PETAL PUSHER

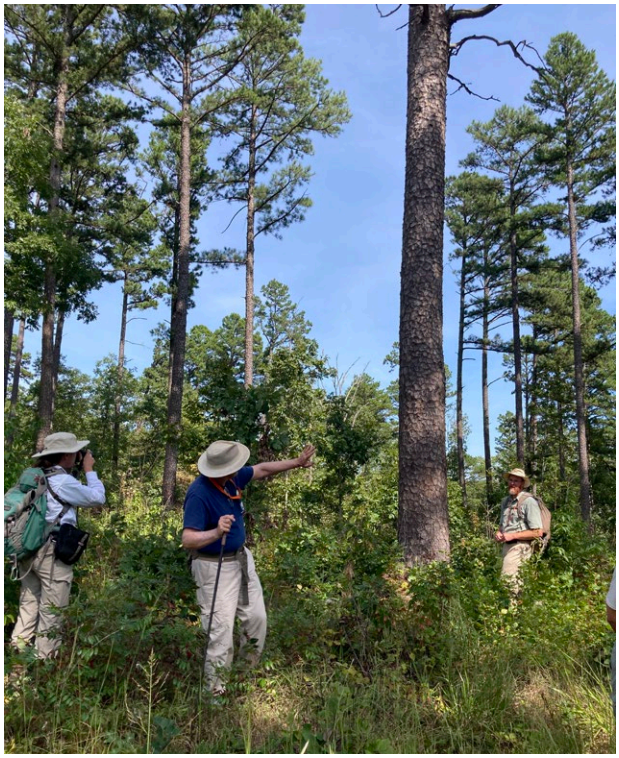
Noovember-December 2021 Newsletter of the Missouri Native Plant Society Volume 36 No.6
"… to promote the enjoyment, preservation, conservation, restoration, and study of the flora native to Missouri."

In this issue

Report of MONPS Fall 2021 Trip (September 24-26)

By Malissa Briggler

Our final state field trips of 2021 were in the vicinity of Eminence. Fall weather had finally arrived with crisp mornings and warm afternoons. On Friday, September 24, MONPS members gathered at the Virgin Pine Stand owned by the L-A-D Foundation. Neal Humke (Land Stewardship Coordinator) was our guide and spoke about the history of the area and the forty-acre patch of pine that had not been logged during a time when virtually all of the pine forests in the Missouri Ozarks were harvested. Neal also explained some of the management history the area had undergone after decades of fire suppression led to the pine forest becoming crowded with deciduous trees. The L-A-D Foundation and partners now manage the forest primarily with prescribed burning, which has brought back species of plants and animals that depend on pine forests. Particularly notable were the return of the prairie warbler and brown headed nuthatch.



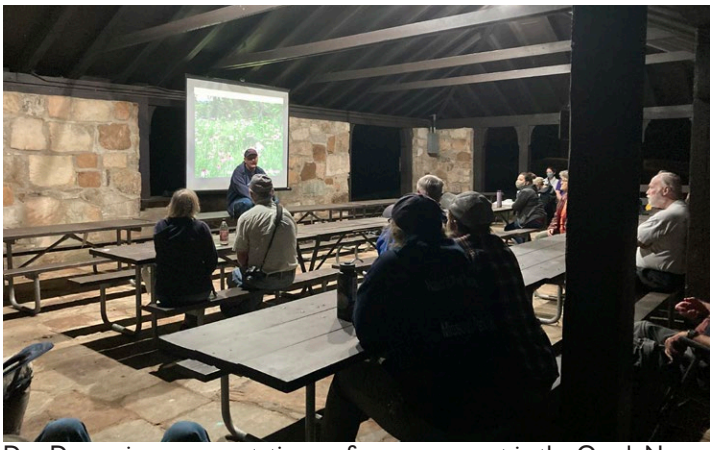
Our gracious hosts, Susan Farrington, Dan Drees, and Neal Humke, admiring an old growth shortleaf pine (*Pinus echinata*). Photo by M. Briggler

On Friday evening, Dan Drees provided a presentation on fire management within the Ozark National Scenic Riverways. He talked about and showed pictures

White leaf mountain mint (*Pycnanthemum albescens*) is characteristic of high quality woodlands and has made a comeback at the Virgin Pine Stand following tree thinning and prescribed fire. Photo by M. Briggler

of how prescribed burning has brought back natural communities that were once suppressed by overstory vegetation. He also mentioned the irony of how land managers historically strived to immediately put out all fire on the area, even going to the extent to patrol for smoke from fire towers, while current land managers have plotted the forest into burn units and actually ignite fires through prescribed burning.

Dan's talk was held at the Alley Mill Pavilion where



Dan Drees gives a presentation on fire management in the Ozark National Scenic Riverways. Photo by M. Briggler

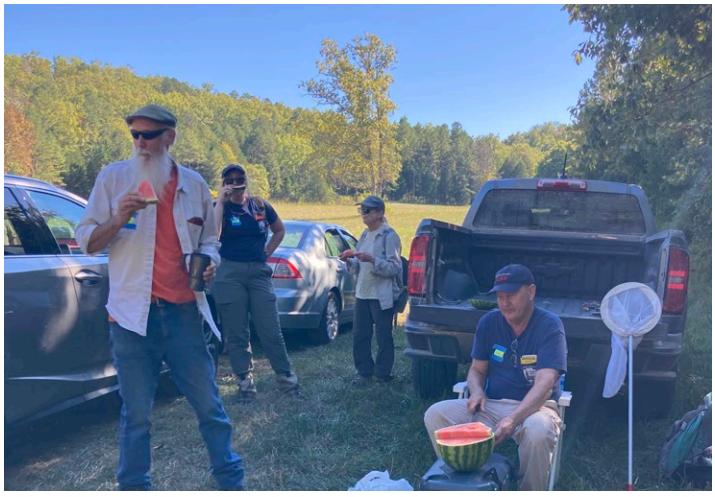
bats had found a place to roost. As Dan's talk began about dusk, the bats were pleasantly awakened by the flying insects attracted to the light on his projector. The information Dan shared, coupled by swooping bats, made for a memorable time.

We began our Saturday field trips at Alley Spring Mill where Dan described some of the management activities on the area and how cultural resources come into play. After walking the trail along the beautiful Alley Spring, we continued along to view some of the woodland communities and fire management responses that Dan had described the night before.

After lunch, our next destination was a portion of the Ozark Trail near Mill Mountain Shut-in. Near the trail, we enjoyed exploring a prairie fen. Although it was very dry, we were still able to detect plant species that are characteristic to fen communities. After some leisure

Riddell's goldenrod (*Solidago riddellii*), a rare plant characteristic of fen communities. Photo by M. Briggler

time at the shut-ins, our group returned to the parking area where Dan was waiting with some slices of delicious watermelon.



Nothing like a refreshing slice of watermelon to finish a field trip. Photo by M. Briggler

The final trip of the weekend was on Sunday, to Angeline Conservation Area. MONPS members hiked along the 1.2 mile Lick Log Hollow Trail. The trail featured scenic overlooks and a population of *Parnassia grandifolia*, a species restricted to calcareous fens within the Ozarks.

Grass-Of-Parnassus (*Parnassia grandifolia*), photo by M. Briggler. Editor's note: this is not actually a grass, despite its common name. Currently, this species is placed in the Celastraceae (the bittersweet family), but it has previously been placed in either its own family (Parnassiaceae) or in Saxifragaceae.

December Board Meeting

The MONPS Board will hold its annual planning meeting over Zoom on Saturday, December 4 at 10:00 AM.

Hope to "see" you there! An e-mail with the Zoom link will be sent to Board members and other interested parties. If you would like to attend, but are not on the Board list, pleasee e-mail Malissa Briggler for the link (malissa.briggler@mdc.mo.gov).

Know the Rules: Help to Protect Vegetation in State Parks and Historic Sites!

By Linda Vogt

Our state parks and historic sites are havens of delicate and colorful native vegetation. These plants form the base of support for our native mammals, birds, herptiles and insects by providing food and places to live and raise young.

As members of the Missouri Native Plant Society, we all enjoy the opportunity to get out on a public trail, learn new species, and re-visit old friends discovered over the years. Furthermore, we all want to protect them so that their ecosystem will thrive into the future.

However, while we may know Latin names galore, we may not all be familiar with the state regulations that are in place to protect the vegetation on public lands. Many of these regulations governing public property are more protective than responsible harvesting practices adhered to by hobby or interest groups. That seems fitting since public areas have greater access and more people traffic than private lands.

The Division of State Parks and Historic Sites, under the umbrella of the Department of Natural Resources (DNR), has some very specific regulations that apply.

Here's a list so that we all know what is FORBIDDEN in state parks and historic sites. No person shall:

1. Pick, collect or remove flowers or other plant parts of any plant species,
2. Plant or remove any vegetation and/or propagules (seeds, roots, etc),
3. Injure the bark, break off limbs or branches or mutilate in any way the trees or shrubbery,
4. Dig or disturb grass areas or pile material of any kind on the grounds, or
5. Dig, move, mar, deface, or remove any…artifacts, relics, stones, trees, shrubs, or plants, downed timber, or other wood materials.

However, numbers 1 and 2 on the above list CAN be done with the written permission of the director. An example might be for purposes of scientific study.

Rules, continued...

And here is a list of what a person CAN do:

1. Collect wild edible fruit, berries, seeds, and nuts (excluding below-ground plant parts), not to exceed a one-gallon container for personal consumption within the state park or historic site,

2. Collect edible mushrooms by hand not to exceed two gallons for personal consumption outside a state park or historic site.

In addition to these rules, Limited Access Areas may be designated for areas that possess unusual natural significance and are vulnerable to damage resulting from public access. An example here could be limiting access to an area containing a threatened or endangered species. If adopted, any other special management rules for additional protection should be posted in the site area where they apply.

Please note that these regulations apply ONLY to parks and sites owned by Missouri State Parks, DNR. Other public land agencies - such as the Missouri Department of Conservation, Department of Transportation, and federal and local entities - have specific regulations that apply to their property.

DNR's regulations can be found in full in 10 CSR 90-2, which are on the internet under the Secretary of State's office or **https://www.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c90-2.pdf?fbclid=IwAR0RvCRLLDeIQGuvzKbEw9LsiHVaxcJCH3jiuSpq8MeHuEpBFwkpVpI7USc**

So, enjoy your visit, but leave all that you enjoyed in the park for those who come after you!

From the Editor

Thank you for bearing with us during these continued uprecedented times.

Thank you to our Assistant Editor, Pam Barnabee for getting everything in good shape before it came to me! Thanks also to our Board members who proofread each issue and all authors, chapter representatives, and other contributors.

Please consider making a submission for a future Petal Pusher! Here is some information for submissions:

A. The theme for the January Petal Pusher is "Winter Botany," but other submissions are encouraged, especially Genus descriptions ("Better know a genus"), Conundrum Corner, Invasive Tip of the Month, Name Change of the Month, and Poetry Corner.

B. Send ONE email saying "here is my contribution on_____," and attach (don't embed) the following:

1) an article in Word format with photo captions at the end (no photos in the Word document) and your name in the text.

2) Images, in JPEG format--NOT in a document file.

C. Use only one space between sentences

D. Even short notes with pictures would be great!

E. Send to: pamela.barnabee@gmail.com (don't send them directly to me!)

F. Due date for the next issue is: December 20

Thank you so much,
Michelle Bowe

Not getting the Missouri Native Plant Society organizational emails?

Most email clients have a "safe senders" mechanism for you to make sure that your email server always sends mail from our MONPS server to your inbox.

*Some just have you add our server to your "Contacts"

*Some have you create "Rules".

*Some have an actual "Safe Senders/Domains" area in the settings.

To ensure that you get the organizational emails please add these two domains to whatever your email's "safe senders" process is: **monps.org** and **webapps.monps.org**

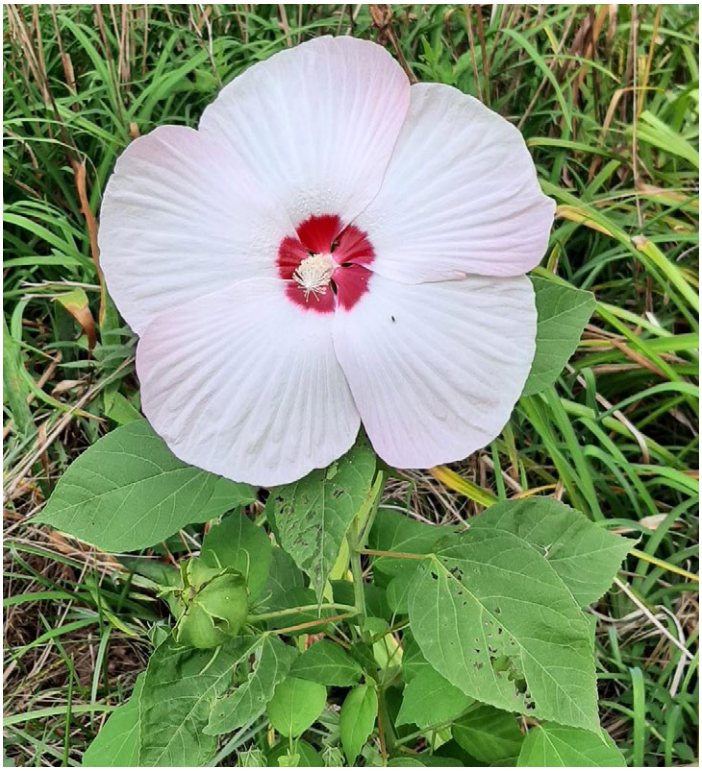
OR: You may simply need to update your email address with us. If so, click this link: https://monativeplants.org/ask-a-question/

The Mallow Family (Malvaceae)

Louise Flenner, Hawthorn Chapter

- Flowers slimy when crushed
- 3 rose mallows - flowers 15 cm across - wet habitats
- 4 poppy mallows - fruit a schizocarp - drier habitats
- 1 sida
- 1 tree, American basswood

My yellow lab, Rufus, and I stepped out into our yard one August morning and he broke into a robust round of barking. He doesn't usually bark so I wondered what had his attention. Then I saw it, too. It was a large white disk that seemed to glow. It was positioned about 3 feet off the ground. In an eerie way, it was staring right at us. With Rufus close behind me, I walked over to see what it could possibly be. Delighted with what I saw, I easily identified it as a rose mallow reflecting the morning sun. Any plant that can produce a flower that scares a dog is impressive in my book. This close encounter with what initially seemed like an alien object sparked my interest in knowing more about the mallow plant family, known as Malvaceae.



Hibiscus moscheutos, photo by L.Flenner

If the mallow family were a human family, the rose mallows (*Hibiscus*) native to Missouri would look like triplets. Rose mallows all bloom with five petals forming a large corolla that can reach 15 cm across. They have a strikingly beautiful magenta center that looks like nature dropped an ink spot there just for the artfulness of it. Emerging from this spot are numerous white stamens fused into a central column around the pistil. Rose mallows don't make good cut flowers, but if you were to pick one and crush the petals, stamens, and pistils in your hand, you would feel the slimy, mucilaginous quality of the plant that helps identify it as a member of the mallow family.

The *Hibiscus* native to Missouri are *H. lasiocarpos, H. laevis*, and *H. moscheutos*.

Hairy rose mallow (*H. lasiocarpos*). Lasiocarpos means "hairy fruit" and refers to the fruit capsule, which is indeed covered with fine white hairs as can be seen in the photo. As the fruit matures, the capsule eventually opens to reveal 18 to 35 seeds that are easily collected out of the upright casing. The undersurface of the leaves is quite hairy and can serve as a distinguishing characteristic when no fruit is present. The leaves have both stellate and simple hairs visible with magnification. They are alternate, simple, ovate, and unlobed for the most part. In the Missouri bootheel, this plant grows for miles in the roadside ditches. I would love to see this someday as I can imagine it is quite beautiful.

Fruit of *Hibiscus lasiocorpus,* photo by L.Flenner

Halberd-leaved rose mallow (*H. laevis*). Laevis means "smooth" referring to the fruits and leaf surfaces. Its flower is a close look alike to *H. lasiocarpos*, but the plant is easily differentiated by its unique halberd-shaped leaves that are smooth and not hairy. The halberd was a medieval weapon with a long triangular point and two side points opposite each other at the base looking much like an arrowhead. This species is found throughout much of Missouri though uncommon in the Ozark region. Although the fruit capsule is not hairy, the seeds are. In *H. lasiocarpos*, the opposite is true: the seeds are smooth and the capsule is hairy.

Hardy hibiscus or swamp rose mallow (*H. moscheutos*). Moscheutos means musk-scented in reference to the odor of the crushed flowers and leaves. This species has smooth leaves and smooth seeds. Its corolla tends to flare out flat like a dinner plate, while the others have a slight cup shape. This is the rose mallow that surprised Rufus and me, partly because I had not planted it and did not expect to see it where it appeared. I can only conjecture that a passing bird deposited the seed. Adding to the mystery of where it came from, I have many hairy rose mallow seeds in my rain garden, but have never seen swamp rose mallow in my yard or any of the neighbors' yards. I'm happy to have the addition as it adapted to the sunny, slightly moist environment where it was planted and I will gladly leave it there and hope for more.

Rose mallows are found mostly south of the Missouri River in counties that border Illinois. They like wet areas like pond edges, sloughs, ditches, even shallow standing water. Although in the same family, the poppy mallows set down their roots on the western side of the state where they enjoy the prairie, glades, and open fields. Both genera grow on roadsides and near railroad beds.

Missouri has four native poppy mallows. They are in the genus *Callirhoe* named after the daughter of the Greek deity Achelous, river god.

Purple poppy mallow (*Callirhoe involucrata*) is probably the most well known. This plant can be seen in many garden plantings across the state. It is a sprawling plant with ascending tips. The flowers are often described as wine colored and its nickname is wine cup. The flowers have five petals and present such a brilliant display of red they are easily identified. They have the central column of stamens surrounding the pistil that is a defining characteristic of the mallow family. The flowers are much smaller than the rose mallows. They measure only about 40 mm. Every part of this plant is interesting. The stems are densely pubescent as are the leaves. The leaves are alternate, mostly palmate. Some are deeply lobed; others are more rounded in shape. The fruit is formed by its superior ovary that consists of 14 to 20 united carpels, as indicated by the same number of styles. Partition walls are present and form an equal number of chambers. The ovary matures as a capsule called a schizocarp as seen in the photo. Attempts to describe the fruit have included comparing it to a round cheese wheel, pie wedges, and orange slices. This shape is indicative of a member of the mallow family and can be found in all the poppy mallows. It blooms May to August.

Schizocarp of *Callirhoe digitata*, photo by Dan Tenaglia, missouriplants.com

Bush's poppy mallow (*C. bushii*) is probably the strongest look-alike to *C. involucrata*. This species is named after the botanist Benjamin Franklin Bush. Its ascending stems, not sprawling like *C. involucrata*, distinguish it.

Fringed poppy mallow (*C. digitata*) is named for its deeply, narrowly lobed leaves - so narrow and plentiful they resemble fringe. It has the characteristic wine cup flower.

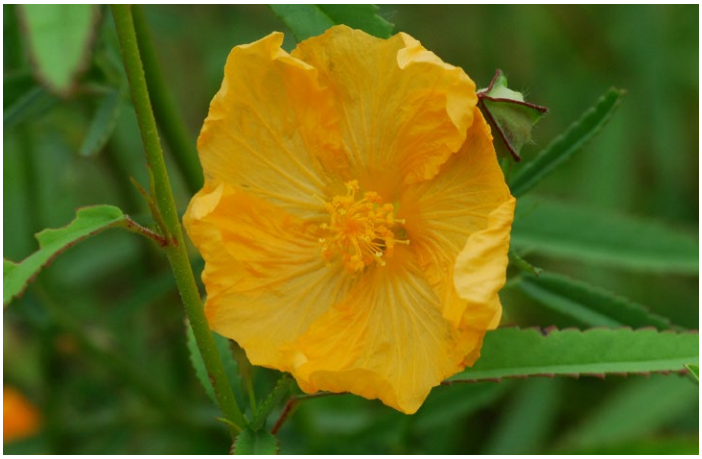
Pink, pale, or plains poppy mallow (*C. alcaeoides*) differs from the other listed poppy mallows because its petals are nearly white to light pink. Its stem is erect. It flowers in a cluster of 4-14 flowers which form a pseudo umbel. The flowers are delicate and small.

The next member of the mallow family is a loner, a hermit, a recluse. It is only found in six counties in the state, mostly in the extreme southeastern section of the state. The best place to see it is Sand Prairie Conservation Area. Also search for it in glades. It blooms August to October. It is Missouri's native sida, *Sida elliottii*. This family member does not bloom in white, pink, or red. It has a beautiful yellow/orange flower whose petals are 10-16 mm long. They are asymmetric at the tips, which have a sharp point. Rumor has it that the flowers open at sunset. Its fruits are schizocarps, like the poppy mallows, consisting of ten mericarps.

The last member of our native mallows is the family member that everyone looks at and says, "How did you get into this family?" This member is not a perennial forb like our other members. It's a tree! The American basswood (*Tilia americana*) is a deciduous tree that can grow to 80 feet. It sprouts at the base forming a clump of many small trees. It flowers May to July in fragrant creamy yellow flowers. These are very attractive to bees and have earned the tree the nickname of "bee tree." The flowers have five petals alternating with five sepals and have numerous stamens which are not fused together as a column. The young leaves are somewhat mucilaginous and edible. An interesting piece of lore is that "some native tribes carved ritual masks on living trees, and then split the masks away to hollow and dry the inside. If the tree survived, the mask was believed to have supernatural powers." (Source: Lady Bird Johnson Wildflower Center).

A few non-native members of the mallow family are worth mentioning. Almost everyone is familiar with rose of Sharon (*Hibiscus syriacus*) which is cultivated throughout the state. Hollyhock (*Alcea rosea*) is another popular garden flower. Okra (*Abelmoschus*) is a mallow favored for its mucilage that is used to thicken gumbo. Cotton (*Gossypium*) seeds are mucilaginous and oily. The oil from the seeds is sometimes used in cooking.

What is the most famous mallow of them all? -the marshmallow of course! Marshmallows originated from the European marsh mallow (*Althaea officinalis*). The natural mucilage can be whipped into a froth; egg white meringue is added to maintain marshmallow consistency. If you are really interested, there are recipes on YouTube. Cheeseweed (*Malva neglecta*) is a more readily available mallow in North America. In his book, John Kallas makes wild marshmallows from it.



Sida elliottii, photo by Steve R. Turner, missouriplants.com

Websites

mdc.mo.gov/discover-nature/field-guide
https://www.missouribotanicalgarden.org/PlantFinder/
missouriplants.com
wildflower.org

Books

Denison, Edgar, *Missouri Wildflowers,* 6th Edition
Elpel, Thomas, *Botany In A Day, The Patterns Method Of Plant Identification*
Kallas, John, *Edible Wild Plants: Wild Foods From Dirt To Plate*

Not all Legumes are Nitrogen-Fixers (and Vice-versa)

by Nadia Navarrete-Tindall

- **Nitrogen-fixing bacteria important for soil health**
- ***Amorpha* genus, legumes, do fix nitrogen**
- **Important also for pollinators**
- **4 species described**

For some, this won't come as a surprise but for others it may, since the common knowledge is that all legumes are nitrogen fixers. However, as with many other generalizations in nature, this is not true. I decided to start writing about this after a comment exchange in social media. Someone posted that redbud (*Cercis canadensis*) is a nitrogen fixer because it is a legume, but, according to Allen and Allen, 1981 and personal observations, redbuds lack nodules and do not form symbiosis with rhizobia bacteria. Unless there is new research that I am not aware of, this pretty much rules out nitrogen-fixation in this species. This takes me back to my years as a graduate student working on my dissertation and, later, my first post-doctoral job, both focused on leguminous nitrogen fixing plants that form symbiosis with rhizobia bacteria. There are other plant families, including some members of the Ulmaceae (*Ulmus* and *Celtis* spp.), Rhamnaceae (*Ceanothus americanus*), and Eleagnaceae (*Eleagnus* spp -autumn olive- an introduced invasive) in temperate regions and Casuarinaceae in the tropics that can fix nitrogen in association with the actinomycete *Frankia* spp., not rhizobia. We are learning more and more that nitrogen fixing bacteria and mycorrhizae help maintain and improve soil health in ecosystems and gardens so I hope with this article I can encourage our members to add nitrogen fixing plants in their gardens and other plant restoration efforts. As follows, I will describe four members of the genus *Amorpha* that I have observed for years growing in our own yard in Columbia, Missouri.

The Genus *Amorpha*

The genus *Amorpha* is in the Fabaceae family and subfamily Papilionoideae or Faboideae. *Amorpha* is from the Greek and means "without form", referring to the imperfect flowers with only one petal- the banner. The keel and wing petals are missing. Despite that, the flowers are showy, all having dark purple shades with protruding bright yellow stamens and pistils.

According to Allen and Allen, there are twenty to twenty-five species all indigenous to North America, with distribution from southern Canada to northern Mexico. In Missouri, Yatskievych only recognizes two species: *Amorpha fruticosa* and *A. canescens*. In this article, I will describe these two, plus *A. nitens*, an endangered species in Illinois, recently reported to be present in southeast Missouri and eight more states and *A. nana*, a shorter species also present in a handful of states from New Mexico to North Dakota.

Species descriptions:

Amorpha canescens Pursh (leadplant) is usually found in prairies, savannas or forest openings. It can reach heights of up to 1 meter. The compound leaves normally have 31 to 51 oblong to elliptical pubescent leaflets, much smaller than *A. fruticosa* and *A. nitens*. Leadplant is considered a desirable species for wildlife and livestock for its palatability, and it is also grown as an ornamental. This species is a slow grower and does well in dry sites under full sunlight (personal observation). Of all the *Amorpha* species known, leadplant is the only one that I found that could be consumed by humans. The leaves of this spe-

Leadplant (*A. canescens*), photo by N. Navarrete-Tindall

cies can be used to prepare a tasty tea, by steeping dry or fresh leaves with warm water for a couple of hours to overnight (Kindscher 1987 and Kurz 1997). We have served this tea for events like Dining Wild at Lincoln University, and those who tasted it found it pleasant. Various researchers refer to *A. canescens* as an indicator species of good quality prairie and the USDA Forest Service considers it an important species for wildlife.

False indigo (*A. fruticosa*), photo by N. Navarrete-Tindal

Amorpha fruticosa L. (false indigo), is probably the most well-known species in the genus. It adapts to a wide range of ecosystems, from moist to dry and from sunny sites to moderate shade (Allen and Allen 1981; Yaskievych, 1999). It was introduced in China and now is found naturalized there (Wang et al. 1999). In other places like Italy, it is considered an invasive species. In certain parts of the United States like Oregon, where it was not originally found, it can be aggressive and encroach on local ecosystems. It is a fast-growing shrub that can reach up to 4 m in open woods, especially in riparian areas subjected to short term flooding. Its pinnately compound leaves normally have 9 to 25 oblong to broadly elliptical leaflets. It usually flowers in May or June and is an important source of nectar for bees and other pollinators. The relatively persistent pods can be an important source of food for wildlife, including quail. Field observations and greenhouse experiments suggested that A. fruticosa grows well under reduced light levels typically found in managed forests (Navarrete-Tindall et al 2001). Its ability to grow under shade and fix atmospheric nitrogen make it a potential woody nurse crop. False indigo was included in the quail cover bundle promoted by the Missouri Department of Conservation to provide cover and forage for quail and other wildlife. During work I conducted at Prairie Fork Conservation Area from 2002 to 2004, *A. fruticosa* was the best performing shrub compared to the rest of the species included in the quail cover bundle. A combination of *Rosa setigera* and *A. fruticosa* showed promising results to create quality habitat for quail and other wildlife.

Smooth wild indigo (*A. nitens*) inflorescences, photo by R. Tindall

Amorpha nitens Boynton (smooth wild indigo) is an attractive shrub found along streams or lakes from southern Illinois to Louisiana (Wilbur, 1975). This legume is listed as endangered in Illinois and Georgia. Taft (1994) suggests the reasons for its decline are habitat disturbance and low reproduction rates. *Amorpha nitens* is easily confused with *A. fruticosa.* Although found in habitats similar to *A. nitens, A. fruticosa* has a much wider distribution range in the United States. Both species are relatively shade tolerant and form symbiosis with nitrogen fixing bacteria making them candidate species for inclusion in several agroforestry practices and restoration of natural ecosystems. Studies conducted in Missouri showed promising results as companion crops for pecan (Van Sambeek, Navarrete-Tindall, et al 2004). One way that I found reliable to differentiate *A. nitens* and *A. fruticosa* in my yard is that the leaflets of *A. fruticosa*, have a tiny

pointed tip compared to *A. nitens* leaflets that have an indentation without the tip. Some may argue this because both species have been found to hybridize (Taft 2013).

Amorpha nana (dwarf amorpha) is a species also native to the Midwest and found in dry and sunny sites like leadplants. Dwarf amorpha is listed as threatened in Iowa where it is found in prairies. It grows up to 0.5 m in height under full sunlight. It is phenologically and morphologically similar to *A. canescens,* but lacks the trichomes, or hairs, found on leaves and fruits of *A. canescens*. This species truly looks like a dwarf version of *A. fruticosa* or *A. nitens*.


Dwarf amorpha (*A. nana*), photo by N. Navarrete-Tindall

All *Amorpha* species described here form symbiosis with nitrogen fixing bacteria, as demonstrated by studies conducted in 1998 and 1999 (Navarrete-Tindall, 1999). These species are also important for pollinators as the flowers of these and other *Amorpha* species are visited by bees in search of nectar and pollen (Hilty 2020). False indigo and smooth false indigo are host plants for caterpillars of silver-spotted skipper, dogface sulfur, and the moth black-spotted prominent.

In our garden in Columbia, Missouri, we have all four species described here. Years ago I discovered dozens of walking sticks in a planting of both *A. nitens* and *A. fruticosa* at South Farm at the University of Missouri. Unfortunately, all those shrubs were destroyed. I was pleasantly surprised later that same year to find walking sticks in our own plants in the yard we call our wildlife refuge. Through the years, we have seen them browsing *A. nitens*, as their favorite host plant. Once they are done with them, they move to other legumes like *Baptisia* spp. and Illinois bundle flower that grow freely in our yard. This year they were so abundant that we saw them in wild plum and other non-leguminous species.

During our studies with *A. fruticosa* and *A. nitens*, field observations showed that pure plantings were browsed by deer or rabbits; however, plants responded well to browsing and sprouted rather readily. *A. canescens* and *A. nana,* on the other hand, need more time to recover from browsing pressure.

In articles to come, I will continue to explore the world of nitrogen fixers found in Missouri.

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Putty root orchid, photo by N. Bass, 10/15/2021

Putty Root or Adam and Eve Orchid (*Aplectrum hyemale*)

by M. Neil Bass, Natural Resources Specialist, Fort Leavenworth, Kansas

- **Scattered throughout Missouri, eastern Kansas**
- **Habitat - deciduous forest**
- **Single basal leaf, late summer through winter**
- **Flowers May to mid-June**

I live in Jackson County, Missouri and work on the Kansas side of the state boundary, in Leavenworth County. So this is not strictly a Missouri native plant report. Like me, the plant I'm writing about can also be found on either side of the state line. The putty root orchid (*Aplectrum hyemale*) is found predominantly in eastern Missouri and the Ozarks. According to *Steyermark's Flora of Missouri* it is, "scattered throughout the state, except the Unglaciated Plains Division." (Steyermark and Yatskievych, 1999)

Krista Noel, the Missouri Department of Conservation Natural History Biologist for the Kansas City Region, reported that she has seen this orchid in Jackson, Lafayette, and Platte Counties in Missouri, indicating the putty root orchid must be scattered throughout the state. In Kansas it is only known from 10 counties: Anderson, Coffey, Crawford, Douglas, Franklin, Johnson, Leavenworth, Linn, Miami, and Wyandotte. All are clustered in the eastern forested counties of Kansas. While not a listed species in Kansas nor Missouri, putty root orchids reach their western range limits in the state and are known from less than 10 percent of Kansas counties. As a Natural Resources Specialist at Fort Leavenworth, I thought it was an interesting and somewhat rare plant. A 2018 floral survey on the fort found putty root orchid in one of the twenty-three study plots (USACE, 2020). Located in that same plot were two other Kansas orchids: the yellow lady's slipper (*Cypripedium parviflorum*), and the showy orchid (*Galearis spectabilis*).

The plot where these orchids were located was characterized by, listed according to abundance, American basswood (*Tilia americana*) and slippery elm (*Ulmus rubra*) in the overstory and twelve additional tree

and shrub species present. In the midstory, pawpaw (*Asimina triloba*), Amur honeysuckle (*Lonicera maackii*), border privet (*Ligustrum obtusifolium*), and American hop-hornbeam (*Ostrya virginiana*) were the dominants. Canadian sanicle (*Sanicula canadensis*), coralberry (*Symphoricarpos orbiculatus*), and jumpseed (*Antenoron virginianum*) were the three most abundant understory plants. An additional forty-seven species of understory plants were identified (USACE, 2020).

In 2010, Craig Freeman, on the University of Kansas biodiversity blog, highlighted some of the unique features of the putty root orchid. The most obvious feature is the orchid's one green leaf that is not produced until late summer or fall. Photosynthesis for putty root orchids occurs when most other plants are or soon will be dormant. This strange lifecycle trait helps the putty root orchid capitalize on an aspect of its deciduous forest habitat. It leafs out as the overstory plants lose their leaves, and maximizes the sunlight reaching its single leaf (Freeman, 2010).

Flowering occurs May to mid June. A single stalk with about a dozen flowers will emerge, these flowers being pollinated mostly by halictid bees (sweat bees). The ribbed pendent fruits, about an inch long, mature in the summer and persist into the fall (Freeman, 2010).

Suitable climate and habitat in Kansas and western Missouri are rare for the putty root orchid. Being on the western edge of the putty root orchid's range means large swaths of the landscape are inhospitable for the orchid. Where habitat exists on Fort Leavenworth and the life requirements are met, the species can be quite abundant. Even though the 2018 floral survey only found orchids at one site, my personal observations have found putty root orchids at several locations.

While geographically limited, the local abundance can make this orchid relatively easy to view in the wild. Maintaining its one green leaf throughout the winter makes it easier to locate than most native orchids and thus easy to pinpoint precise locations for a return in the spring to find it in flower. So as tree and shrub leaves fall, take to the woods to locate the putty root orchid leaves, mark its locations, and be sure to return in the spring for the flowering display.

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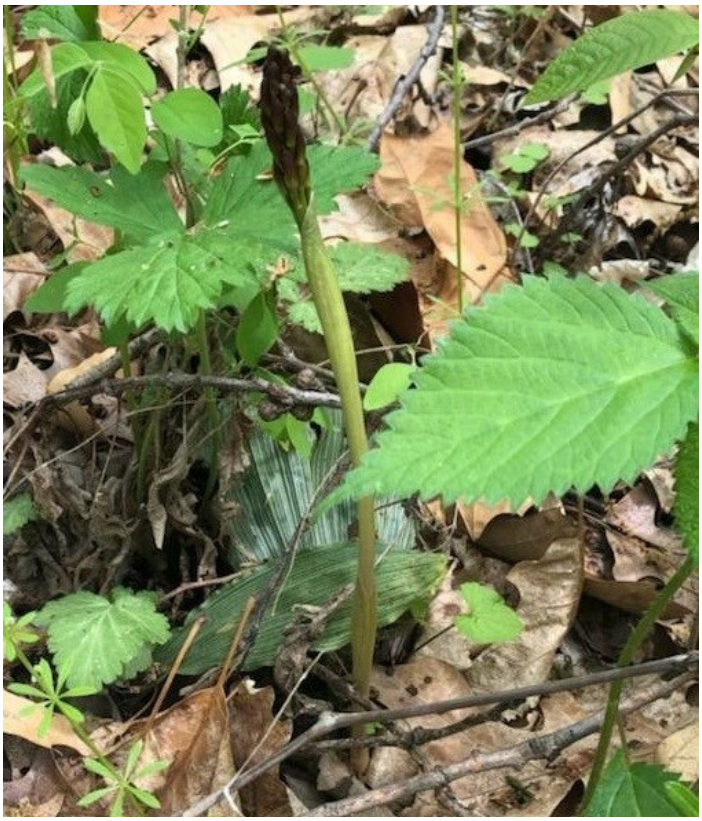


Putty root orchid stalk and leaves, Photo by M. Neil Bass

Mountain Mints/Pycnanthemums in Missouri

by Kathy Bildner

There are twenty species of mountain mints in North America, six are native to Missouri. (*Flora of Missouri*)

Comparison of the four common species

I have four of them side by side on the sidewalk to demonstrate difference in height, flower heads, and leaf size. They all have square stems and smell like mint. The flowers are terminal (top of the stem). Flowers are flat topped, formed from clusters of small flowers that are mostly white with some small pink parts if you look closely. These I am showing on the sidewalk and steps are all done blooming.

Stem height, top to bottom: slender mountain mint (*P. tenuifolium*), Virginia mountain mint (*P. virginianum*), hairy mountain mint (*P. pilosum*), white mountain mint (*P. albescens*), photo by K. Bildner

Flowerheads, left to right: slender mountain mint (*P. tenuifolium*), Virginia mountain mint (*P. virginianum*), hairy mountain mint (*P. pilosum*), white mountain mint (P. albescens), photo by K. Bildner

Leaf size, bottom to top: slender mountain mint (*P. tenuifolium*), Virginia mountain mint (*P. virginianum*), hairy mountain mint (*P. pilosum*), white mountain mint (*P. albescens*), photo by K. Bildner

P. albescens, photo taken in the Pioneer Forest virgin pine area, Shannon County, 9/24/2021, by K. Bildner

Plant Characteristics

Pycnanthemum albescens (white mountain mint). 40 to 90 cm tall, leaf 2.5 to 7 cm long and 15 to 25 mm wide. Upper leaves white on the top side. Habitat: mesic to dry upland woods, savannas, sand prairies, bluff ledges, acid seeps

Pycnanthemum muticum (clustered mountain mint). 4 to 110 cm tall, leaf 3 to 8 cm long and 15 to 40 mm wide.

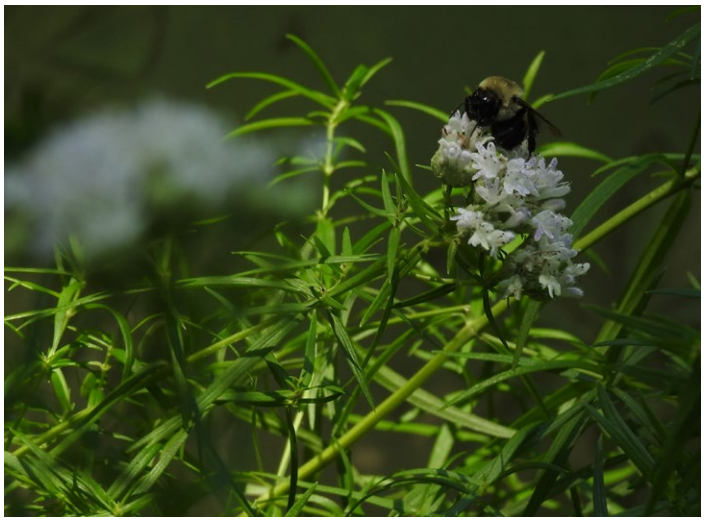
P. muticum, photo taken at Otter Slough Conservation Area, 8/16/2021, by K. Bildner

P. pilosum, photo taken in my back yard, 9/30/2021, by K.Bildner

Upper leaves white on the top side. Habitat: bottomland forests, ditches. This species is uncommon in Missouri, occurring in a few counties near the bootheel.

Pycnanthemum pilosum (hairy mountain mint). 50 to 150 cm tall, leaf 2 to 8 cm long and 4 to 20 mm wide. Habitat: mesic to dry upland prairies, savannas, glades, ledges and tops of bluffs, banks of streams and rivers, margins of lakes.

Pycnanthemum tenuifolium (slender mountain mint). 40 to 80 cm tall, leaf 1.5 to 5.5 cm long and 1 to 5.5 mm wide. Habitat: mesic to dry upland forests, savannas, glades, bottomland or upland prairies, banks of streams, fens, ledges and tops of bluffs. This mint has the faintest mint odor of the mints in Missouri.



P. tenuifolium, photo taken in my front yard, 7/2/1921, by K. Bildner

Pycnanthemum torreyi (Torrey's mountain mint). 40 to 80 cm tall, leaf 3 to 9 cm long and 5 to 11 mm wide. No longer known to be in Missouri. The only known collection was from Dunklin County in the bootheel. There are no known photos of Torrey's mountain mint in Missouri.

Pycnanthemum virginianum (Virginia mountain mint). 40 to 90 cm tall, leaf 2 to 6 cm long and 5 to 11 mm wide. Habitat: banks of streams, rivers, spring branches, fens, swamps, prairies bottomland or upland.

Pycnanthemum virginianum, photo taken at Angeline Conservation Area, 9/26/2021, by K. Bildner

CHAPTER REPORTS and EVENTS

SAINT LOUIS

by Rick Gray, Chapter President

September 22: Chapter meeting. Dr. Richard Abbott, Assistant Professor of Biology, University of Arkansas at Monticello, gave a presentation on the phylogeny and field identification of Missouri vines. A recording of the presentation and the PowerPoint will be posted to the MONPS website.

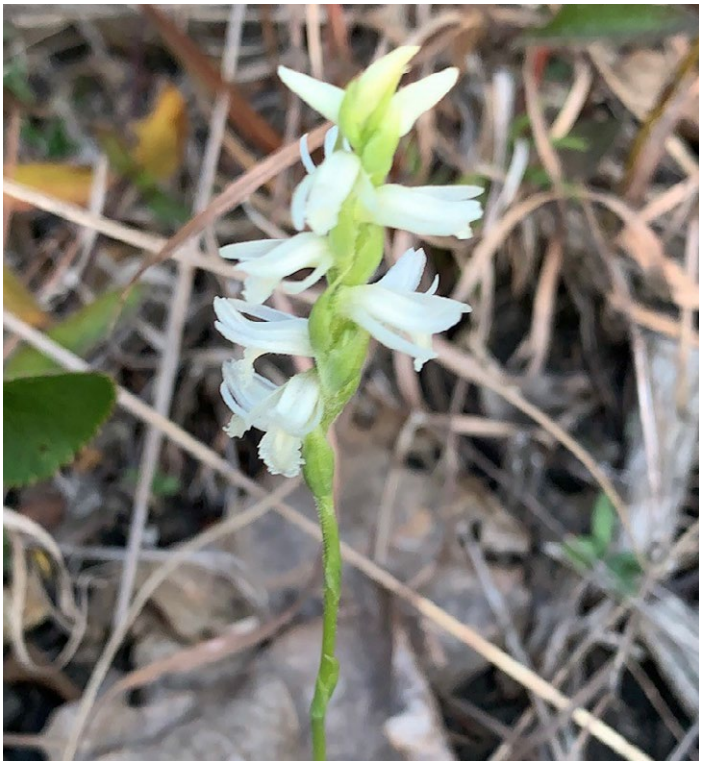
Upcoming Events: The Chapter plans to continue to hold Zoom meetings at least through April of 2022. These will be held on the fourth Wednesday of each month and will begin at 7:00 p.m. A confirmation notice will be sent via email shortly prior to each meeting.

PARADOXA

Pam Barnabee, Chapter President

On August 28, we packed our lunches and set out from Rolla on a road trip to Prairie Garden Trust in New Bloomfield. We hoped to see as much as we could in the four hours we allotted for our visit, so our plan was to take the paved path to the lotus ponds and then circle Indigo Prairie in the morning, eat lunch on the shaded porch of the visitor center, then head out through the shadier part of the property in the afternoon, toward Hillers Creek. Many of the plants we saw were familiar ones from home, others we knew only from photos, and a few were completely unknown - iNaturalist was a big help for those! As always, we learned from each other. We learned to recognize white oak by looking at the scaly, light gray bark on the upper tree trunk. We learned to tell the difference between water lily pads - they have a notch - and lotus pads which are completely round. We felt how much colder a compass plant leaf is, than the air temperature around us on a hot, August day.

White turtlehead, *Cleone glabra*, at Prairie Garden Trust, photo by H. Johnston



Spiranthes magnicamporum at St. James Park glade, photo by P. Barnabee

For our September 28 walkabout, we met at St. James Park to look for asters and goldenrods on the glade. We've visited there several times, but always manage to find something new. This visit was no exception, as we added three asters: *Symphyotricum pilosum, S. turbinellum*, and *S. urophyllum* to the list. The sweetest find was a dainty little orchid that was also a new addition: *Spiranthes magnicamporum*.

HAWTHORN

Michelle Pruitt, Chapter Representative

September 14: The Hawthorn regular business meeting was held in person outdoors at a local park shelter. A local author offered a short presentation on her children's book about native plants before the business meeting. Becky also brought a tray of eighteen plants from the chapter nursery with mystery tags and members competed for the most correct identifications, ties to be broken by the inclusion of scientific names and/or best habitat.

October 2: The chapter hosted a booth selling native plants and reference books at the annual Chestnut Festival in New Franklin, Missouri. We shared tent space with Forrest Keeling Nursery who had a number of chestnut saplings for sale.

October 9: Members met at and toured the Prairie Garden Trust property near Fulton.

October 17: A propagation workshop was offered with seed collecting and processing on the Hundred Acre Woods Nature Preserve north of Columbia. In early December, a follow-up workshop will be offered, to learn methods of stratification and scarification.

October 21: The Third Thursday Lunch was held for the first time since the beginning of the pandemic, outdoors at a member's home.

Upcoming Chapter Events

November 8: Regularly scheduled monthly meeting

December 13: Regularly scheduled monthly meeting and annual election of officers

See www.columbianativeplants.org for an updated posting of newsletters and activity details.

New Members!

By Ann Earley, Membership Chair

Click here to join!

Kansas City
Troy Brasher, Lenexa, KS
Sarah Storm, Kansas City
Katharine Lynch, Kansas City
Eric Mozingo, Sedalia

Paradoxa
Carol Spurlock, Rolla
Alice Richmond, Cuba
Treva Imes, Rolla

St. Louis
Toni Armstrong, St. Louis
Eric Feltz, St. Louis
Robert Rafferty, St. Louis
Wendy Williams, Kirkwood
Bodhi Lee, Manchester
Melissa Hilboldt, St. Louis
Laura Vrabel, Marthasville
Catherine Hu, St. Louis
Len Meier, Lake Saint Louis

Hawthorn
Jackie Hickam, Boonville
Jonathan Parker, Fayette
Eric Mozingo, Sedalia
Bonnie Chasteen, Columbia

Southwest
Marie Ceselski, Hermitage
Justin Gloe, Springfield

Osage Plains
Eric Mozingo, Sedalia

Ozarks
James Bresnahan, Lawrence, KS
Eric Mozingo, Sedalia

State Level Membership
Arthur Benson, Kansas City
Brenda Gray, Godfrey, IL

Missouri Native Plant Society Membership Form

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City, State, ZIP	
Phone	
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Membership Level (check one):

	Student	$5
	Goldenrod	$10
	Sunflower	$25
	Bluebell	$50
	Blazing Star	$100

Chapter dues (optional, check all that apply):

	Empire Prairie (Saint Joseph)	$5
	Hawthorn (Columbia)	$5
	Kansas City	$5
	Osage Plains (Clinton)	$5
	Ozarks (West Plains)	$5
	Paradoxa (Rolla)	$5
	Perennis (Cape Girardeau)	$5
	Saint Louis	$5
	Southwest (Springfield)	$5

Newsletter Delivery (normal delivery is via email):

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Other contributions (optional, check all that apply, specify amount, tax deductible):

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"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."
—Aldo Leopold