

green horizons

Growing tomorrow's future today.

Winter 2021

A newsletter from the Center for Agroforestry in conjunction with the Forest and Woodland Association of Missouri <http://www.centerforagroforestry.org/pubs/newsletters.php> Editors: Mike Gold, Hank Stelzer, Hannah Hemmelgarn, and Raelin Kronenberg

Brown-headed Nuthatches return to Missouri pine woodlands

Kristen Heath-Acre, Research Assistant, School of Natural Resources
Frank R Thompson III, Research Wildlife Biologist, USDA Forest Service
Sarah Kendrick, State Ornithologist, Missouri Department of Conservation
Tom Bonnot, Research Assistant Professor, School of Natural Resources
Jane Fitzgerald, Central Hardwoods Joint Venture, American Bird Conservancy

Forty-six Brown-headed Nuthatches were released in restored shortleaf pine woodlands of Mark Twain National Forest in Missouri in August and September 2020 after years of collaborative effort by state and federal agencies. The Brown-headed Nuthatch is a small and charismatic songbird with a squeaky call like a rubber ducky. They were reported in Missouri over a century ago but disappeared, likely due to the loss of pine woodlands caused by exploitative logging and fire suppression in the late 1800s and early 1900s. This reintroduction was made possible by decades of habitat restoration by Mark Twain National Forest and partners as part of the U.S.D.A. Forest Service's Collaborative Forest Landscape Restoration Program (CFLRP).

Many species of birds of conservation concern are benefitting from the landscape-level habitat restoration practices that are being used by the CFLRP to restore pine woodlands. However, Brown-headed Nuthatches needed a helping hand in returning to Missouri. The Brown-headed Nuthatch is a non-migratory, resident bird that does not typically fly long distances. Therefore, it was highly unlikely they would find their way to restored habitat in Missouri that is over 200 miles from the nearest populations in Arkansas. Given these circumstances, and with widespread support by stakeholders, our team moved Brown-headed Nuthatches from a large population on the Ouachita National Forest in Arkansas to southeast Missouri.



Shortleaf pine woodland. Photo credit: MSU Extension Service/John Kushla

 Center for Agroforestry
University of Missouri 

The 12th Annual Agroforestry Symposium: Community Health & Resilient Food Systems

A virtual gathering with engaging webinars, research posters, exhibitors and roundtable networking.

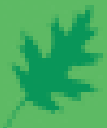
January 28 – 30, 2021 | 9am – 12:30pm CT each day

Entirely Online!
Free and Open to the Public!
Register at https://whova.com/portal/registration/agrof_202101/

More information at <http://www.centerforagroforestry.org/events/symposia.php>

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Our team worked in collaboration with state and federal agencies and conservation groups in Missouri and Arkansas and with nuthatch expert Jim Cox from Tall Timbers Research Station in Florida. We captured nuthatches in Arkansas and transported them by plane to Missouri. We marked nuthatches with color-bands and half were tagged with a tiny radio transmitter about the weight of a paperclip. This made it possible for us to track their movements and survival after their release in Missouri. Our goal is to release 100 nuthatches over two years and this year's release of 46 birds puts us well on our way to meeting that goal.

Our monitoring efforts suggest the birds are doing great in Missouri. We experienced no mortalities during the capture, translocation, and release. The birds are moving around and exploring the pine woodlands on the CFLRP, socializing in small groups as we would expect them to. This is a great example of ecosystem restoration -- when you bring back the habitat, you can bring back some of the species that have been lost along the way. We brought the squeak back to Missouri! We encourage people to visit these restored shortleaf pine woodlands in the area 5 miles south of Fremont Missouri off Highway J and look for this charismatic species. There is also a self-guided tour of the larger restoration effort (<https://oakfirescience.com/current-river-pinery-self-guided-tour>).

Besides documentation that this bird once occurred here, this reintroduction is particularly relevant from a climate change perspective. Our research suggests these pine-woodland ecosystems are well adapted to predicted future changes in our climate. This release in many ways is a test of a practice that may be needed in the future to help some species keep pace with climate change.

Collaborative partners that made this reintroduction possible include the Missouri Department of Conservation, U. S. Forest Service's Northern Research Station, Mark Twain National Forest, Ouachita National Forest, Tall Timbers Research Station, University of Missouri, Arkansas Game and Fish Commission, the Nature Conservancy, and the Central Hardwoods Joint Venture.



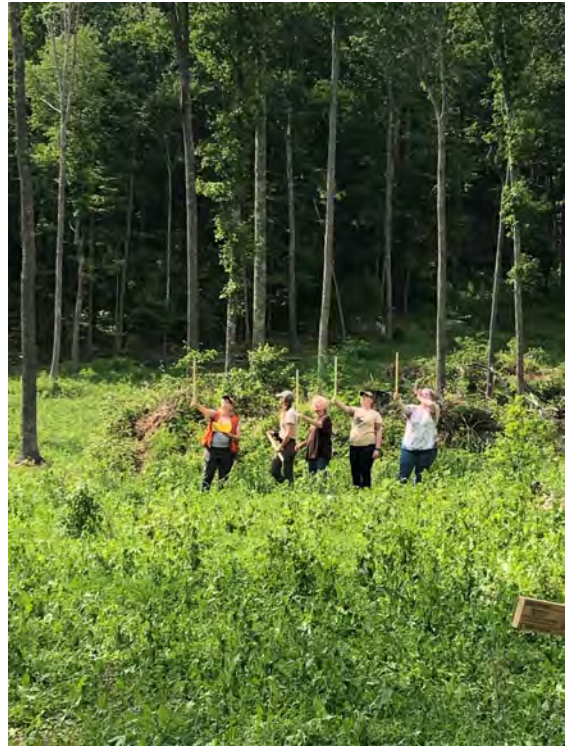
Researchers put color bands on the nuthatches prior to release so they can be individually identified when resighted during monthly surveys to determine their movements and survival.

Women Owning Woodlands - Missouri

Sarah Havens, Field Specialist in Natural Resources, MU Extension

Women Owning Woodlands (WOW) is a national initiative that was originally funded by the U.S. Forest Service. The program is now overseen by the Forest Stewards Guild. The initiative provides information and connections to women in natural resources positions to encourage women landowners in stewardship of their land.

The WOW program was started in Missouri in 2019. That year, introductory programs were started at several locations around the state. These programs invited women to learn about WOW and meet other women landowners. A WOW Timber Sale workshop was also held in Phelps county in November of 2019. This program was coordinated with Missouri Department of Conservation, the Natural Resources Conservation Service and the James Foundation at Maramec Springs. Ten women participants learned about the process of having a timber sale and then toured an MDC timber sale and heard from an MDC forester about the objectives of the sale.



WOW participants learning to use biltmore sticks to estimate tree trunk diameter and height.



In 2020, WOW-Missouri was set to hold several face-to-face programs and two field days with various partners across the state. When COVID necessitated the cancellation of in-person gatherings, Women Owning Woodlands Lunch and Learns were scheduled instead, to grow the program and allow women landowners to begin connecting with each other virtually. The virtual Lunch and Learns covered topics ranging from forest

management practices to invasive species to wild edibles. Guests were included from MDC, Pheasants/Quail Forever and University of Missouri Science, Technology and Biology departments. In August of 2020, WOW partnered with Pheasants/Quail Forever in Missouri through Women Caring for the Land and held a joint forest management practices field day in Ste. Genevieve. This program covered forest stand improvement, prescribed fire and timber sales.

The Lunch and Learn events were such a success that they will continue in 2021! This year, WOW-Missouri will start hosting the Lunch and Learns on a weekly basis and with a virtual timber sale workshop in February. We will continue to offer programs virtually to try and connect women landowners with each other and with natural resources professionals. This program aims to empower women landowners in an open and inviting environment and promote good land stewardship.

Questions about WOW-Missouri can be directed to Sarah Havens, Field Specialist in Natural Resources with MU Extension at havenss@missouri.edu or by calling 573-458-6260.



The Case of the Mystery Seed

Sarah Phipps, Missouri Department of Agriculture

Every detective case begins with a deep voice describing the scene, “On a Friday, late in the afternoon... the end of July 2020, the state entomologist was nestled in his office when he came across a curious email. Unsolicited seeds from China were being sent to Missourians. Residents across the state were receiving small packages containing seeds labeled as earrings, rings and other small items. What sort of seeds, you ask? Why are they being shipped to people that didn’t order them? Well, that is part of the mystery. Stay with me as I explain.”



Packet of acorns received in an unsolicited seed shipment from China. Photo credit: Collin Wamsley

The scam is called “brushing.” An e-commerce vendor acquires names and addresses and creates fake accounts. They ship the unaware recipients an inexpensive product, seed in this case. Once shipped, the vendor, under the guise of the recipient, submits a five-star positive review on the recipient’s behalf to boost ratings and increase visibility on e-commerce sites.

The narrator continues, “What is the trouble of this “brushing” scam? Well take your pick: The unsolicited seed could be invasive, introduce diseases to local plants or be harmful to livestock. All foreign seeds shipped to the United States should have a health certificate guaranteeing the seeds meet import requirements. “Unsolicited seeds can be trouble — trouble I say.”

The National Identification Services (NIS) through the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is aiding in identifying the mystery seeds. As of Dec. 4, 2020, the USDA has collected 18,854 packages from all 50 states. Examinations of 8,482 of those packets has identified a total of 469 taxa of seeds. Most of the seeds are common horticultural and ornamental species. They include common seeds such as sunflower, Brassica (i.e., mustard plants such as broccoli, cauliflower, cabbage, rutabaga, bok choy), basil, beet, radish, watermelon, cucumber/melon, pumpkin, rose, carrot, tomato, corn, celery, dill, lettuce, pepper, onion, green bean, coriander and others.

Thus far, the USDA has detected multiple “bad players” including two quarantine insect pests using X-ray and three Federal Noxious weeds based on identifications by APHIS botanists: water spinach, *Ipomoea aquatica*, dodder, *Cuscuta* sp., and turkey berry, *Solanum torvum*. Also, six quarantine significant viruses or viroids have been identified using molecular testing. This emphasizes the need to raise public awareness about this scam. We want people aware that these unsolicited seeds have not followed proper protocol and, if planted, could bring an invasive pest or plant to your home garden.

Thankfully, Missouri has received approximately 1,600 reports from residents with the Missouri State Plant Health Director’s office having collected approximately 800 packages and submitted 472 seed samples for identification to APHIS’ National Identification Services (NIS). Missouri’s species list was identified from 72 different seed taxa. Some of the seeds identified included corn, citrus, pigweed, zinnia and hibiscus seeds. Missouri received the following tree or shrub species from the seed samples: *Acacia*, *Citrus*, *Malus*, *Moringa*, *Prunus* and *Quercus*. While this is an encouraging start, we need to get the word out as much as possible to continue reporting any unsolicited seed that has been received.

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The Missouri Department of Agriculture works closely with the USDA-APHIS to prevent the introduction of invasive species and protect Missouri’s diverse agricultural industry. The majority of the seed packets were received in August and September 2020, but Missouri residents are still reporting shipments of unsolicited seeds. Please help spread the word that if you receive an unsolicited seed package in the mail, hold onto the seeds and packaging, including the mailing label, and contact APHIS for further instructions. Any unsolicited seeds received can be reported to: <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/news-info/unsolicited-seeds>.

LEFT: Unsolicited seeds from countries such as China and surrounding areas. The seeds are sent in packages usually stating that the contents are jewelry, specifically stud earrings, bracelets and other accessories. Photo credit: Collin Wamsley



EVENT HIGHLIGHT!

Missouri Natural Resources Conference (MNRC) Natural Resource Conservation in a 5G World

Conference date: Feb 2-4, 2021, Web link: www.mnrc.org



The Missouri Natural Resources Conference (MNRC) is an annual meeting organized and sponsored by the Missouri Chapter of the American Fisheries Society, The Missouri Chapter of the Society of American Foresters, Missouri Chapter of the Wildlife Society and the Show-Me Chapter of the Soil and Water Conservation Society. This unique blend of disciplines, represented by the four societies, promotes wise use and management of Missouri’s natural resources. Each year the conference hosts approximately 1,000 established and aspiring natural resource professionals who meet to exchange information and ideas and encourage continued cooperation among resource professionals, agencies, and other natural resource stakeholders. Cooperating agencies are the Missouri Department of Conservation; University of Missouri, School of Natural Resources; Missouri Cooperative Fish and Wildlife Research Unit; U.S. Forest Service and Natural Resources Conservation Service.

Keynote: Dr. Pamela M. Bachman, PhD. Digital Ag & Sustainability Manger, The Climate Corporation
Dr. Bachman is an environmentalist with the goal to build partnerships between the agriculture and conservation community to promote wise and sustainable use of resources while increasing productivity through modern agriculture. She has experience working successfully across sectors building trust-based relationships to leverage scientific expertise and outreach/communication skills to influence policy & opinion to support sustainable agriculture.



Leave the Leaves

Carol Davit, Executive Director, Missouri Native Foundation

"Fallen leaves and spent stems provide important shelter for native bees, snails, salamanders and more in forests, woodlands, and yards."

Through the mastery and mystery of plant chemistry, leaf abscission occurs every fall in Missouri's woodlands and forests, and petioles detach from deciduous tree and shrub twigs, sending cascades of colorful leaves to the ground.

Hiking through Missouri with crunchy leaves underfoot is an annual delight. We value neighborhoods with lots of trees—but instead of enjoying those fallen leaves at home, we tend to go into “yard cleaning” mode as soon as they hit the ground.

Why? Because many of us live in houses with trees on our properties, but with lawn underneath them instead of a woodland or forest floor. A light layer of leaves shouldn't hurt your lawn, whereas a heavy layer of leaves can damage or even kill turf—but are leaves the problem, or is it all that lawn?

Lawns are the perfect vegetation to withstand foot traffic: they are ideal for playing ball in the yard, and perfect venues for barbeques or other outdoor events. If you use your yard for these activities, by all means, leave the lawn where you use it. But for other areas of your property, if the only time you are on your turf grass is to mow it, consider “losing the lawn” and instead, “leaving the leaves.”

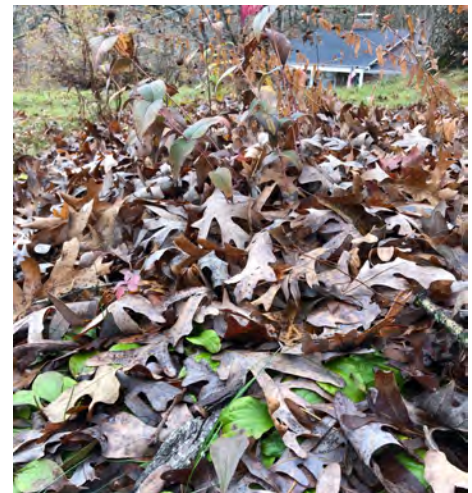
Converting areas of unused lawn into beds of native wildflowers, grasses, and sedges, as well planting more trees and shrubs, will improve the ecological functionality of your yard and make it more interesting. And when leaves fall in these areas, you can leave them be.

As in forests and woodlands, fallen leaves in yards provide year-round habitat for snails, insects, and salamanders, harbor moth cocoons, and shelter and feed many other animals. Snails are food for birds—snail shells provide birds with calcium, which is important for strong bird eggs. Salamanders need insects for food. Moths pollinate plants. In other words, nature isn't alive only in spring and summer, but year round, and fallen leaves and other spent vegetation in your yard are important to nature's web of life.

Resisting the urge to cut back the stems of grasses and wildflowers at the end of a growing season will also benefit many species. Leaving seedheads and plant structure throughout winter provides food and shelter resources for many creatures and gives people opportunities to observe nature up close. In the dormant season, leaving spent stems



The “Leave the Leaves” garden sign, manufactured in Missouri, is available for sale through the Grow Native! program.



Fallen leaves in native plant beds provides habitat for many small creatures. Photos by Carol Davit

of native grasses and wildflowers standing throughout the winter not only gives vertebrate animals shelter, but the stems also are hibernating places for native bees.

If you trim your native garden or landscaping in late winter or early spring, instead of cutting all spent vegetation to the ground, leave some 8- to 22-inch tall stems to provide nesting areas for stem-nesting native bees. Bees develop in these stems over the course of a year. New growth will hide the stubble.



Become a Tree Keeper

Meridith McAvoy Perkins, Executive Director, Forest ReLeaf of Missouri

Tree care can be an intimidating topic. Whether you are managing problems on established trees or trying to plant new ones, just figuring out where to begin is a challenge. Books can be outdated or too general. Online resources are often specific to the wrong region, contradictory or outright wrong. Wouldn't it be great if you could get accurate advice and instruction from local industry professionals, for free, from the comfort of your home? This winter you can!

Forest ReLeaf of Missouri's TreeKeepers classes, presented by Forest ReLeaf of Missouri and sponsored in part by the Missouri Department of Conservation, will be offered February 17th-March 10th, 2021. Classes will be held online each Wednesday night from 6-8pm. This free, six-week course will educate citizens about trees, their benefits and care, and will provide practical, hands-on learning in six key areas: identification, biology, soils, planting, pruning, insect, and diseases.

Each topic will be presented by guest speakers and Forest ReLeaf staff. We will walk you through the steps of good tree care, beginning with tree species identification. You'll learn the basics of how a tree functions, what its needs are, and how you can meet them. We'll discuss the challenges and problems you might face and how to handle them. Classes will include classroom-style presentations as well as practical demonstrations to show you the theory and practice of tree care. Presenters will be available to answer questions in real time to give you the information you need to succeed.

At Forest ReLeaf of Missouri, citizen stewardship of trees is vital to our mission of "planting trees and enriching communities." Trees provide invaluable services to our communities. They clean our air and rainwater, lower our blood pressure, cool our summer air temperatures and increase real estate value. Become a Tree Keeper and you can help your community get the most out of these benefits!

No prior experience required. Graduates are asked to provide 24 hours of volunteer service to Forest ReLeaf or in forestry-related projects in their community. For more information email us at info@moreleaf.org. Register at <https://moreleaf.org/learn/educational-programs/>



Forest ReLeaf of Missouri's Forestry Manager Mark Halpin leads a Tree Keepers class in Forest Park.



The Amazing Cover-up

Lynn Barnickol, Missouri Consulting Foresters Association

Political cover-ups are pretty amazing but more amazing is how trees respond to wounding. When a tree is wounded the tree goes to work as the conductive tissues of inner bark, cambium and sapwood are exposed to harmful bacteria that causes decay. Exposed wood can also attract wood boring insects. Fungal decay spores are in the air and infect the wound immediately. Although a grim situation, many trees survive wounds, but quality of the wood and health of the tree can be at stake.

Your black walnut plantation, your timber stands, or the tree shading your home are all examples of a huge investment worth protecting. Wounds can cause decay and stains that reduce the value of the timber and wood products, and be limiting factors that shortens their life as shade trees. Wounds allow disease to become established in a tree. Intentional scars from pruning or accidental wounds from fire or mechanical damage during lawn mowing or logging cause your trees react to protect themselves through compartmentalization of the wound. University of Missouri research shows that wounds from prescribed and wildfire can range from non-existent to expensive, depending on the size of the fire scaring and length of time until harvest, resulting in both loss of volume and product value.

Surgery or accidental cuts that break our skin require a response of our bodies to heal. If the cut is small there is no perceptible record the injury occurred as our bodies regenerate healing tissues. Trees do not have the ability to regenerate tissue but they do react to the wound by building protective walls of cells that are reinforced by deposits of lignin and extractives in response to the wound. The four-step process is called compartmentalization of decay in trees or CODIT for short. It's a concept documented by Dr Alex Shigo.

Steps 1 and 2) The tree uses lignin to plug pores and vessels above and below the wound attempting to isolate spread of decay through sapwood. 3) A wall forms to the inside of the wound comprised of extractives and lignin to seal the ray cells from transmitting decay toward the heart. 4) Finally, new growth from the healthy cambium attempts to create a living wall of wood to seal the wound to the outside. Over time the wound caused by pruning will result in a cat face (Figure 1) or distorted bark serving as a record of the wound. Even when the cat face is totally concealed by new wood there will be a record of the pruning scar that is revealed when veneer or lumber is sawed from the log. Ideally, the pruning scar is concealed deep within the log so yield of veneer or high grade lumber realized.

LEFT: Figure 1. Arrow points to a "cat face", a distortion in the bark indicating the location of a limb that has been removed. Typically, bumps on logs signal the location of a missing branch. Inside the bark is a knot where a limb was growing and where the tree responded to cover a wound. Note the saw line in the center of the 6-inch diameter log.



Figure 1. "Cat Face"

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Figure 2. The log was sawed to reveal the inside or heart center of the log. Arrow pointing to the bump where wood has formed around the knot from a pruned limb. Note, the limb originates at the pith; it's the biological center of the tree. The limb as living when pruned but wood rapidly compartmentalized the wound so little decay is present

Readers who have attended Walnut Council meetings may have seen Harlan Palm's description of compartmentation of pruning scars. Let's take a trip from the bark into the heart center of a log. The log was cut during a thinning project in Harlan's walnut plantation and was milled to expose the pruning scars. Pictured below reveals how the tree compartmentalizes the pruning wound. Healthy, rapidly growing trees have a better chance to successfully compartmentalize wounds and any associated decay that stressed the trees. Consulting forester Fred Crouse reports anecdotally, that failure to prune off lower branches when the tree is young can lead to a significant reduction of product value. Pruning early in the tree's life is advisable as it helps keep wounds small and allows time for clear wood to cover the wound (Figure 2 and Figure 3).



Figure 3. Note how close to the pith this pruning cut was made. The limb was pruned early so wood accumulated to compartmentalize the wound. Rapid growth of the tree effectively compartmentalized the wound by covering it with wood. Note, there is no perceptible bump in the log. Clear wood is covering the wound.

References and additional information:

- <http://walnutcouncil.org/wp-content/uploads/2018/07/Walnut-Pruning-Guide.pdf>
- <http://walnutcouncil.org/wp-content/uploads/2019/10/Pruning-Black-Walnut-for-Veneer.pdf>
- <http://walnutcouncil.org/wp-content/uploads/2018/11/When-to-Prune-Black-Walnut-trees.pdf>
- <https://www.extension.purdue.edu/extmedia/FNR/FNR-76.html>
- https://www.nrs.fs.fed.us/pubs/misc/ne_aib405.pdf
- http://faculty.missouri.edu/~stambaughm/2014_Marschall_et_al_FORECOL.pdf
- <https://www.purdue.edu/fnr/extension/equipment-damage-to-trees/>



Conservation Planning with NRCS

Joe Alley, NRCS State Forester

Over the last several years, Green Horizons has made a strong effort to make readers aware of opportunities available through USDA conservation programs. This has included dedicated funding for agroforestry practices through EQIP (Environmental Quality Incentives Program) administered by NRCS (Natural Resources Conservation Service), signups for CRP (Conservation Reserve Program) administered by FSA (Farm Services Agency), forest and wildlife habitat improvement opportunities offered in EQIP and CSP (Conservation Stewardship Program), and regionally targeted programs such as RCPP (Regional Conservation Partnership Program) and JCLRP (Joint Chiefs Landscape Restoration Partnership). Did you catch all of that? Do you remember all of the details about these programs, application deadlines, etc.? My NRCS career is old enough to vote and I can't remember all of these details. Programs change from year to year. How do you keep up?

The key to keeping up with programs is to focus first on CONSERVATION PLANNING and let the programs fall into place after. While our programs have annual application deadlines, you can apply at any time. By planning up front though, you will be better positioned to make decisions and take advantage of programs as they become available. NRCS staff and our partners are trained to be conservation planners – to work with private landowners and help them identify and solve problems on their land using conservation practices. In NRCS lingo, problems are referred to as “resource concerns”. Once resource concerns are identified, then a conservation plan is developed, which identifies planned conservation practices and site-specific requirements (seeding rates, number of trees to plant, acres to burn, designs, etc.). These plans are then used to support conservation program applications.

In the case of forestland, we take conservation planning a step farther and start with a Forest Management Plan or Forest Stewardship Plan (essentially the same but administered by different agencies).



Credit: NRCS

These are in essence conservation plans developed by foresters who are trained to identify resource concerns on forestland and recommend forestland-specific conservation practices. Among other things, these Plans will divide a wooded acreage into manageable units (stands) and prioritize practices based on forest conditions and landowner objectives. This is a huge benefit for forest landowners, many of whom have trouble “seeing the forest for the trees” and don't know where to start their management activities. Additionally, NRCS requires a Forest Management/Stewardship Plan to be developed prior to receiving financial assistance for implementing forest management practices. There are several avenues to find a forester to develop a Plan, including working with a Department of Conservation Forester. Another option is to utilize NRCS EQIP funding to hire a Forestry Technical Service Provider to develop a Forest Management Plan.

USDA conservation programs offer great opportunities to private landowners. But don't wait for the next program application deadline. Be proactive and contact your local USDA Service Center sometime soon (find your Service Center at <https://www.nrcs.usda.gov/wps/portal/nrcs/mo/contact/local/>). Let them know that you would like some help with “enter-your-problem/resource-concern-here” and that you are interested in any programs that may be available to you. They will be happy to help!



The Bid Box

Hank Stelzer, MU Extension – School of Natural Resources, University of Missouri

This edition of The Bid Box features a sale on the MU Hugo Wurdack Research Center near Cook Station. Approximately 1,000 acres of the 1,200-acre farm is in timber. A recently updated management plan revealed one compartment, harvested in 1996, was ready for another harvest.

Dent County, Missouri

- 140 acres
- 1,547 marked trees; 955 were white oak with remainder being other oak species
- Estimated total volume: 271,720 bd.ft.; 191,600 bd.ft. were white oak (International ¼ Scale)
- The consulting forester estimated the market value to be \$80,000.
- Two bids received
 - \$90,510.00
 - \$67,350.00
- Return: \$646/ac

Forest management pays! Most folks think a timber sale is a once in a lifetime proposition. But, the selective harvest in 1996 ‘weeded the woodland garden’ allowing for the growth potential of the farm’s below average soils to be placed on the best remaining trees... and another harvest!

We will be following all aspects of the harvest in the coming months; from the felling of trees to the milling of logs. So, stay tuned in future issues of Green Horizons!

To help you become familiar with some of the aspects of selling timber, check out the following MU Guides:

G5051 – Selling Timber: What the Landowner Needs to Know

G5057 – Basic Elements of a Timber Sale Contract

G5056 – Managing Your Timber Sale Tax

These Guides will help you better understand the ins and outs of marketing your timber and help you help your professional forester!

MU Extension Woodland Steward Winter Webinars

University of Missouri Extension kicks off a new year of Missouri Woodland Steward programs to help family forest landowners learn more about how to manage their woodlands.

MU Extension state forestry specialist Hank Stelzer and natural resources field specialist Sarah Havens teach the virtual sessions on Tuesday evenings in January and February.

They will share online educational resources, basic tree identification, planting native trees and shrubs, selling timber, managing woodlands for timber and wildlife and invasive plants.

The Tuesday evening sessions begin January 12 and end February 16. Each session will begin promptly at 7:00 PM and conclude no later than 8:30 PM. For \$30, participants may choose any three of the six sessions or may attend all six for \$40.

Cannot make a live session? No Problem! All sessions will be recorded AND available throughout 2021.

Register at <https://extension.missouri.edu/events/missouri-woodland-steward-winter-webinar-series> or contact Havens at havenss@missouri.edu or 573-247-3082. ADA accommodations are available.



NRCS – Agroforestry Spotlight Silvopasture in Southwest Missouri

Joe Alley, NRCS State Forester

Robert Marsh has been managing livestock for over thirty years on his farm in southwest Missouri. He began experimenting early on with tree crops and silvopasture as ways to improve productivity and sustainability, and his current silvopasture system encompasses a sixteen-acre creek bottom field. Silvopasture is an agroforestry practice that combines livestock, forages, and woody plants on the same acreage. Katahdin sheep are Robert's primary market livestock, but he also raises a few steers each year for beef to share with friends and family.

Robert's approach to silvopasture is a little different than the "poster-child" design where trees are evenly spaced across a pasture. Robert wanted to maintain more flexibility for utilizing his land and settled on establishing trees in widely spaced rows. The rows are one-hundred feet apart with trees spaced twenty to thirty feet apart within the rows. In the short term, shade is relatively limited with this design. However, as the trees mature, each pasture will have a mix of shaded and full-sun zones that will promote diversity in forage type and production and encourage improved grazing distribution. Additionally, the wide spacing provides other management options, such as haying, that would not be as practical with grid-spaced trees.



Photo courtesy of Tiny Attic Productions

The long narrow pastures in Robert's design are defined by electric fencing running along each tree row. The fencing provides three purposes. First, the fence defines the side boundaries for each pasture. Second, each one-hundred-foot-wide pasture can be easily subdivided into smaller paddocks by running temporary electric fencing between the fences in the boundary rows. Third, the fence provides for a simple method of protecting the trees from browsing. At each tree, a loop of wire is connected to the electric fence and encircles the tree, keeping livestock at bay. This "two-birds-with-one-stone" approach is a common theme for most things on Robert's farm and is a big key to his success.

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Robert has experimented with several types of trees but the primary species in his silvopasture are thornless honeylocust and pecan. The pecans are a recent addition, bringing nut production to the enterprise in the near future. Pecans produce a relatively light shade which is an important characteristic for silvopastures. Thornless honeylocust provides multiple benefits and is very well suited to silvopasture systems. These trees provide a light shade that benefits livestock while having little impact on forage production. In fact, Robert notes that during a drought, grass remains green under honeylocust while drying up in the direct sun. In addition to beneficial shade, the thornless honeylocust that Robert has planted are a variety known for their pod production. The pods have a high sugar content and are consumed by livestock, providing an additional source of forage. Honeylocust is also a legume and adds nitrogen to the soil. This benefits forage production as well as overall soil health. Note that while the planted trees are thornless, the seeds from them may or may not produce thornless seedlings. However, any seedlings that germinate are also a tasty forage for the sheep and cattle.

Robert recently added a third woody component to his silvopasture, the shrub false indigo (*Amorpha fruticosa*). Through his research, Robert learned that this native shrub provides excellent forage qualities and readily resprouts. It is also a legume, and like honeylocust will add nitrogen to the soil and benefit soil health. He established the false indigo in double rows in very narrow paddocks (fourteen-foot wide). One side of the paddock is located along an existing tree row and thus incorporates honeylocust, pecan, and false indigo in the same paddock. This design is currently in the experimental stage and is limited to one pasture. However, Robert plans to add more false indigo paddocks if this system is successful. In addition to providing more forage, multiple rows of false indigo would slow flood flows when the local river jumps its banks.

Robert Marsh has created a diverse, productive, and sustainable farm using practical and well thought out techniques. His operation is a shining example of how silvopasture can be tailored to fit multiple objectives while maintaining flexibility. I hope learning about Robert’s approach will inspire some of you to make silvopasture work for you. Contact your local NRCS office for additional assistance in planning silvopasture and other agroforestry practices.

NRCS Service Center Locator: <https://offices.sc.egov.usda.gov/locator/app?agency=nrsc>



Course Schedule:

- FEB 23 - Course Orientation
- MAR 2 - Healthy Soils, Healthy Plants
- MAR 9 - Right Plant, Right Place
- MAR 16 - Basic Lawn Care
- MAR 23 - Gardens & Groundcovers
- MAR 30 - Basic Tree Care
- APR 6 - Integrated Pest Management
- APR 13 - Slow the Flow: Stormwater Management

Healthy Yards for Clear Streams to Begin February 23

Hank Stelzer, MU Extension

Healthy lawns make for healthy streams. University of Missouri Extension will once again offer the online course *Healthy Yards for Clear Streams* beginning February 23. The eight-week course will take homeowners through a series of best practices to reduce chemical usage around the yard and slow the flow of stormwater runoff.

Participants will participate a live Zoom on February 23 to ensure everyone can get into the online course and feel comfortable navigating once inside. After the first meeting, participants will view recorded sessions the week leading up to a live Q&A session with the featured presenter. Participants will earn the Yard of Merit Award by completing seven easy assignments, one for each module.

The cost of the program is \$40. Registration will be open soon on the MU Extension website. Simply type the words ‘Healthy Yards’ in the search window.

Healthy Yards for Clear Streams offers homeowners information to share with their neighbors to improve practices for beautiful lawns and healthier waterways. You can make a difference!



Good News for 2020: Individuals and Groups Recognized for Invasive Plant Action in Missouri

Tina Casagrand

As public awareness grows about the harmful effects of invasive plants, the Missouri Invasive Plant Task Force (MoIP) recognized two individuals and one group in Missouri who have exhibited outstanding work controlling invasive plants on property across the state. These Action Awards seek to demonstrate how controlling the spread of invasive plants on Missouri farms, forests, woodlands, prairies, gardens, roadsides and along waterways is wise stewardship. A recommendation by a natural resource professional is required to be eligible. Members of MoIP evaluate nominations. “There are many individuals and groups carrying out impressive invasive plant control in every corner of the state,” says Carol Davit, chair of MoIP and executive director of the Missouri Prairie Foundation. “We want to recognize those doing exemplary work and present them with an award at an event of the awardee’s choice to be honored in front of their peers.”



Hillside where honeysuckle was covering the rock faces, which are in the background. Bryan used a hack and squirt method to treat the invasive plants. Photo provided by Jason Bryan.

2020 Invasive Plant Action Award for Individual Citizen: Jason Bryan

MoIP members chose Boone County landowner Jason Bryan as the recipient of the Individual Citizen award. “Like most landowners I deal with, Jason was interested in managing his property for better wildlife habitat to increase deer and turkey use, but most importantly he wanted to leave the property in better shape that it currently was,” Missouri Department of Conservation (MDC) Private Land Conservationist Ryan Lueckenhoff wrote in his nomination. He noted that multiflora rose (*Rosa multiflora*), wintercreeper (*Euonymus fortunei* ‘Coloratus’) and bush honeysuckle (*Lonicera maackii* and *Lonicera x bella*) were common through the wooded areas on the property, and they were getting worse. On one rocky outcrop, Lueckenhoff says, “Bush honeysuckle was so thick that you could not see from the top of the hillside through to the bottom and little to no wildlife were using the area.” He worked with Bryan to develop a 10-year plan for the property, with invasive species removal at the top of the list. The Bryan family started removing invasive plants the first year and have seen incredible success, with new visibility and returned wildlife.

Members of MoIP have gathered resources, tools, and guides that help landowners understand, assess, and manage invasive and exotic plants commonly found in Missouri, including those found on Bryan’s property. Lueckenhoff added that Bryan understands the importance of follow-up treatments. “His commitment to this removal effort has been awesome to see!”

Continued on page 15...

2020 Invasive Plant Action Award for Individual Professional: Roger Frazier

MoIP is proud to present MDC Priority Habitat Coordinator Roger Frazier with the Individual Professional award. “Roger Frazier has a long history of supporting Conservation for all the right reasons,” writes MDC private land services chief Jason Jensen in his nomination. “For him, it is not just a job, and not even just a profession; it is his passion and his lifelong commitment to protect, conserve, and serve Missouri’s Natural Heritage. But putting all that aside, we are nominating him for this award because of his recent efforts that have gone way beyond even what the most demanding of us would call above and beyond.” Adam Frazier has an extensive list of invasive plant success stories including developing the Southwest Missouri Region Invasive Species Strike Team who worked tirelessly to prevent the spread of invasive plant and protect Conservation Opportunity Areas. Frazier is also recognized for serving as a member of MDC’s Invasive Species Coordination Team, helping to start and secure funding for the Scenic Rivers Invasive Species Partnership, and working with the City of Farmington and AmeriCorps on the Engler Park Eradication project.

Furthermore, Frazier’s duties as Priority Habitat Coordinator have kept him continually engaged with both MDC and Natural Resources Conservation Service staff on invasive species management on private land. “For those of us that work alongside Roger, even these words do not fully express the level of commitment and contribution Roger has made towards true invasive species management in Missouri,” Jensen writes.



Spearheading the development of the Southeast Missouri Region Invasive Species Strike Team is just one of Roger Frazier’s invasive plant accomplishments. Photo provided by Jan Dellamano.



2020 Invasive Plant Action Award for Group Collaboration: Jason Jensen, Jan Dellamano, Roger Frazier, Chris Rutledge, Mark Auffenberg, and Tony Jaco

This group collaboration started in 2007 as a grassroots effort led by Jan Dellamano and the local MoDOT shed. Over the years, it has transformed into a long-term commitment to address the growing problem of invasive plant spread on highway rights-of-ways (ROW). This effort has been effective in stopping the spread of extremely invasive plants such as spotted knapweed (*Centaurea stoebe* L. subsp. *micranthos*) and teasel (*Dipsacus fullonum* L. and *D. laciniatus*).

This project has had many facets including conceptualizing, planning, gaining and developing administrative and budgetary support, equipment, and implementation on the ground. All of this occurred with the cooperation of two state agencies (MDC and MoDOT), and a nonprofit organization, the Missouri Prairie Foundation (MPF). (MPF is excluded from the award, due to the nature of MoIP's being housed under MPF's Grow Native! program).

"I drive I-55 between Cape Girardeau to St. Louis with regularity, and I can see a clear difference between areas impacted by this arrangement and those that have no such treatment," writes Tony Jaco, Southeast Regional Administrator for MDC, in his nomination. "I have witnessed a decline of teasel, *sericia lespedeza*, autumn olive, and spotted knapweed. This impacts the area treated with herbicides specifically, but it has a larger reach as the mowing equipment used by MODOT will not have carry as much seed debris from invasives which leads to spread of the invasives. It also benefits the watersheds I-55 touches because seed stock will not be flowing down stream to infect new properties."

This pilot program has caught on and is being considered and/ or replicated in other parts of the state.



Two state agencies and a nonprofit organization are engaged in a long-term project to address the growing problem of invasive plant spread on highway rights-of-ways. Photo provided by Chris Rutledge.

The Missouri Invasive Plant Task Force (MoIP) is a resource of Grow Native!—a 19-year-old native plant marketing and education program serving the lower Midwest. Grow Native! is administratively housed by the nonprofit Missouri Prairie Foundation. For more information about MoIP, visit www.moinvasives.org, email info@moinvasives.org or call 417-299-1794; for more on the Grow Native! program at grownative.org or for more on the Missouri Prairie Foundation visit moprairie.org

Reminder: By definition, invasive plants are those not native to a region whose abundance and/or rapid spread that harms economic and environmentally important resources.

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Past issues of Green Horizons are available on the Center's website: www.centerforagroforestry.org



Calendar of Events

12th Annual Agroforestry Symposium: Community Health & Resilient Food Systems

January 28, 29, 30 2020 | 9:00am - 12:30pm | Online

In response to the ongoing challenges we collectively face at this time, including the coronavirus pandemic, climate change, and inequities in social, environmental, and economic realms, the University of Missouri Center for Agroforestry seeks to share and support creative solutions. From healthy, accessible food that supports disease-resistant bodies, to innovative strategies for strong local economies, and community engagement for improved equity and awareness, the 2021 Agroforestry Symposium will highlight inspiring efforts and leaders who are paving a way to comprehensive community wellness. The symposium is free and open to the public, but advanced registration is requested: https://whova.com/portal/registration/agrof_202101/

Missouri Woodland Steward Winter Webinars

January 12 - February 16, 2021 | 7:00 - 8:30 pm | Online

\$30 for any three or \$40 for all six webinars. Register at <https://extension.missouri.edu/events/missouri-woodland-steward-winter-webinar-series> or contact Havens at havenss@missouri.edu or 573-247-3082. ADA accommodations are available.

JAN 12 – Getting to Know ‘The lay of your land’: Online Resources and More!

JAN 19 – Basic Tree Identification

JAN 26 – Right Tree, Right Place: Planting Native Trees & Shrubs

FEB 2 – Selling Timber: What the Landowner Needs to Know

FEB 9 – Have Your Cake and Eat It Too: Managing Your Woodlands for Timber and Wildlife

FEB 16 – Invasive Plants: Real Threats to Tomorrow’s Woodland

Healthy Yards for Clear Streams

February 23 - April 13, 2021 | MU Extension | Online

This eight-week course, will take homeowners through a series of best practices to reduce chemical usage around the yard and slow the flow of stormwater runoff. Cost is \$40. Registration opening soon on the MU Extension website. Simply type the words ‘Healthy Yards’ in the search window.

FEB 23 – Course Orientation

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APR 13 – Slow the Flow: Stormwater Management

Food Animal Concerns Trust (FACT) Webinars

January - February, 2021 | FACT | Online webinar

Webinars focus on pasture management and livestock health to create resilient grazing systems. All webinars are free and open to the public. Register and view archived sessions at <https://foodanimalconcernstrust.org/webinars>

Calendar of Events Continued

Development of the Agricultural Conservation Planning Framework (ACPF) and Use by NRCS for Watershed Planning

January 28, 2021 | 3:00pm | NRCS | Free Webinar

Nutrient and sediment losses from agricultural watersheds have impacts on U.S. aquatic and marine ecosystems. Improving agricultural water quality requires planning and voluntary installation of new conservation practices through producer engagement. To help meet this challenge, ARS scientists in Ames, Iowa, have developed the Agricultural Conservation Planning Framework (ACPF) to provide watershed databases and software tools that can be used to present realistic options for placement of conservation practices that can improve water quality outcomes. <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?cid=nrcseprd1576043>

Savanna Institute Webinars and Conversations

January - February, 2021 | The Savannah Institute | Webinar

Webinars cover the latest research, challenges, and opportunities facing our agriculture systems and how agroforestry practices fit into adapting to the changes in food, farming, and sustainability. View details and register at <https://www.savannainstitute.org/events/>

JAN 26 - Conversation: Perennial Farm Gathering Synthesis Session

FEB 9 - Webinar: Value Added Agroforestry Products with Dr. Mike Gold, UMCA

FEB 18 - Conversation: Passing on the Gift of Land

MAR 9 - Webinar: Food Forests, Foodscaping, and Edible Agroforestry with Dr. Sarah Lovell, UMCA

MAR 18 - Conversation: The Role of Land Trusts in Agroforestry

Events: January, February, & March

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
24	25	26 MO Woodland Steward – Tree Planting 7-8:30 pm	27	28 Agroforestry Symposium 9-12:30 am Watershed Plan 3pm	29 Agroforestry Symposium 9-12:30 am	30 Agroforestry Symposium 9-12:30 am
31	1 – February-	2 MO Woodland Steward – Selling Timber 7-8:30 pm	3	4	5	6
7	8	9 MO Woodland Steward – Managing Woodland 7-8:30 pm	10	11 FACT - Solar Grazing Sheep	12	13
14	15	16 MO Woodland Steward – Invasive Plants 7-8:30 pm	17	18 Passing on the Gift of Land Conversation 11:30am – 12:30pm	19	20
21	22	23 Healthy Yards - Orientation	24	25 FACT - Pasture Livestock Resilience	26	27
28	1 – March -	2 Healthy Yards – Healthy soils, Healthy plants	3	4	5	6