



The Leaflet



In This Issue

2 Woods Updates

4 Featured Species:
Red-berried elderberry

5 Forest Bulletin:
Seeds of Success

6 Take a Hike:
Deer Creek
Conservation Area

7 Featured Events
New Members

8



From Sap to Syrup: The Unique Journey of Maple Sugaring in Missouri

By Valerie Blandina, Forest ReLeaf Education Specialist

While maple syrup production is often associated within regions further north, tapping into Missouri's maples can yield a sustainable, sweet, and nutritious treat! Syrup comes from the sap of trees, collected in the late winter through early spring. Its roots run deep, from Native Americans producing it for sustenance and medicinal purposes to tapping being adopted by early settlers before cane sugar was readily available. Despite the increasing stressors faced by maple trees in our state, the challenges and rewards of collecting syrup are growing in Missouri. For those who are interested in embarking on a sugaring journey, the Missouri Department of Conservation provides valuable resources and guidance with getting started. Visit: mdc.mo.gov/discover-nature/activities/maple-sugaring

Any broad leaf tree can be tapped; however, maple trees contain the highest levels of sugar (around 3 percent) compared to the average of most tree sap (1 percent or less). Maple trees in Missouri can be identified by their vibrant orange and red hues in autumn. Initially, sap is highly diluted compared to the breakfast delicacy we know and love. The process of turning sap into maple syrup involves reverse osmosis, or boiling off excess moisture, leaving behind the delightful rich sugar. Typically, it takes about 40 gallons of sap to make just one gallon of syrup! Maple syrup production starts with tapping, the process of extracting sap from

Continued on Page 3



Woods Updates



The Endangered Species Act Marks 50 Years!

The 50th anniversary of the Endangered Species Act (ESA) marks an exciting milestone for the ongoing commitment to conservation of biodiversity! Enacted in 1973, the primary goal of ESA is to prevent the extinction of vulnerable species, restore their populations and ensure the thriving of their habitats.

The act categorizes at-risk species into two groups: endangered or threatened. Once a species is categorized, the ESA accords federal agencies, such as the U.S. Forest Service and the U.S. Fish and Wildlife Service, the authority to implement habitat protection, prohibitions against species harm, and measurement of recovery. The ESA plays a pivotal role in protecting and preserving our nation's diverse wildlife and plant species facing the danger of extinction.

The ESA has and continues to protect Missouri's diverse ecosystem. Approximately one third of Missouri is covered by woodlands. These lush woodlands are home to several endangered and threatened species.

Bachman Sparrow

Among the species protected by the ESA, the Bachman's Sparrow (*Peucaea Aestivalis*), is a large, ground-nesting sparrow that thrives in dry, scrubby areas. Its home spans throughout southern regions, and it remains a resident during winter, except in Missouri, Arkansas, and Tennessee where some individuals have been believed to migrate during the colder months. The reproductive cycle of the Bachman Sparrow is noteworthy, with females laying 3-5 eggs from April through July. These eggs undergo an incubation period of roughly two weeks. Unfortunately, due to habitat destruction in Missouri, this species is currently listed as endangered under the ESA.



Indiana Bat

The Indiana Bat is another woodland-dependent species listed as endangered. These bats thrive in wooded areas, especially forests near caves. Due to the disruption to their habitat and the introduction of White Nose Bat Syndrome, the Indiana Bat population is struggling and subsequently supported by the ESA.



Eastern Spotted Skunk

This skunk lives in a variety of habitats, including Missouri woodlands which provide cover and foraging opportunities. They love to eat wasps, bees, honey, larvae, and hives. They also eat mice, moles, and other rodents. Due to habitat loss, their population has declined drastically. The ESA is supporting conservation efforts with hopes to preserve this species and their homes.



From Sap to Syrup (continued)

trees. As the temperature of the sapwood reaches approximately 40 degrees F, the stored starches undergo conversion into sugars, and flow into the sap. Tapping the sap involves drilling a hole into the tree, inserting a Spile, and positioning a bucket to capture the sap flow. The successful flow of sap hinges on weather conditions, necessitating temperature that induces pressure within the tree. A productive tree is capable of yielding one gallon of sap per day in the peak of season.

Many factors can affect the amount and quality of sap a tree will produce. Variables like cloud cover, wind, changes in temperature, atmospheric pressure and sunlight all influence sap production. One primary challenge in collecting enough sap is the climate. With our annual temperatures changing rapidly, sap flow in Missouri has become unpredictable. Maple trees depend on a delicate balance of freezing nights and warm days to trigger flow. A slow, gradual freeze leads to more sap production building up in the fibers of the maple tree. However, Missouri's weather is notorious for its unpredictability, and the temperature fluctuations are anything but gradual. As a result, this creates a much more limited window for sap collection.

The journey into the world of maple syrup production in Missouri is a blend of tradition, sustainability, and nature. As we tap into the maples of Missouri, we gain a unique and exciting opportunity to connect with the land and savor the sweet rewards it offers. Despite the challenges possessed by the unpredictable climate, the growing popularity of sugaring reflects a strong appreciation for this timeless tradition. Whether you have a single maple in your backyard or a vast grove, may we not only savor the sweet essence of sugaring, but also forge a meaningful connection with nature and the heritage of this priceless human tradition.

**Fun Fact: It takes
110 gallons of sap
from a birch tree
to make 1 gallon of
Birch Syrup**



The Forest ReLeaf Office Has Moved!

Contact Forest ReLeaf and the
Missouri ForestKeepers
Network at:

Forest ReLeaf of Missouri
4642 Shenandoah Ave
St. Louis, MO 63110



Featured Species
Red-Berried Elderberry
Sambucus pubens

The red-berried elderberry (*Sambucus pubens*) is a distinctive shrub or small tree native to Missouri. It can be recognized by its unique features. Reaching heights up to 24 feet, it stands alone rather than forming colonies. Flowering in April-May, the white flowers form dense egg-shaped clusters, while the red fruits mature from June to August. The fruits have an unpleasant flavor.

The tree occurs on shaded, north- to northeast-facing wooded limestone bluffs and ledges and mesic upland forests. In Missouri, it is found only in Marion County. Once established, this species grows rapidly. Its large purple buds are a striking contrast in the winter against a background of snow.

The red-berried elderberry is endangered in Missouri. This species is more common in northern states and in the Appalachian mountains. It occurs in Missouri as an ice age relict: it is one of the plants whose range shifted south, ahead of glacial advances; then, as the climate warmed and glaciers retreated north, some populations died out, others migrated north, and some — like populations of this plant in Missouri — remained in pockets of cool, moist sites such as north-facing bluffs.

This emphasizes the importance of conservation efforts put in place by the Endangered Species Act.

Source: By Valerie Blandina, Forest ReLeaf Education Specialist,
 Missouri Department of Conservation

Q: What's happened to my bark?



A: Sunscald

As anyone who has ever forgotten a glass bottle in a freezer knows, water expands when it freezes. The same expansion happens in the water in a tree's leaves, where water content is highest. As a protective measure to prevent the leaves from breaking, deciduous trees drop their leaves altogether. In the fall before each winter, the cells at the base of each leaf stem form a barrier that keeps water and nutrients from traveling to the leaf.

But below-freezing temperatures are still a challenge for trees. Although the most immediate danger of broken leaves has been solved, there is still much water in the trunk and branches that can cause damage to a tree. This can lead to a phenomenon called Sunscald where the death of cells in the bark is caused by rapid fluctuations in temperature. Research suggests that the highest risk for sunscald occurs in frozen tissue on the south or southwest side of the trunk where the bark is heated by the sun, thaws and then rapidly refreezes. This leads to an uneven die off of bark that can cause longer term structural issues.

FOREST BULLETIN

Seeds of Success

In 2023 ForestKeepers gathered in Licking, MO for a late season peek into the seed collection processes at the George O. White State Nursery. The nursery began in the 1930s, soon after Missouri's national forests had been designated. At that time, thousands of forest acres needed restoration, and it would take millions of seedlings to do it. To meet this demand, land was set aside in a central part of the state to grow high quality native seed stock for the health and benefit of Missouri's Forests. Administered by MDC, the nursery is 754 acres, with 50 acres of seedbeds. The nursery now grows more than 70 species of trees and shrubs. Except for a few pine species and wildlife shrubs, all are native Missouri plants.



While the rest of us were recovering from Thanksgiving dinner, folks at the George O White state nursery were beginning to pull seedlings for shipment and processing. Each year the nursery processes over 10,000 orders and ships about 2 million seedlings. To grow all these species, the nursery collects or buys tens of thousands of pounds of seeds each year. For example, about 2,000 bushels of walnuts, 6,000 pounds of white oak acorns, 500 pounds of hazelnuts and 500 pounds of plum seed are needed to establish seedlings for these four species for one year. For this reason, MDC is building processes to help Missourians collect seeds from healthy native specimens.

Over the summer, ForestKeepers were encouraged to participate in harvesting seeds to add to our state's seed bank. With a slow seed production year, the nursery collected many of the species on its wish list, but some, like white oak and chinkapin were harder to source. White oak seeds are quick to germinate, often beginning to sprout within weeks of hitting soil. Consequently, they are unable to be cold stored – all available seeds must be planted immediately. When we have low mast years, volunteer and commercial collection are key to ensuring a sufficient stock for planting, otherwise the nursery turns to neighboring states like Arkansas to make up the deficit.

That's not to say last year wasn't a success for Missouri's trees. In 2023, George O'White expanded its seedling collection sites to include statewide locations, promoting and collaborating with nature centers in St Louis, Cape Girardeau, and Columbia. After a struggle to germinate wild plum during a rainy winter led to a depleted stock of seeds, the expanded efforts of seed collectors were able to gather over 6,000 lbs of fruit, enough to provide 900 lbs of seed, or the next two years' supply of saplings. It's important to note that many species like plums have a significant gap in their fruit to seed ratio. Plants that rely on animals for distribution tend to go all in on sugary fruit casing to ensure their consumption. Eastern wahoo, elderberry, and pawpaw all fall into this category and have seeds that are in high demand. But perhaps the worst offender is the downy serviceberry. Beloved by birds, small mammals, and ambitious jam makers, this fruit has a 50:1 lbs fruit to seed ratio, making it difficult to match the pace of collection to demand.

If you're so lucky as to have a downy serviceberry, or other native tree growing near you, consider participating in the 2024 statewide seed collection. Early spring is the perfect time to begin searching for mature specimens to collect from. Be sure to check in with the state nursery to make sure your seed is in demand, test the seeds for ripeness, and store the seed in a cool dry place until you're ready to deliver it to a collection agency. Mike Fiaoni, George O White Nursery Director, recommends placing water-heavy fruits like serviceberry in the crisper drawer of your refrigerator!

If you missed the 2023 event, don't worry- this spring the State Nursery will be hosting tours for the public on April 6th. Space is limited, so be sure to call the nursery at (573) 674-3229 and reserve a spot.

Take a Hike!



Acreage: 7,154.9

Established: 1950's

County: Lewis

Owner: Missouri Department of
Conservation

Region: Northeast

Location: Approximately 7 miles
north of Lewistown on
Hwy Y

Deer Creek Conservation Area

Hiking, biking, fishing, and more!

Deer Ridge Conservation Area was purchased in the 1950's because of the efforts of local farmer James B. Jenkins to expand outdoor recreational opportunities in northeast Missouri. Situated along the North Fabius River, this area offers ample hiking opportunities to enjoy the approximately 5,000 acres of woodlands and forests. The extensive trail network boasts over 20 miles of multi-use trails and service roads with many loops of various lengths and difficulty levels which allows visitors to customize their experience.

As hikers, bicyclists, and horseback riders traverse the beautiful oak-hickory forests, they can find themselves surrounded by birds, squirrels, deer, turkey, and other wildlife while visiting bottom land forests, wetlands, and grassland openings along their journey. The easy to walk purple trail will take you through a woodland that has an abundance of 150 year old post oaks where woodland forbs such as Culver's root and pale purple coneflowers are being established. Be sure to dress appropriately and to pack plenty of water and snacks for longer hikes.

The area is also rich with human history. Artifacts found along the ridges that overlook the North Fabius river indicate the area was used by at least five different Native American tribes. To help find your way around Deer Ridge and other Missouri conservation areas, download the MO Outdoors app!



Featured Events

Trees: Maple Sugaring

Date: Saturday, February 17, 2024 10:00 am - 11:30 am

Location: Rockwoods Reservation

Learn the history of maple sugaring, visit the sugar bush to see where sap is collected, and learn how to turn the sap into syrup. The entire program is outdoors, so please dress for the weather.

Sap to Syrup (Virtual Education)

Date: Tuesday February 20th 6:30-700 pm

Winter is full of wonder and processing tree sap into syrup is one of those wonders. This virtual program will cover the basics of tree selection, collection, processing and equipment needed to turn that watery sap into delicious syrup.

Special Event: Urban Woods

Date: Saturday, February 24, 2024 10:00 am - 2:00 pm

Location: Anita B. Gorman Conservation Discovery Center

Walk-in (all ages) Taste a tree at the Sugar Camp where we will boil sap to make syrup. Learn how to split firewood, throw an atlatl, build a wren house, start a fire, braid a rope with cordage, and other useful skills to survive the wilds of the urban woods or your own backyard.

Handmade Wood Crafting

Location: Cape Girardeau Nature Center

Spoon Carving Tuesday, February 27, 2024 5:00 pm - 9:00 pm

Trencher Bowl Carving Wednesday, February 28, 2024 5:00 pm -9:00 pm

Location: Cape Girardeau Nature Center

Missouri's original settlers were very independent and self-sufficient. If they needed an item for their home they usually found a way to make it using materials provided by nature. Join the Southeast Conservation Educators and learn how to make supplies out of Missouri hardwood. Ages 18+. This is an intermediate woodworking class and experience with hand tools is required.

Hiking: Early Spring at Big Oak State Park

Date: Wednesday, March 27, 2024 9:00 am - Wednesday, March 27, 2024 3:00 pm

Location: Cape Girardeau Nature Center

Explore the swamp and bottomlands that make southeast Missouri unique and view some of Missouri's state record trees. This hiking trip consists of three trails which total nearly three miles with an easy trail rating. Pack a lunch and enjoy the sights and sounds of the southeast. Participants will meet at the nature center and carpool to the state park.

Mushrooms: V-Learning to Hunt: Mushrooms

Date: Thursday, April 11, 2024 6:00 pm - 7:30 pm

Join us in learning about mushrooms and how they live and grow. Get some tips on how to find and identify the edible ones and what ones to stay away from.

Wild Edibles: Learning to Hunt: Wild Edibles

Date: Saturday, April 13, 2024 9:00 am - 11:30 am

Location: Andy Dalton Shooting Range

It's unbelievable what nature provides! Join us with special guest, Bo Brown, to find out what is in the outdoors that is edible and what you need to stay away from. Bo will show us some of the everyday plants that we see in our garden or on walks that are healthy for the body.

Register for these events and others at mdc.mo.gov/events

Welcome Members!

Graham Bachman
Lori Brinkman
Chase Dahmm
Jack Hambene
Ella Ho
Gary Jambazian
Tim Kendall
Rob Kienle
Ryan Lindsey
Ethan Lowrey
Amanda Mann
Daniel Moak
Lisa Morin
Kerrigan Morton
Devan Osburn
Gabriella Parkhill
Betty Rieger
Sidney Shelby
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Apply for free trees through Project CommuniTree!

Everyone, regardless of financial status or zip code, deserves to live among trees. Tree canopy provides social, environmental, and economic benefits to communities and should not be reserved only for the privileged few.

Project CommuniTree subsidizes the cost of growing potted trees at Forest ReLeaf's tree nursery and arboretum in St. Louis County's Creve Coeur Park. The 3-gallon saplings are offered free of charge to public and nonprofit partners who plant and maintain this new community investment. The program distributes over 10,000 trees to more than 250 partners every year and mobilizes more than 3,000 volunteers to participate in the tree planting process.

Apply for trees today!

