

PETAL PUSHER

March-April 2022 Newsletter of the Missouri Native Plant Society Volume 37 No.2

“... to promote the enjoyment, preservation, conservation, restoration, and study of the flora native to Missouri.”

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A New Development Coming to a Schoolyard Near You: Phenomena

text and photos by Jeff Cantrell

Schoolyards have been my canvas for teaching for nearly thirty years. It doesn't matter if the campus has a beautiful "wild acre" or if we are concentrating on "sidewalk botany" next to a fenced off busy street – I always say "this has lots of potential!"

A butterfly garden is usually the first learning station considered for outdoor classrooms. My longevity tips for a successful school butterfly garden are: 1) Make sure the forbs bloom while school is in session, or there is a class usage for foliage, stems or seeds later (e.g., there is little reason to have *Liatris* blooming if there is no late summer school session); 2) Keep the flower bed pretty for the neighbors and parents who don't understand the curricular uses of plants and pollinator observations (we don't want staff hearing any unwarranted disapproval); 3) Have curriculum like Missouri Department of Conservation's Nature Unleashed or Monarchs in the Classroom by K. Oberhauser & L. Goehring tied to the school's objectives and aligned to state learning standards.

While butterfly gardens are often the showpiece and Grow Native (GN) resources give a school a template to hone to fit their school's calendar and site needs, I propose a second or a new kind of outdoor classroom learning station. One of the new themes and buzz topics in the education field is "Phe-



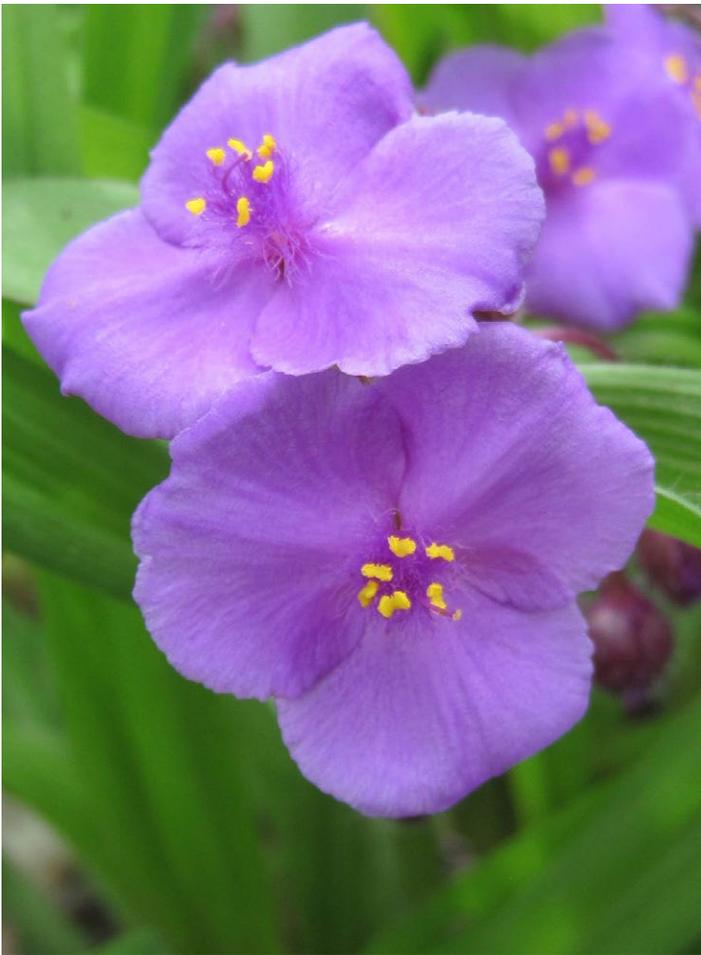
Phlox divaricata

nomena”. It has reformed some curriculum for elementary schools. We who love Missouri’s biodiversity and natural communities make this part of our every day lives. We certainly see the importance of our students learning about native plants, their adaptations and connections to each other and other native life forms. Learning and instructing Phenomena is a method of understanding an observable event using various methods and perspectives, which may overlap. Students observing nature (broad or specific) from several different approaches helps them to truly understand the life science processes in nature. The steps are basic: 1) Find a real-world phenomenon, 2) Engage the students and “train” them to bring forward their ideas on the subject, 3) Educators facilitate students arriving at a question they can investigate, 4) Mentor/coach students as they gather data or proceed with their plan, 5) The teacher becomes the interested skeptic, assisting the students to use their findings to form defensible data-based conclusions. Phenomena works well with a butterfly garden anchored with appropriate native plants.



Aquilegia canadensis

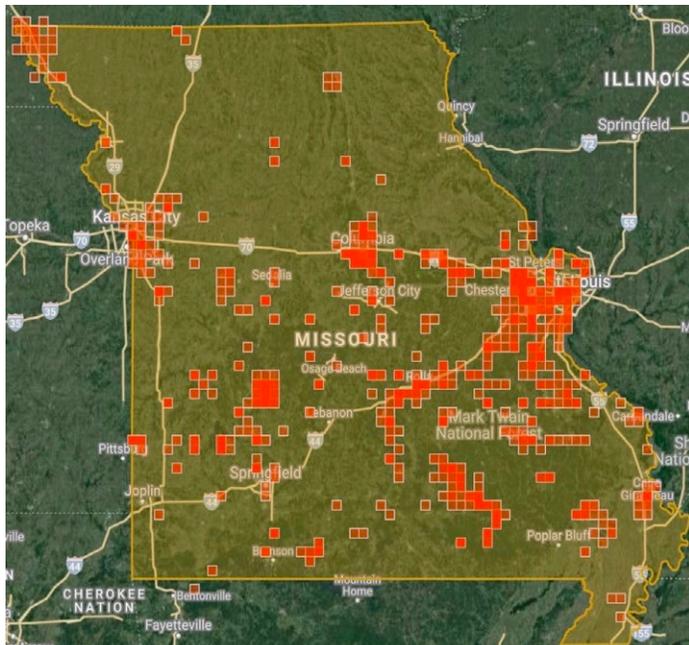
However, I propose a second station for phenomena investigation in a school’s shady area. We will use a simple oval design of a raised bed using a brick or one layer of stacking stone edging. Fresh soil or organic peat may be added. A piece of log or big cut firewood is laid across the inside of the area diagonally with some soil banked up on the backside of the wood. This will be supplemented with two or three native ferns on the side or a trimmed wild hydrangea (*Hydrangea arborescens*) behind the log. GN nursery-bought ephemerals like a woodland or early spiderwort (*Tradescantia* sp.), blue phlox (*Phlox divaricata*), columbine (*Aquilegia canadensis*), fire pink (*Silene virginica*), and pussytoes (*Antennaria parlinii*) work nicely along with other regional favorites. I advise the log to stay put for years of decay and replaced eventually. Students will observe a variety of seasonal fungi, sowbugs, bess beetles and other beetles, northern flickers (a woodpecker that seeks fallen branches), and much more. An extension for in the classroom is to bring pieces of rotting log into the school from another site. The subjects may be placed on plastic trays and students may observe and pry with prods and forceps. It’s hands-on science and the potential of investigating phenomena is limitless.



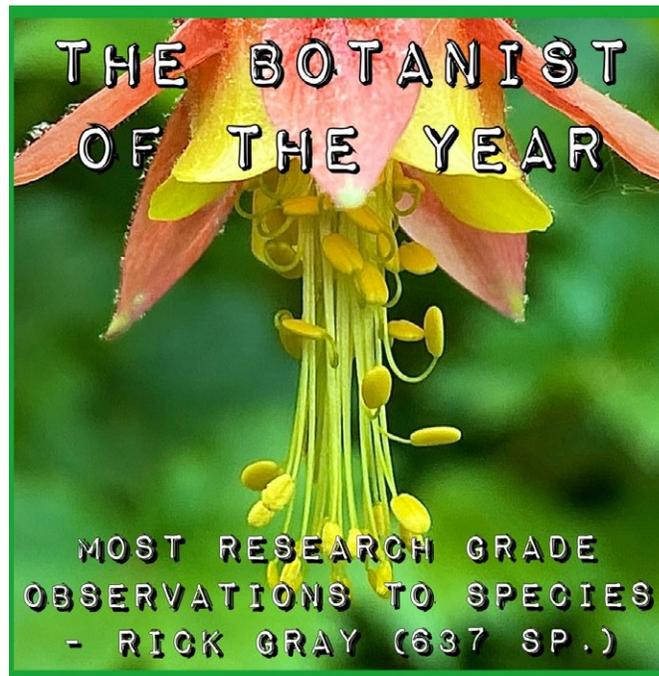
Tradescantia sp.

The Results of the First Annual Missouri Botanists Big Year Are In!!!

text and photos by James Faupel



Missouri Botanist Big Year's reach across the state!!!



The winners of 2021 are...

GRAND PRIZE - Most research grade species of plants-

- 1st place - (637) Rick Gray*
- 2nd - (431) Joanna Reuter
- 3rd - (304) Kathy Bildner
- 4th - (293) Jared Gorrell
- 5th - (271) Pam Barnabee

The Explorer - Most observations overall (1,090) - **Joanna Reuter**

The GrassMaster - Most research grade Poaceae (50) - **Rick Gray**

The FiddleHead - Most research grade Polypodiopsida (42) - **Thomas Koffel**

The Composer - Most research grade Asteraceae (126) - **Joanna Reuter**

The SedgeHead - Most research grade Cyperaceae (86) - **Rick Gray**

The Traveller - Farthest spread across Missouri - **James Faupel**

The Northerner - Farthest spread across Northern Missouri - **Joanna Reuter**

The Southerner - Farthest spread across Southern Missouri - **Nathan Aaron**

Most observed flowering plant (42 specimens) - *Viola pedata*, bird's foot violet

Most observed non-flowering plant (42 specimens) - *Polystichum acrostichoides*, Christmas fern

Top Identifiers of Plants in Need-

1st place - (1,749) **Lee Elliott**

2nd - (1,392) **Cal Maginel**

3rd - (1,061) **Norman Murray**

4th - (866) **Claire Ciafre**

5th - (394) **Rick Gray**

*As acting president of the St. Louis Chapter, Rick wishes to pass the grand prize of a hand lens and plant press to MONPS member Joanna Reuter in 2nd place! Jared Gorrell, who is our top performing non-member, wins a one-year membership to MONPS! Our top identifier, Lee Elliot will also be receiving a one-year membership to MONPS! Congratulations to all and a job well done! Your passion for getting outdoors and exploring the wonderful world of botany in our state will surely inspire many more to participate this year and in the years to follow. Thank you!

Out of the staggering 9,666 total plant observations sent in during 2021's competition, only 6,715 (69.5%) unfortunately made it to research grade. For future

years' competitions, to help identifiers and improve observations so we don't have 2,949 (30.5%) observations floating in the ether; competitors should remember to take as many descriptive photos as possible. Typical photos you should be taking for any plant are closeups of the tops and undersides of flowers, tops and undersides of leaves, the connection point of where the leaf meets the stem, closeups of the stems/bark/trunks, fruits if available, far away shots showing the plant's full form and surrounding habitat.... You probably see where I'm going with this. The more descriptive photos, the better the odds are of getting that full ID to species!



Descriptive photos (above and below) of leaves and flowers help identify a plant to species



A big thank you to all of you who competed in the first year of the competition and also a HUGE round of applause to all of you who helped out identifying plants!!! We need more help with identification for this year's! The first annual Missouri Botanists' Big Year Competition had much more participation than I had originally expected. I did not anticipate that we would have 36 people compete in its first year, with almost 10,000 individual plants observed! There were also many species of conservation concern observed, such as decurrent false aster, and these locations will be shared with the Natural Heritage Database. Once data has been gone over, we will know if new populations had been discovered.

Our observations from this competition will help researchers track and better understand the flora of Missouri and how it changes over time, from native plants to exotic invasives. This data provided by our members will be publicly available, to help improve science and nature communication. We also hope to present more iNaturalist training opportunities again in the near future, to help new users get acquainted with using the website and phone app. We will continue to host these Big Years over many more years, and then will be able to compare data from each year's competition. We also hope to have even more and varied types of prizes in the future.

Join the 2022 competition right now and enter your observations to help participate in citizen science!
<https://www.inaturalist.org/projects/missouri-botanists-big-year-2022>

Missouri Botanists Big Year 2022 - iNaturalist

Help us track the flora of our great state of Missouri! Project rules:

1. Observation must be a wild plant observed in Missouri in 2022.

2. You must be a member of the project - click on the link above to join.

3. Observation must be research grade, so submit many descriptive photos.

4. To be entered for the grand prize, you must be a member of the Missouri Native Plant Society - join here: monativeplants.org.



Missouri Native Plant Society Awards

Award nominations due May 15

The MONPS Awards Committee seeks nominations of people who have supported the preservation of Missouri's flora. MONPS offers five awards:

- 1) Erna Eisendrath Memorial Education Award, recognizing individuals who, through teaching, writing, or other activity have conveyed to others a significant appreciation and knowledge of Missouri's native flora.
- 2) Arthur Christ Research Award, recognizing an individual's significant contribution in furthering the knowledge of Missouri flora.
- 3) Plant Stewardship Award, recognizing an individual or organization for the preservation of important elements of Missouri's flora through purchase, registry, and/or management practice.
- 4) The John E. Wylie Award, recognizing individuals who have provided exceptional service to the Society.
- 5) Plant Conservation Award, recognizing an individual or organization for outstanding contributions to the conservation or preservation of native plants or plant communities in Missouri. This award differs from the Plant Stewardship Award in that it is not tied to direct acquisition or management of tracts of land, but instead may recognize various types of outstanding achievements or efforts, such as conservation planning, advocacy, or new ways of looking at old problems.
- 6) Julian A. Steyermark Award, the Society's highest award, given to an individual who has made outstanding contributions to any and all aspects of Missouri botany.

The deadline for nominations is May 15. Nominations should contain the full name of the nominee and the name of the person making the nomination, and they should set forth the contributions of the individual or organization that merits recognition. Award recipients need not be members of MONPS.

Please submit nominations to Awards Committee Chairwoman, Malissa Briggler:
Malissa Briggler, State Botanist
Missouri Dept of Conservation
2901 W. Truman Blvd.
Jefferson City, MO 65102
573-522-4115 ext. 3200



Students prepare to plant the mint bed designed by Summit fifth graders, photo by D. Thomas

From the Editor

Thank you for bearing with us during these continued unprecedented 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 May Petal Pusher is "Past Contributions of MONPS," but other submissions are encouraged, especially Genus or Family descriptions ("Better know a genus/family"), Conundrum Corner, Invasive Tip of the Month, Name Change of the Month, Terminology, 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: April 20

**Thank you so much,
Michelle Bowe**

Spring MONPS Field Trip

April 1-3

Join us near Bolivar, Missouri, for the first state field trips of 2022 on April 1-3. Our weekend will include visits to remnant prairies, limestone and sandstone glades, as well as a dolomite glade and chert woodland at Niangua River Hills Natural Area. We are also likely to see the illusive state endangered geocarpon (*Geocarpon minimum*) and Missouri bladder-pod (*Physaria filiformis*). Complete details, directions, and lodging information is on our website: <https://monativeplants.org/FieldTrips/SpringFieldTrip2022/>

1. Friday afternoon, Twenty-five Mile Prairie Conservation Area.

The surface soils of this prairie range from just slightly acidic to neutral in reaction, which is unlike most remnant prairies in this region. Many plant species such as prairie turnip, scurfy pea, prairie dock, aromatic aster, Missouri coneflower, and narrow-leaved milkweed require higher levels of nutrients in the soil, including calcium, and are more prevalent here than on prairies developed over sandstone bedrock.

2. Friday evening, Comfort Inn.

Malissa Briggler will discuss the natural history and population status of rare plant species that we're likely to see on the next day's field trips.

3. Saturday morning.

Our first stop will be Schuette Prairie; then on to Rocky Barrens Conservation Area to visit limestone glade sites and hope to spot a small mustard plant called Missouri bladder-pod (*Physaria filiformis*). The plant, which is on both state and federal endangered species lists, is found only in four counties in southwest Missouri. We'll eat lunch at Jackson Street Park in Willard. Bring a sack lunch or pick up a sandwich at one of the fast food options in town.

4. Saturday afternoon, Corry Flatrocks Conservation Area

This area is a recent acquisition for the Missouri Department of Conservation. Half of the area was donated by The Nature Conservancy and the remaining was purchased for the protection of one of the largest known populations of geocarpon (*Geocarpon minimum*), a state and federal endangered species. Early

spring will be the best time to find this tiny and rare plant.

5. Saturday evening, Comfort Inn. MONPS Board meeting.

6. Sunday morning, Lead Mine Conservation Area and Niangua River Hills Natural Area.

We'll wrap up the weekend with a visit to the Niangua River Hills Natural Area that features dolomite glades and chert woodlands. We're certain to enjoy the spring ephemeral flora before the forest canopy closes in. We might see flowering twayblade and showy lady slipper orchids along with other orchid species. The area also features a scenic overlook of the Niangua River.

Save the Dates for more 2022 MONPS Field Trips!

June 3-5. In the Summer we'll travel to the east-central part of the state, headquartering in Festus. Many good choices for botanizing can be found here, including Don Robinson State Park and Valley View Glades Conservation Area.

September 16-18. Our Fall trip will take us to the north, Eagleville, where potential sites include Dunn Ranch Prairie and a joint excursion with the Iowa Native Plant Society to Rolling Thunder Prairie in Warren County, Iowa.

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Make sure to navigate to smile.amazon.com each time you shop. The default amazon.com will not result in a donation, and your smart phone application may not support AmazonSmile. Visit [About AmazonSmile](#) to read more about the AmazonSmile Foundation.

Highlighting a Chapter

Paradoxa -Rolla

We want to know our chapters better. We want to hear about all the fun and valuable activities our chapters do, understand their needs, and share that with you, our members. We hope you will find ways you might participate. In the next several issues of the Petal Pusher, we plan to showcase one of our chapters; up this month is Paradoxa:

We welcome anyone to attend MONPS meetings and events! There are no prerequisites. MONPS members span all walks of life and can range from beginners to experts and everything in between. Members love to teach as well as to learn from others. MONPS events are a great way to meet other nature lovers, a great way to meet new people in your community, and a great way to get to know people in the conservation community for career networking.

Pam Barnabee, Chapter President: We started Paradoxa Chapter in Rolla in 2017 with a core group of members who were not trained botanists, but had an affinity for plants in the wild. Our goals were to learn more about native plants, their habitats, and their roles in the ecosystem; to improve our plant identification skills; and to get more comfortable with botanical terminology - all through practicing in the field and by learning from each other. I think it's working!

Many members of our chapter belong to local chapters of other organizations: Missouri Master Naturalists, Audubon, Master Gardeners, to name a few. From the beginning, we determined that we already attend one or more regular monthly meetings and hear a variety of speakers. We were looking, instead, for a more hands-on approach. Our chapter is dedicated to getting outside and looking at plants. (That said, we do appreciate the learning opportunities provided by other chapters who invite us to their online meetings!)

We try to schedule an outing every month from March through October. We try to achieve a balance between meeting at nearby sites that we can visit for an hour or two on a weeknight, with places farther away that we carpool to on a Saturday. Something new we're going to try this year is sending out a Zoom link and filming live video of our walkabouts, so those unable to attend can participate remotely. Our October meeting, the final one of the year, is always held at Marguerite Bray Conservation Area; we have a seed and plant exchange, brainstorm ideas for the coming year, and - beginning a new tradition in 2021 - order out pizza. We also participate in spring and fall native plant sales in the Rolla/St. James area. And we have a group that meets every other Thursday at Bray CA to collect and process specimens for the herbarium there.

A typical meeting begins with me trying to keep everyone corralled so we can introduce ourselves (and our host(s) if it's to be a guided walk); give some background information about the place we're visiting; mention upcoming events; and draw for door prizes. Then we're off to see the plants!

We cohost two native plant sales each year, not so much to raise funds as to make plants available locally. We



Field trip to the dolomite glade at St. James City Park, September 2021, photo by P. Barnabee



Bray herbarium crew members at work, photo by P. Barnabee

also take every opportunity to set up a display at local festivals and events in order to promote native plants and our organization. In the past, we've set up educational displays about choosing wildflowers to provide three seasons of bloom, choosing native plants to host caterpillars, and on how to recognize and deal with invasive plants.



Natives vs. invasives display at Audubon Fall Festival, 2019.

We have, officially, about 35 members, but I stay in touch through regular emails with anyone who has expressed an interest - currently 85 individuals.

Paradoxa Chapter has a full complement of officers for 2022-2024: Pam Barnabee, President; Linda Sidwell, Vice-President; Kathy Gallagher, Secretary; Janet McKean, Treasurer; and Jerry Barnabee, Chapter Representative. We always have a need for new members with fresh ideas and energy. I'm very inspired by the native plants in schools articles in this Petal Pusher issue, to see if we can do more along those lines.



Field trip to Solomon Hollow Glades Natural Area with Angela Sokolowski, USFS, June 2019, photo by P. Barnabee

Earthday-April 22 FOOTPRINTS AND FOOTNOTES, part I

Thank you to Dave Schilling for compiling this chronological list of quotes and milestones!

1854 Henry David Thoreau - *Walden*

"I wish to speak a word for Nature...I wish to make an extreme statement for there are enough champions of civilization..."

1891 Public Lands Bill Section 24

"That the President of the United States may, from time to time, set apart and reserve, in any state or territory having public lands wholly or in part covered with timber or undergrowth...declare the establishment of such reservations and the limits thereof."

1908 Teddy Roosevelt

"It is safe to say that the prosperity of our people depends directly on the energy and intelligence with which our natural resources are used. It is equally clear that these resources are the final basis of national power and perpetuity. Finally, it is ominously evident that these resources are in the course of rapid exhaustion."

1910 Gifford Pinchot

"The first duty of the human race on the material side is to control the use of the earth...for the greatest good of the greatest number for the longest time."

1914 Last Passenger Pigeon dies at the Cincinnati Zoo

1948 Aldo Leopold - *A Sand County Almanac*

"For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasque-flower is a right as inalienable as free speech...We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Native Plants for Wild Imaginations

by Dana Thomas, NatureCITE

Children are losing their connection to nature. Entire books have been written on this topic. We've watched the population of the United States shift from a historically large rural population to present day, when more than 80% of people live in urban areas. As this shift has occurred, so has the ability of children to explore, to engage, and to become friends with the wild plants around them, to call them by name or to even notice them at all. The refrain in children's heads has changed from adults asking them to, "Go gather hickory nuts for a pie" or "Come help us tap the maple tree" to requests like, "Don't step on the landscaping" or "Don't pick those flowers". Children have learned that most plants are forbidden, only occurring as a decorative backdrop in their lives as they pass by. Or worse, they've learned that plants should be avoided since the adults around them aren't themselves able to determine which plants are safe.

Combined with this modern mentality is a degraded landscape devoid of the rich plant communities with which past peoples were able to engage. Rural lands are now largely monocultures of fescue or crops. Urban lands are concrete or lawn. The non-native ornamental plants that do exist in human-dominated landscapes are ubiquitous, redundant, and largely uninspiring. The damaged woodlots in urban parks are often uninviting and overgrown with disturbance-tolerant, weedy species. Children yearn to touch, to smell, to eat, and to utilize plants. To smash them and create fantastic concoctions of leaves and berries, to weave their stems into braids and adorn themselves, to pick their flowers and fruits and offer them to the people they love. To interact at a deeper level. But most children no longer have access to places where they can play with nature.

Urban ecology is a way to ameliorate some of this tragic loss of connection. By reintroducing native plants to our urban areas, we can increase biodiversity and provide habitat and food for native fauna---including our children. Luckily, many people are beginning to understand the importance of urban ecology, of rewilding our towns, cities and children. One such example is happening in Springfield, Missouri, through a joint partnership between The Summit Preparatory School, the Missouri Department of Conservation (MDC), and NatureCITE. Thanks to the open minds and ideals of progressive education embodied by the faculty and administration of The Summit, the generosity of MDC's Community Conservation Grant program, and the project management provided by staff of NatureCITE, children at The Summit Preparatory School are participating in a project to convert their nearly seven-acre campus to native Missouri plant species.

The multi-phase project so far consists of a pollinator garden, a sensory garden, and landscaping beds along the street and building. The pollinator and sensory gardens are student-led projects which allow the students themselves to design and implement their vision—a task that incorporates many STEM elements and allows students hands-on experience with the struggles and victories of transferring a plan on paper into three-dimensional reality. Students selected plant species, planned bed dimensions, measured and staked their gardens, calculated area, designed plant layout according to plant height, bloom time, and other characters, dug, mulched, watered, and then watched their flowers grow into gorgeous, wild arrays of color and texture.

The wildflower infusion on campus is not only beautiful, but also healthful. According to several studies, an environment rich in plant species and green space decreases stress and increases cooperative and imaginative



Summit Preparatory middle school students lay the groundwork for their student-designed pollinator garden, photo by D.Thomas



Students and families work on their pollinator garden to celebrate Earth Day at The Summit Preparatory School, photo by D.Thomas

play. And to the children, other small but important joys come from the gardens. They are discovering the delight of finding a tiny caterpillar on a milkweed leaf, of casually dissecting a flowerhead to see the symmetric patterns of growth inside, and of watching the colorful myriad of insects feed on the plants. They are learning how to name each plant in Latin and English, which insects rely on specific plant species to survive, and that a calamint leaf will knock your socks off with minty fragrance when it's crushed. They are learning that these particular plants ground them with the comforting knowledge that, "I'm in Missouri. This is what home looks like." And they're

learning that it's more than okay to touch the plants, to play with them and to become friends with them. They are learning that plants are a connecting force of something bigger, of which they are a part as well; a community that expands and morphs from these plants outward, to the global ecosystem. Students at The Summit can also be proud that the campus they're enriching will benefit other students for many more years to come. Perhaps most importantly, by bringing back the plants that once past to the future. It is my hope that they will carry this understanding with them as they grow into adulthood and will create a beautiful, new reality in which urban areas are rich and sustainable gardens of native plants and wild imaginations.

called this land home, the students are connecting the



Girl Scouts from The Summit Prep created stone markers for each plant species in the garden, photo by The Summit Prep



Middle school students enjoy tending their new plants, photo by D. Thomas

Outdoor Kids & Forestkeepers

text and photos by Pat Perry

Being Missouri Master Naturalists (MMNs), my husband Bob and I enjoyed sharing our knowledge of the natural world with students at Truman Elementary School in Rolla. We provided in-classroom programs such as dressing as a giant spider to help teach kindergarteners about the value of spiders. We also helped maintain and enhance the school's Outdoor Classroom.

Perhaps our greatest enjoyment came from working with the kids in the Outdoor Kids Club which met after school for an hour. We combined our work as MMNs with our charter membership in the Missouri Forestkeepers Network to put on an annual program for the third graders in the Outdoor Kids Club.

For those of you not familiar with Forestkeepers, it is a program jointly sponsored by the Missouri Department of Conservation and Forest Relief. One of its goals is to survey the health of Missouri's trees by doing a tree survey twice a year. We decided to sign up the Third Grade Outdoor Kids Club as a volunteer group. They received a membership packet which included a Forestkeepers Field Manual on how to conduct a tree survey and survey forms. Also inside were two adhesive strips that fit on a yardstick. One of these had leaf pictures with the code for the tree species. The other one was a ruler for measuring the diameter of the tree.

April became the designated month to do the survey so that there would be leaves on the trees. We divided the playground and Outdoor Classroom into six areas where small groups could do their survey. We recruited several MMNs and two retired foresters so that each group would have an individual to provide instruction and answer questions. After explaining how to use a penny to determine which trees to count, each group departed to their area with pennies, measuring sticks, a data sheet and the book, *Fifty Common Trees of Missouri*. The students used their pennies to determine which trees to count, identified the tree by leaves and/or bark, designated any dead trees and measured the diameter at breast height. They also determined the health of the tree including the trunk and crown and listed anything unusual they found. We re-grouped back in the classroom then and discussed their findings and observations. I compiled their data and input it on the Forestkeepers website.



The Forestkeepers Network then provided the students with recognition of their efforts. They sent a certificate of membership in the organization which I photocopied and then added each student's name so they would have a memento of their participation. They were also given an enameled pin with the Forestkeepers logo and an embroidered patch.

If you are interested in joining the Missouri Forestkeepers as an individual or a school group you can find information at forestandwoodland.org. Click on the Forestkeepers tab and then the submenu "For Educators" to get lesson plans.

Columbia Public Schools & Native Plants

text and photos by Lea Langdon

In Columbia, I have been volunteering with what I call Outdoor Classrooms (OC's) for many years, by which I mean outdoor learning spaces. These all include native plants and can include various native habitats (prairie, woodland, pond, etc.), or something as simple as a small pollinator garden or a few native bushes and a bird feeder.

Schools in Columbia have had a history of a variety of outdoor classrooms that have been created with lots of enthusiasm by teachers, parents and the community. Over time, as teachers, staff and parents move on, these spaces have often become neglected and unused. There have then been various efforts to revitalize them and make sure they are useable and actually used by teachers.

My experience with Columbia Public Schools (CPS) Outdoor Classrooms began as one of these efforts to revitalize the OC's around 2007. At the time, there were probably ten outdoor classrooms at elementary schools that had been begun with Missouri Department of Conservation help, maybe ten years before. These outdoor classrooms included a variety of small habitats and sometimes seating areas. While they were generally assumed to take care of themselves, it became obvious that they needed maintenance. Invasive species have become a large problem in some of our outdoor classrooms. Besides this, prairie areas generally need burning and/or removal of trees in order to survive as prairies. And of course, pollinator gardens will become weedy messes, or at least lose their diversity, if left to be. So, a group of us began with figuring out how to restore and maintain these areas to be welcoming to teachers and students, and then how to engage teachers in using these spaces.

Two of my motivators have been 1) When teachers teach outdoors, the students (and teachers) generally enjoy the learning process and 2) if students do not connect with nature at a young age, they will be less likely to appreciate and want to protect our natural systems when they become adults, which could be devastating for our ecosystems. Another motivator was my first experience at CPS at a school where the outdoor space was just short grass & blacktop. It felt sterile, and it motivated me to start my first school native butterfly garden.

Three tactics that I have found helpful for maintaining our outdoor classrooms are 1) creating an Outdoor Classroom Committee at each school, 2) involving teachers and students in service-learning opportunities which include physically caring for these spaces and 3) reaching out to community volunteers. More detail about these three ways, which work well together, is below.

An Outdoor Classroom Committee is ideally made up of teachers and other staff (including the principal if possible), parents, and community members. This broad base helps bridge the gaps that naturally occur in knowledge and habits in relation to the outdoor classroom when teachers retire or move and students graduate into other schools. Tasks for the OC committee include general planning (including funding) as well as hosting work parties (at least one in the fall, and one in the spring, since there are generally tasks that need to happen at least that often).

Involving students and teachers in service-learning projects can help keep teachers aware of OC possibilities, while offering hands-on tasks for the students. (One school forgot it had a prairie for more than a year, and allowed it to be mowed for a whole summer.) Simple native plant tasks like cutting back perennial foliage in late spring, re-planting native plants to fill in areas in the pollinator gardens, gathering prairie seeds and sowing them in the prairie, and removing invasive species are activities that students generally love. While they connect to their own schoolyard by helping care for it, they can learn unforgettable lessons about the importance of di-



Fourth graders tackling invasive species at Blue Ridge Elementary

iversity, plant life-cycles, the problems with invasive species, etc. They also have good experiences with some of Missouri’s native plants and habitats.

I have helped volunteers from the local Missouri Native Plant Society (MONPS), Missouri Master Naturalists and Missouri Master Gardeners get involved in caring for OC’s, as well as in helping teachers get their students outdoors to use these spaces. I always encourage the teachers to involve their parents as well. Garden clubs can also be a good source of volunteers, as can university student groups.

Columbia now has twenty-one elementary schools, of which maybe ten have what I would call good quality Outdoor Classroom areas (with plenty of native vegetation). In addition, all of the Title I elementary schools (seven) have raised vegetable gardens, which include at least a small plot for native pollinators. There is also a large native detention area/rain garden at one of the high schools that was begun and planted by a teacher and his classes. Another native plant connection has happened with the installation of “Nature Explore” areas in several schools. The original two of these had large native plantings, but as these areas have proliferated (there are soon to be thirteen), they have focused more on active interactions with natural materials (huge logs, etc.), instead of on plantings and plant explorations.

While teachers are often interested in pollinator gardens, etc., my experience is that they are very busy and do not often have the time to install these resources, or even to fill out the applications for grant opportunities. If there were enough volunteers available, much more could be done to get more native plants into our schools. Of course, the volunteers would be needed on an ongoing basis to maintain these areas as well.

On the other hand, as Columbia has begun transitioning to more “place-based” education, some of the schools have taken on more ownership of their outdoor spaces. One school has even been working on creating a new prairie planting. So, it remains to be seen what the future will bring. But native vegetation will be a part of the student experience at least as long as MONPS and other volunteers remain involved.

(Editor’s note: Lea has shared her email - langtrea@gmail.com - for anyone who would like to contact her for more information or advice.)



Planting natives with preschoolers at Center for Early Learning North

Celebrating Earthday-April 22. FOOTPRINTS AND

FOOTNOTES, part 2

Compiled by David Schilling

1960 Wallace Stegner

“What I want to speak for is not so much the wilderness uses, valuable as they are, but the wilderness ‘idea’, which is a resource in itself. Being an intangible and spiritual resource, it will seem mystical to the practical minded—but then anything that cannot be moved by a bulldozer is likely to seem mystical to them.”

1962 Rachel Carson - *Silent Spring*

“I am not afraid of being thought a sentimentalist when I stand here tonight and tell you that I believe natural beauty has a necessary place in the spiritual development of any individual or any society. I believe that whenever we destroy beauty, or whenever we substitute something man-made and artificial for a natural feature of the earth we have retarded some part of man’s spiritual growth.”

Boone County Nature School Coming Soon

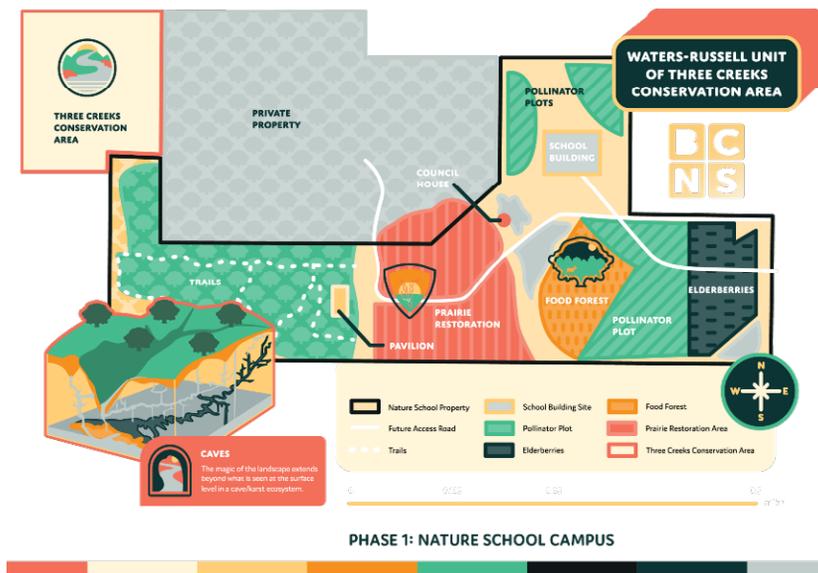
by Mike Szydlowski

A historic partnership between Columbia Public Schools and the Missouri Department of Conservation is bringing a whole new concept to environmental and community-based education. Once complete, a four-classroom Nature School will sit on 200 acres of donated land bordering the Three Creeks Conservation Area in Boone County. This isn't just "another nature area". Instead, the Nature School will be an immersion into a robust place-based experience for all fifth graders in Boone County.

First, a quick primer on what place-based learning is. Place-based learning means that you teach the same standards as everyone else but those standards are taught with an extensive nod towards your own community before extending those concepts more globally. For every curriculum standard, students try to make connections to the ecology, economy, and culture of their place.

Place-based learning isn't new – it's just been on pause for many years. When schools first started as tiny single room schoolhouses, learning was always place-based. Students were taught what they needed to be successful in their community. As communities and schools became larger and larger, statewide and nationwide curriculum, textbooks, and programs were developed. While this is an efficient way to deliver curriculum materials, local connections were lost.

Students in place-based learning explore their community, find problem opportunities, research the problem and learn the related curriculum content, design solutions to the problem, and in some cases, make their community better by carrying out their designed solutions. Therefore, not only does place-based learning allow students to become more engaged in their community, place-based learning makes the community better for everyone.



Nature School Curriculum

When the Nature School is complete, every Boone County fifth grader will spend seven days exploring the ecology, history, and culture of Boone County. The students will hike, fish, canoe, investigate, learn about their place. In the first four days, the students will also work with their class to develop a service learning project near their school. Before their next three-day visit (the next semester), the class will carry out the community project and then report on and celebrate the project's completion.

The Nature School itself will be surrounded by active science projects. All landscaping will be done by native plants with educational displays

to encourage others to do the same. The building will also take advantage of water runoff by creating native waterscape areas. The Nature School staff will work with interested organizations to help design and maintain these beautiful and functional native garden areas.

In addition, the Nature School and Missouri Conservation Department staff will work with other organizations to create a several-acre food forest using only Missouri native plants. This food forest will not only showcase what is possible from Missouri plants but will also allow students to sample Missouri's wild foods.

Even more, much of the Nature School property is covered in non-native grasses. In a process that has already begun, three-acre patches of land will be converted to native prairies each season until all are converted. Students and other interested groups will be invited to take part in this work.

Finally, students and staff will work on identifying and removing invasive plants on the property. In the end,

the students and community will be able to enjoy and learn from a diverse native landscape that offers many exploration opportunities.

To learn more about the Boone County Nature School, please visit www.boonecountynatureschool.com.



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/>

Do You Have a Plant Story?

In 2022, we hope to bring a fresher look to our MONPS website. One part of the plan is to post text and photos by our members, on individual Missouri native species. Do you have a favorite Missouri native plant? A photo you're particularly proud of? Please submit it to pamela.barnabee@gmail.com for posting on the monativeplants.org website. Thank you to Yolanda Ciolli and Mike Trial for kicking things off with their essay and photos of *Aplectrum hyemale* (Adam and Eve or putty root orchid) - a very appropriate plant for winter!

CHAPTER REPORTS and EVENTS

HAWTHORN

by Cindy Squire, Chapter Representative

14 February. The Hawthorn regular business meeting was held via Zoom. A program was given by Joanna Reuter. Joanna's presentation illustrated how the iNaturalist app can be used as a tool to enhance one's understanding of Missouri's flora. Examples of interesting plants were presented from the Missouri Botanists Big Year 2021 iNaturalist project.

Upcoming Chapter Events

14 March. Regularly scheduled monthly meeting via Zoom with Nadia Navarrete-Tindall's presentation entitled Nitrogen Fixing Plants: Native Legumes and Other Nitrogen Fixers

End of March. Adopt-a-Spot Work Day, TBD dependent on weather

9 April. Bradford Research Farm Native Plant Sale, a MPF event

11 April. Regularly scheduled monthly meeting via Zoom with John Miller's presentation entitled Frogs: How They Depend Upon Native Plants and Vice Versa

24 April. Earth Day Festival, a City of Columbia Event
See www.columbianativeplants.org for an updated posting of newsletters and activity details.

ST LOUIS

by Rick Gray, Chapter President

01/26: Chapter meeting. Justin Thomas, Science Director for NatureCITE, gave a presentation on the "Interpretations and Uses of Floristic Quality Assessment" and a broader discussion of ecological dynamics. A recording of the presentation will be posted to the MONPS web site.

The Chapter plans to continue to hold meetings via Zoom at least through April of 2022. These will be held on the fourth Wednesday of each month and will begin at 7:00 pm. A Zoom invitation will be sent via email a few days prior to each meeting.

PARADOXA

by Pam Barnabee, Chapter President

After Paradoxa Chapter's long winter hiatus, we're anxious to welcome spring. Here are our upcoming events:

Saturday, March 5: Winter Tree ID Workshop, Bray Conservation Area, Rolla, 9:00 a.m. to noon. MDC Forester Mike Fleischhauer will show us the basics of using twigs and bark to identify tree species in the winter, and then lead a walk through the woods so we can put our new skills to use. Class size is limited, so you must pre-register by sending your name(s) in an email to paradoxarolla@gmail.com.

Saturday, April 9: Spring Ephemerals Walkabout, Barnabee property, 10:00 a.m. to noon. Join us for a walk through river bottom and along bluff base to view spring ephemerals, those wildflowers that take advantage of sunlight that filters through leafless trees in early spring and then fade away as the tree canopy fills in. The walk will be on level ground, but we may encounter uneven surfaces and mud. Our property is located in southeast Pulaski County, about an hour's drive from Rolla. Contact us at paradoxarolla@gmail.com for directions.

Thursday, May 5: Prairie Walk at the Edgar property, 6:00 p.m. to 7:30 p.m. John and Elaine Edgar are once again welcoming us to tour their prairie, located about 20 minutes south of Rolla. On this visit, we should see Indian paintbrush and shooting star in bloom. The walk will be on level, mowed paths and a 4-wheeled ATV is available for our use. Contact us at paradoxarolla@gmail.com if you need directions.

Saturday, May 14: Native Plant Sale, Rolla Saturday Farmers Market (in the Big Lots parking lot on South Bishop), 7:00 a.m. to 1:00 p.m. A large selection of native plants will be offered by our vendor, Prairie Hill Farm. Chapter members: if you have native plants from your gardens to donate to the sale, please let me know. We'll also have a booth with information and resources. Volunteers will be needed to set up canopies and tables, answer questions and help customers with their selections. Contact us at paradoxarolla@gmail.com to volunteer.



Castilleja coccinea, Indian paintbrush. Photo by Elaine Edgar.

Celebrating Earthday-April 22. FOOTPRINTS AND FOOTNOTES, part 3

Compiled by David Schilling

1963 Stewart Udall - *The Quiet Crisis*

"America today stands poised on a pinnacle of wealth and power, yet we live in a land of vanishing beauty, of increasing ugliness, of shrinking open spaces, and of an overall environment that is diminished daily by pollution and noise and blight. This is the quiet conservation crisis of the 1960's."

1967 Paul and Anne Ehrlich - *The Population Bomb*

1969 Oil slick on the Cuyahoga River in Cleveland catches fire

1970 Pogo/Walt Kelly

"We have met the enemy and he is us."

1971 Barry Commoner - *The Closing Circle*
The 4 Laws of Ecology: 1)Everything is connected to everything else. 2)Everything must go somewhere.3)Nature knows best. 4)There is no such thing as free lunch.

1972 Clean Water Act

1973 Endangered Species Act

1988 Robert Mohlenbrock - *Where Have All the Wildflowers Gone?*

2008 Richard Louv - *Last Child in the Woods*

2015 Elizabeth Kolbert - *The Sixth Extinction*



Once a barren corner of lawn, now a living science classroom, photo by D.Thomas

"Living school grounds are richly layered outdoor environments that strengthen local ecological systems while providing place-based, hands-on learning resources for children and youth of all ages. They are child-centered places that foster empathy, exploration, adventure and a wide range of play and social opportunities, while enhancing health and well-being and engaging the community.

Well-designed living school grounds model the ecologically-rich cities we would like to inhabit, at a smaller scale, and teach the next generation how to live more lightly on the Earth—shaping places where urbanization and nature coexist and natural systems are prominent and visible, for all to enjoy. When implemented comprehensively and citywide, living school ground programs have the potential to become effective components of urban ecological infrastructure, helping their cities address many of the key environmental issues of our time." – **Sharon Danks, CEO, Green Schoolyards America**

New Members

St. Louis

Leslie Penning, Berger
Gwenllian Clopton, University City

Hawthorn

Peter Lynne Schauer, Boonville
Thomas Crawford, Excelsior Springs

Kansas City

Peter Lynne Schauer, Boonville
Donald Meier, Kansas City
Thomas Crawford, Excelsior Springs

Paradoxa

Kirsten McIntyre, Rolla
Darrin Limbaugh, Salem

Empire Prairie

Thomas Crawford, Excelsior Springs

Osage Plains

Thomas Thompson, Clinton
Thomas Crawford, Excelsior Springs

Ozarks

Angela Sokolowski, Ava

Southwest

Blake Pagnier, Bolivar
Angela Sokolowski, Ava
Jennifer Ogle, Fayetteville, AR

State Level Membership

Christine McCarthy, West Branch, IA

Wildflowers of the Midwest by Don Kurz has recently been published by Falcon Guides. Containing 387 pages and covering over 600 species, the entries are arranged by flower color and families. It ends with a 20-page section in "brown" entitled "Weeds" – those invasive non-natives we are all but too familiar with. Besides "Habitat/Range" for each entry, "Comments" often include folklore/medicinal use of the plant. List Price is \$29.95.

Missouri Native Plant Society Membership Form

Name	
Address	
City, State, ZIP	
Phone	
Email	

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):

	Check here if you prefer to receive your newsletters via postal mail!	\$10
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Other contributions (optional, check all that apply, specify amount, tax deductible):

	Hudson Grant Fund	
	Other contributions	

Total:

Total amount	\$
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To contact the Missouri Native Plant Society, please **click the "Have a Question" link** on our website.

“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