



# The Leaflet



Winter 2023



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## Winter Drought

*By: Robbie Doerhoff, Forest Entomologist, Missouri Department of Conservation*

*After the late summer and fall droughts of 2022, much of the forests displayed signs of drought stress. While it is easy to connect declines in forest health with hot and dry summer months, the impact water scarcity has in the dormant period can have just as many long term health consequences for trees.*

Depending on where you live in the state, soil conditions are dry—really dry in some places. According to the University of Nebraska-Lincoln Drought Monitor, nearly three-quarters of Missouri has soil moisture conditions ranging from abnormally dry to severe drought this winter. If it were summer, you would clearly see drought impacts on the grass, plants, and trees in your yard. In the winter, however, drought stress is not always obvious on trees and plants (unless you have evergreens!). Is winter drought really that big of a deal for trees? The short answer: yes!

There are two things to know about tree roots to understand how drought can harm them, even in winter. First, around 90% of a tree's root system is in the top 18 inches of soil, including nearly all of the tree's water-conducting fine feeder roots. Essentially, roots form a wide, flat mat around the trunk of the tree—generally extending well beyond the tree's dripline. Except for bald cypress, tree roots are not able to survive in ponds or lakes, so even trees planted near open water aren't able to use that source during drought. Tree roots also can't tap into groundwater, a common misconception among tree owners.

*Continued on Page 3*



# Woods Updates



© Photo: David Seals

## Hibernation in the Leaves

When winter arrives, we expect wildlife to hide out. While many frogs hibernate underwater to keep their bodies from freezing, the wood frog has a unique approach- disguising itself as a leaf. The leaves, duff and overlying snow give some insulation from extreme cold, but the frog allows its body to freeze solid.. During this time, their heartbeat and breathing will pause, but once winter passes they will be able to resume their active lifestyle sooner than their aquatic counterparts.

## Red Headed Woodpeckers in Nesting Cavities

Redheaded woodpeckers are a nomadic and endangered species. This means it won't be the easiest bird to spot, however, do not discount the possibility of spotting one of these elusive birds. You may, like John, one of our Forestkeepers, catch one finding home within the natural cavities of Missouri's oak trees. A unique aspect that sets red headed woodpeckers apart from other woodpeckers is their willingness to reuse a nesting cavity, so John may see the pair for many years to come!



## Leaf Scars

A tree's leaves require strong stems to bear the elements and provide for itself. However, this means that when it is inevitably time for the leaves to fall, severing the connection between the tree and its leaves will leave a mark. Leaf scars are the marks along branches that are left from the fallen leaves. The leaf scars are also unique to both their tree and leaf, so they will vary in shape and color. It is often a helpful tip used in winter plant identification for plants with heavy compound leaves, like this black walnut!



## Winter Drought (continued)

The second important point about tree roots is that they continue growth and metabolic functions when soil temperatures are around 40°F and above. The mild weather we've seen in 2023 has allowed tree roots to be active, and active roots need water even when there are no leaves on the tree. Evergreens, especially, need soil moisture during the winter because they are still supporting their needles (leaves) throughout the year. Winter scorch on evergreens can be related to dry soil conditions. Deciduous trees aren't supporting leaves during the winter, but dry soil conditions during periods of active root growth can lead to fine feeder root stress or death.

Unfortunately, drought-related root damage can lead to much bigger problems in the years to come. Slow tree killers like Armillaria root disease can attack drought-stressed roots, slowly causing a tree to decline and die up to 10 years after a major drought. Stressed trees are also less able to defend themselves against attacks by many insects and diseases. Signs of wood-boring insects are often noticed for a few years following a drought. Outbreaks of Hypoxylon canker, a native fungus that kills the water conducting tissues of hardwood trees, can devastate older, drought-stressed trees and is particularly common on trees in the red oak group. Even the dreaded Dutch elm disease has an easier time killing elms in drought years, and emerald ash borer is more successful in infesting ash trees during dry periods.

What can you do now to help prevent drought damage on your trees? Water them! Consider one or two deep waterings between now and spring bud break. During the growing season, we recommend watering established deciduous trees every two to three weeks during dry periods with 10 gallons of water per diameter-inch of a tree's trunk (measured at 4.5 feet above the ground). Water as much of the root zone as possible. For newly planted trees, consider watering them every 7-10 days for the first three growing seasons after planting. For evergreens, reduce the watering rate to five gallons per diameter inch. Be careful not to overwater as too much water can be just as damaging to roots as too little, especially in poorly drained clay soils.

Another way to help your tree avoid drought stress (and reduce the need to water!) is to apply a 3-inch layer of shredded bark mulch around the root zone. Make sure the mulch doesn't touch the tree's trunk, and never put landscaping fabric or plastic under the mulch. Proper mulching helps to moderate soil temperatures and moisture levels, and it also promotes fine feeder root growth and a healthy suite of soil organisms. Learn more about tree care by checking out MDC's Urban Tree Decline forest health alert.



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### Virtual Science Corner

## Redbud Phenology Project

One of the most iconic native North American trees is the eastern redbud (*Cercis canadensis*). This tree is one of the earlier flowering forest trees in the spring. However, not much is known about when it blooms.

The Redbud Phenology project seeks to answer the following questions: 1) When do eastern redbud trees flower and fruit across the tree's range? 2) How does the timing of these events vary across geography and elevation? 3) Has the timing of flowering and fruiting advanced in recent years?

By tracking observations on the plant's life cycle stages through budding, blooming, and leafing out, scientists hope to gain a better understanding of this beautiful plant. This project is run through the "Natures Notebook" website and requires an account for reporting. Learn more by visiting [www.usanpn.org/nn/redbud](http://www.usanpn.org/nn/redbud)

## Q&A

**Q:** . I saw a large sugar maple (*Acer saccharum*) that had split in half, and the exposed inside of the crack had what looked like roots growing in it. These were located several feet above the ground. I'm confused. I've seen roots in the soil, and on top of it, but never on the side of a tree.

**A:** When trees are injured or distressed, they respond by forming callus tissue (not to be confused with woundwood, which can arise from callus but is not the same). Callus is totipotent (from the Latin "ability for all things"), meaning that it can form any type of cell that could be present in the organism from which it originated. Totipotent plant cells can form not only roots but leaves, branches, and flowers.

The types of cells they form are often determined by environment - moist, dark, such as you would find in a tight crack in a tree essentially "trick" the callus tissue into thinking it is underground. The resulting hormonal signals trigger the formation of roots. This is the same mechanism that allows you to take a cutting from a plant, place it in water or growth media, and cause it to form roots.

It is also the same mechanism that often causes trees planted too deeply, or that have mulch piled against their trunks, to form stem girdling roots above their natural root system. Don't plant trees too deep!

Source: Mark Halpin,  
The Davey Resource Group



### Featured Species

## American Beautyberry

*Callicarpa americana*

Every year, winter robs plants of their green foliage and colorful blooms. Many of us yearn for nature's colors during these cold months, and luckily the American Beautyberry can provide just that. The American Beautyberry flowers in late summer, and drops its leaves in the fall. However, its berries remain throughout the winter until they are eaten by the wildlife. These vibrant purple berries decorate the shrub and add some color during our grayest times of the year.

Source: Missouri Department of Conservation

*Callus tissue seen on a sugar maple.*



# FOREST BULLETIN

## The Role of Community Foresters

By: Jennifer Behnken, Community Forester,  
Missouri Department of Conservation

“Help! My tree is sick!”

This is one of the many inquiries a community forester intercepts on a day-to-day basis. A favorite adage of mine in a five-second speech when people ask what a community forester does, my response is, “we hug some trees and remove others.” In actuality, there are many elements of tree care and management that a community forester addresses, ranging from making appropriate tree species selections when planting, encouraging a young tree to grow and thrive, providing care as it develops and matures, to assessing the old and majestic age class and perform final rights.

Trees generate a multitude of environmental, social, and economical benefits, and are also sources of human connection and attachment. People care about their trees. Many of them are a source of lasting memories. A community forester facilitates that interaction to advocate the interests of both trees and people alike. They are the go-to for finding compatible ways for trees and human society to co-exist.

Arboriculture is the art of specialized care for one tree. Community forestry views those trees on a comprehensive scale across an urban landscape. A community forester looks at aspects for the health of the tree and the health of the forest. It’s also important to observe the environment around the tree, not just the tree itself. Those factors include analyze site conditions, soil properties, drainage or moisture levels, nearby infrastructure, past land use history, and future changes and development when making these informed decisions.

It’s important to maintain open communication with community stakeholders, leaders, and homeowners when nurturing and sustaining community forestry health. It involves discussions and presentations in board meetings, with city government officials, civic groups, community events, and others who have a vested interest. It’s working with partners with other natural resource agencies, non-profit organizations, and community groups to align toward common community forest goals. It’s addressing tree health, invasive species



## Meet your Forester

Jennifer Behnken is a Community Forester for the Missouri Department of Conservation. She assists communities in the south-east region of Missouri with developing tree care and management plans, looking at tree species selection, planting, and safety techniques, forest health, and other urban/community forestry practices. She also assists landowners with their forest management objectives, conducting inventories, developing plans, assisting in timber stand improvement and harvesting, invasive species management, and prescribed fire activities. She has a B.S. and M.S. degree(s) in Forestry from Southern Illinois University Carbondale.

management, planting design and species selections, pruning tactics, insect and disease diagnosis, tree risk assessment, safe removals, soil remediation, stormwater management, and other community forestry aspects, all in the name of rebuilding, enhancing, and maintaining community forests and urban tree canopy.

Community foresters help make this happen by providing technical advice, assisting in developing projects, conducting tree inventories, writing management plans, implementing forest health surveys, and facilitating possible external funding opportunities. We talk to the media (television, radio, newspapers, newsletters, social media) on community forestry related topics. We give presentations, workshops, trainings, and field trips. And on occasion, we dress up as an Emerald Ash Borer (EAB) or Smokey Bear for a school program.

Want to learn more? Check out the Missouri Department of Conservation website community forestry information and funding resources. Visit Trees Work, International Society of Arboriculture (ISA), Arbor Day Foundation, Grow Native, and other community forestry related websites.

# Take a Hike!



**Acreage:** 2,917

**County:** Douglas

**Owner:** State of Missouri

**Region:** South Central

**Established:** 2022

**Location:** 20 miles southeast of  
Ava, MO

## Bryant Creek State Park

### *Missouri's Newest Feature*

In August 2022, Missouri Welcomed it's newest State Park to Ozark MO. Located near Rock Bridge, Bryant Creek State Park features stunning oaks and shortleaf pines. Currently trails are gravel, with a short loop paved. The landform of the park is heavily forested, deeply carved and sharply incised with remarkable sandstone ledges and outcroppings and unparalleled biodiversity. With 940 kinds of plants, the park preserves more wildflowers, shrubs, trees and other vascular plant species than any area of Missouri yet studied, encompassing within these 3,000 acres nearly one-third of Missouri's total known flora.

The park is still in the development phases, but has two completed trails and an accessible overlook, vault toilet and finished parking area. The Pinewoods trail is a 0.6-mile trail through Missouri's Shortleaf Pine grove. At 4.5 miles, Pike wood trail is a greater challenge, traversing the steep slopes of the sandstone range. When Bryant Creek is fully developed, the park will have two day-use areas with parking, picnic tables, vault toilets, potable water and informational/interpretative kiosks. A camping area with fire rings and picnic tables will also be established for primitive camping.



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## Featured Events

### Maple Sugaring

Date: Saturday, February 25, 2023, 1:30pm - 3:00pm

RSVP: [mdc.mo.gov/events](https://mdc.mo.gov/events)

Location: Burr Oak Woods Conservation Nature Center

*In our culture of a supermarket in every neighborhood, it is almost magical and spectacular to be able to make something delicious to eat out of some liquid flowing out of a tree. Savor this wonder of nature by learning how to tap trees, collect sap, and make delicious syrup from native trees. 1/3 of program planned to be outside (weather dependent). Dress for the weather.*

### Prescribed Burn Workshops at Multiple Locations Across the State

RSVP: [mdc.mo.gov/events](https://mdc.mo.gov/events)

Date: Saturday, March 4, 2023 9:00 am - Saturday, March 4, 2023 12:00 pm

Location: MDC Northeast Regional Office

Date: Thursday, March 23, 2023 6:00 pm - Thursday, March 23, 2023 8:00 pm

Location: NCMC Barton Campus

Date: Friday, March 24, 2023 9:00 am - Friday, March 24, 2023 2:00 pm

Location: Powder Valley Conservation Nature Center

### St. Louis Landowner Stewardship Workshop

Date: Friday, March 24, 2023, 8:30am - 2:30pm

RSVP: [mdc.mo.gov/events](https://mdc.mo.gov/events)

Location: Powder Valley Conservation Nature Center

*This free landowner workshop will cover management techniques to help you achieve your land use objectives. Participants will choose from a variety of key forest, fish, and wildlife management topics which will be presented during concurrent sessions throughout the day. Topics will include pond management, forest management, small game habitat, property rights and wildlife code, turkey biology and management, native forbs and pollinator habitat, invasive plant control, tree insect and disease, and creating and maintaining healthy soil. The workshop is open to all Missouri landowners. Lunch and helpful literature will be provided.*

### Pear Buyback Program

Date: April 18, 2023

*Forest ReLeaf of Missouri, the Missouri Department of Conservation (MDC) and the Missouri Invasive Plant Council (MIPC) – are working to remove Callery pear trees from our ecosystem. which provide a free native tree for each property owner providing evidence of removing at least one Callery pear from their property. Check MO invasive plant council's website for locations near you.*

## Welcome Members!

Andrew Brown

Adam Burks

Frederika Gage

Norman Forester

Ashley Harrellson

Ashley Henning

Jennifer Johnson

Austin McMahan

Jesse Melton

Michael Reilly

Ella Scheiderer

Colleen Schmidt

Brett Uhlmeyer

Kathleen Vance

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The Leaflet is produced by Forest ReLeaf of Missouri, the Forest and Woodland Association of Missouri and the Missouri Forestkeepers Network in partnership with the Missouri Department of Conservation.

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## **Looking Forward in 2023!**

The Missouri Forestkeepers Network will be working to promote opportunities around seed collection culminating with our annual conference in August. This year, we're partnering with the George O. White State Nursery for a workshop centered around identifying, collecting, and supporting the diversity of our native tree population.

Follow [@missouriforestkeepersnetwork](#) on Facebook or check out our website for information about events and workshops.