beetles as well as locally through root graphs. Humans can expedite the spread by moving infected firewood or by transporting insect vectors. For more information on oak wilt, or to report a sighting, please visit VTinvasives.



A: Xylem streaking. Photo credit: Robert F. Bassett, USDA Forest Service, Bugwood. **B-C:** (B) Bark splitting, © Mycelial mat. Photo credits Joseph Obrien, USDA Forest Service, Bugwood.

Invasive Plant Spotlight: Japanese Stilitgrass

Japanese stiltgrass (*Microstegium vimineum*), is a delicate annual grass that is native to China, India, Japan, Korea, Malaysia, and the Caucasus Mountains. It was found to have been introduced to North America near Knoxville, Tennessee, around 1919, most likely through its use as a dried packing material for porcelain shipments. It is a member of the Poaceae or grass family, a group of monocotyledonous flowering plants that includes more than 10,000 species. Japanese stiltgrass is also known colloquially in certain areas as bamboograss, Nepaleze browntop, and Asian stiltgrass. It has many common look alikes, including native whitegrass, as well as non-native nimblewill and basketgrass.

Japanese stiltgrass. Photo credit: Rebekah D. Wallace.

Although Japanese stiltgrass is well established in many of the mid-Atlantic states, it has extremely limited distribution in Vermont. It has only been reported in a small number of isolated sites and was officially listed as a plant pest by the Agency of Agriculture, Food and Markets in May 2024, because it presents an ecological and/or economic threat to Vermont.

Japanese stiltgrass in a wooded understory. Photo credit: Chris Evans.

Spread and Impact

A variety of habitats are suitable for Japanese stiltgrass, including floodplains, forest edges, stream banks, fields, trails, ditches, and forest understories. It grows well in many light conditions, from deeply shaded forests to sunny open fields, but it prefers damp conditions, and can often be found in disturbed areas. It can form dense, sprawling mats that choke out native vegetation and inhibit tree regeneration in forest stands. It spreads by seed and by rooting at joints along the stem,

and individual plants can produce up to 1,000 seeds that may stay viable in the soil for 3 to 5 years. Disturbances such as scouring floods and other soil disturbing activities such as the use of heavy equipment can facilitate the spread of Japanese stiltgrass. Seeds and small seedlings can be inadvertently carried in soil through the horticultural trade, as well as landscaping, logging, mowing, tilling, and construction activities. Seeds are readily carried by footwear and trailheads are often the first instance of colonization in wooded areas.

Identification

Japanese stiltgrass is a weak rooted and sprawling annual grass that can grow to heights of 6 feet, though it is typically much shorter. Taller plants usually lie flat on the ground or propped against other vegetation. Plants have weak stems, with aerial rootlets or “stilts” near the base, giving rise to the common name. In the fall, the tops of the plant turn purple or brown in color, and in winter the dried stems and flowers create a mat of tan colored thatch along the ground. There are several key features which will enable identification.

Japanese stiltgrass stems showing aerial rootlets or “stilts”. Photo credit: Nancy Loewenstein.

- **Stems/Roots:** Weak and shallow roots, often have multiple stems branching near the base. Thin, somewhat fleshy stems when actively growing, becoming wiry as plants die back. Smooth stems may be slightly hairy just below leaf sheath. Longer stems tend to sprawl and produce rootlets or “stilts” near the base.
- **Leaves:** Alternate leaves on stem, very narrow: 1-4 inches long, approximately ½ inch wide. Smooth, asymmetrical, lance-shaped and pointed at both ends, with a silvery, off-center midrib.
- **Flowers/seeds:** Flowers late summer through early fall; flower stalks develop in axils of the leaves or at the top of stems. May have 1, 2, or 3 spikes on delicate stalks. Fruits are bristly.

Japanese stiltgrass flower spikes and leaf. Photo credit: J.C. Neal.

Management

Japanese stiltgrass is an early detection species on the VT Invasives website, because it is state regulated as a plant pest and is minimally established in Vermont. There exists an opportunity for early detection and eradication of this species, and public reporting is one of the most effective tools for controlling new infestations. VT Invasives reports of Japanese stiltgrass go directly to staff members at the Department of Forests, Parks and Recreation and the Agency of Agriculture, so that they can quickly respond and assess new detections of invasive plants.

Mechanical Removal

- **Hand pull:** Stilt-grass is a weak rooted annual and small populations can be hand pulled any time during the growing season when the ground is soft. Be sure to pull up the entire root system. Pulling is easier and probably more effective in mid-to-late summer when the plants are much taller and more branched. Hand pulling of plants will need to be repeated and continued for many seasons until the seed bank is exhausted.
- **Mowing:** Larger infestations can be mowed or weed-whacked when plants are mature, but seeds have not yet set. Because stilt- grass is an annual plant, cutting late in the season before the plants would die back naturally avoids the possibility of regrowth.

Pulled pile of Japanese stiltgrass. Photo credit: Monroe County.

Chemical Removal

- **Foliar spray:** This method is used for dense populations and best left to a contractor. For extensive stilt-grass infestations, use of a systemic herbicide such as glyphosate is a practical and effective method if used with caution. Glyphosate is a non-specific herbicide that will kill or damage almost any herbaceous plant and possibly some woody plants it contacts. Grass-specific herbicides (graminicides) work very well on stiltgrass and if used correctly can reduce potential damage to woody or broadleaf 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 four 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?*

County	Knotweed (Fallopia/Reynoutria spp)	Common Reed (Phragmites australis)	Purple Loosestrife (Lythrum salicaria)	Wild Parsnip(Pastinaca sativa)	Barberry (Berberis thunberii)	Bittersweet (Celastrus orbiculatus)	Buckthorn, Common (Rhamnus cathartica)	Buckthorn, Glossy (Frangula alnus)	Honeysuckle (Lonicera sp.)
Washington	not observed	not observed	Breaking leaf buds;Leaves;Increasing Leaf Size;Flower Buds/Flower Heads;Open Flowers	not observed	not observed	not observed	not observed	not observed	Breaking leaf buds;Leaves;Increasing Leaf Size;Fruit;Ripe Fruit
Chittenden	not observed	Leaves	Leaves;Increasing Leaf Size;Flower Buds/Flower Heads;Open Flowers	Leaves;Flower Buds/Flower Heads;Open Flowers	Leaves;Increasing Leaf Size;Flower Buds/Flower Heads	Leaves	Leaves;Increasing Leaf Size;Open Flowers;Fruit	Leaves;Flower Buds/Flower Heads;Open Flowers;Fruit	Leaves;Flower Buds/Flower Heads;Open Flowers;Fruit;Ripe Fruit
Addison	Leaves;Increasing Leaf Size	Leaves;Increasing Leaf Size;Fruit or Seed Drop	Flower Buds/Flower Heads;Open Flowers	Initial Growth;Leaves;Flower Buds/Flower Heads;Open Flowers	not observed	not observed	Leaves;Fruit	not observed	Leaves;Ripe Fruit
Caledonia	Leaves;Increasing Leaf Size	leaves	not observed	leaves, flowe buds, flowers	leaves, flowers, Fruit	Leaves, Fruit	Leaves, Fruit	Leaves;Flower Buds/Flower Heads;Open Flowers;Fruit	Leaves, Ripe Fruit

FORESTS, PARKS & RECREATION VERMONT AGENCY OF NATURAL RESOURCES

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

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Lamoille, Orange & Washington Counties.....
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