PETAL PUSHER

May-June 2019 Newsletter of the Missouri Native Plant Society Volume 34 No.3
"… to promote the enjoyment, preservation, conservation, restoration, and study of the flora native to Missouri."

In this issue

Uncommon or Not?

by Steve Turner

Geum virginianum, flower. Petals are pale yellow and shorter than sepals.

When one spends a lot of time outdoors surveying plant communities, it is easy to fall into the trap of making unwarranted assumptions about IDs. After seeing dozens of specimens of a particular plant during an outing, one may begin to pay little attention to additional examples of that plant. If there is a second species of similar appearance which occurs in the same area, errors in identification can result. Potentially this can lead to undercounting of less common species and inappropriate conservation rankings. Recently, MONPS members deliberately mindful of this trap have been instrumental in revising a conservation ranking, as described in the first example below. In the hope of expanding awareness and perhaps repeating this performance, additional examples below describe uncommon plants and their differentiating characters.

Geum virginianum (pale avens or cream avens) was recently moved from S1 (Critically Imperiled) to the more secure S3 (Vulnerable) state ranking, in response to an increased number of sightings and voucher specimens from multiple counties. This increase is thought to be at least partly due to increased awareness of the plant and its differentiation from the common *G. canadense* (white avens), exactly the sort of awareness that this article seeks to promote. Both species are perennial forbs, erect and typically standing about 2' in height. The flowers are similar, having five distinct petals and conspicuous

Geum canadense, flower. Petals are white and as long as sepals.

sepals alternating with the petals. In the common *G. canadense*, the petals are white and at least as long as the sepals; in the less common *G. virginianum* they are cream or pale yellow in color, narrower, and shorter than the sepals. There is also a difference in the stem bases, with that of *G. virginianum* being densely hairy and that of *G. canadense* much less so. This character can be subtle with some overlap between species, so determination based on the petal aspect is preferred. Note that a third species, *G. laciniatum* (rough avens) can be found in some northern areas of the state and resembles the other two. It has flower stalks which are conspicuously and densely pubescent with spreading hairs, whereas the other two species have minute velvety hairs on the flower stalks.

These species of *Geum* are typically found in rich, mesic or bottomland forest habitats. *G. virginianum* may be less tolerant of disturbance and may also exhibit a slight preference for acidic soils.

Acalypha deamii (two-seeded mercury) is currently tracked by the state of Missouri as an S1 (Critically Imperiled) species. In gross appearance it is very similar to the common *Acalypha rhomboidea* (three-seeded mercury), having opposite leaves on long petioles and inflorescences with leafy bracts in the upper leaf axils. Both typically grow to a height of around 18" and are otherwise unremarkable in appearance, having flowers which are minute and not at all showy. The two species can be differentiated by close examination of the fruits, which are found within the leafy inflorescence bracts. In *A. rhomboidea*, the fruits will be three-lobed, containing three seeds, and in *A. deamii* they have only two lobes. If a two-lobed fruit is found, it is advisable to check other fruits on the same plant, since *A. rhomboidea* will occasionally abort one of its locules and produce an aberrant 2-lobed fruit. The seeds of *A. deamii* are also significantly larger than those of *A. rhomboidea*, and with practice this difference is not hard to discern in the field.

Top left: *Acalypha deamii,* inflorescence bracts and two-lobed fruit

Bottom right: *Acalypha rhomboidea*, inflorescence bracts and three-lobed fruit

Both plants are found in moist bottomland forests, sometimes occurring in close proximity to each other. The relatively uncommon A. deamii has been found with surprising regularity in the floodplain of the Meramec River, but its distribution elsewhere is less well understood.

Potentilla supina ssp. *paradoxa* (bushy cinquefoil) is currently tracked in Missouri as an S2 (Imperiled) species. The flowers of the plant look similar to those of other species of *Potentilla*, with five distinct, bright yellow petals, conspicuous sepals alternating with the petals, and numerous stamens. The flowers tend to be somewhat smaller than those of other species. The plants tend to have a somewhat trailing, sprawling, and bushy aspect. Leaves are alternate. The key differentiator for this species is having at least some leaves which are pinnately compound with five or more leaflets. The leaves of other Missouri species of *Potentilla* are trifoliate or palmately compound (note that this method of differentiation will not necessarily work outside of Missouri, where the number of species and the attendant taxonomic confusion expand greatly). The favored habitat of bushy cinquefoil is less clearly defined than that of the *Acalypha* species described above. Yatskievych's Flora of Missouri lists streambanks, lake margins, roadsides and railroads among its habitats. Recently, it has been found repeatedly in terraced areas of Missouri River floodplain, typically in somewhat sandy substrate. It seems likely that germplasm material has been deposited during flooding events of the river. The plant may be somewhat waiflike, springing up after flooding events but not necessarily persisting for many years.

Newly found populations of tracked species, such as *Acalypha deamii* and *Potentilla supina*, should be reported to MDC, as described in the Species of Conservation Concern booklet available at **http://mdc.mo.gov/145**. The size of the population, its GPS coordinates, nearby plant associates, and other relevant information should be noted if possible.

Potentilla supina, leaf with several leaflets

Documenting the Missouri flora

by Aaron Floden

Missouri lies at the intersection of the Great Plains, Interior Low Plateau, Mississippi Basin, and Appalachian Provinces and the flora reflects these different floristic regions. The southeastern Ozarks and Mississippi Basin have more in common with the great Southeastern flora than the northwest portions of Missouri. Often new discoveries in the state are edge of range occurrences that just enter the state or those found in rarer habitat types. To aid in finding plants new to the flora it is important to first look at distribution maps of species, to know where collections are scarce in the state. Discovering small unexplored habitats is key. The goal is not to only document the flora but to better understand the floristic associations, phytogeography, and enable proper conservation measures when and where applicable.

Many collections housed in Missouri herbaria (specifically MO and UMO) are databased so we can get an accurate estimation of the density of collecting done across the state by native species, native species + exotic, and by the total number of physical collections as well as other information. Figure 1 shows a heat map with the density of native species known from each county of the state (from Jan 2018 database version).

We can see that the density of species known is highest around large metropolis regions, in the Ozarks where the flora is notably more diverse, and the “hotspot” counties with abundant natural features that promote the persistence of diversity. In contrast north of the Missouri River we have more than half the counties with fewer than 400 total known native species documented from them out of the approximately 2050 native species known in the flora. St. Louis County has the highest number of natives reported with 1402 in stark contrast to that of Dekalb Co. with just 131 native species. From the heat map (Fig. 1) and the total specimens collected map (Fig. 2) it is apparent that the low numbers of natives documented for Dekalb Co. is correlated with the low number of only 200 collections made from the county. This correlation of the number of native species known continues across the state where low total

collection numbers are often strongly associated with the low total number of natives in those counties. It is also obvious from these maps that there is a dearth of collections made in these counties and we can target regions where basic floristic documentation will increase our knowledge of the flora of these areas.

Finding novel species new to the flora can be done by investigating difficult genera like *Rhynchospora*. At MO the genus has not been thoroughly examined or annotated for the flora region. Recently, the common southeastern sedge, *Rhynchospora glomerata*, was confirmed from wetlands in the eastern Ozarks. Likewise many of the *Carex* for the flora present opportunities to add "new" species to the flora, or expand our knowledge of their distributions in the state. These methods require time spent looking through herbarium specimens whereas other methods are field based. Recently through field studies, *Carex woodii* was discovered in Missouri far disjunct from populations that occur to the north and east far outside of where it would have been expected to occur.

One method that might enable relatively easier discoveries for the flora is to examine distribution maps in BONAP (Biota of North America; **http://bonap.net/NAPA/Genus/Traditional/County**) and USDA Plants (**https://plants.sc.egov.usda.gov/java/**) which provide county level distributions. From these databases it makes it easier to determine which species that occur in adjacent states are more likely to be found in Missouri. In some cases this is a possibility, while in others the species in question might be endemic

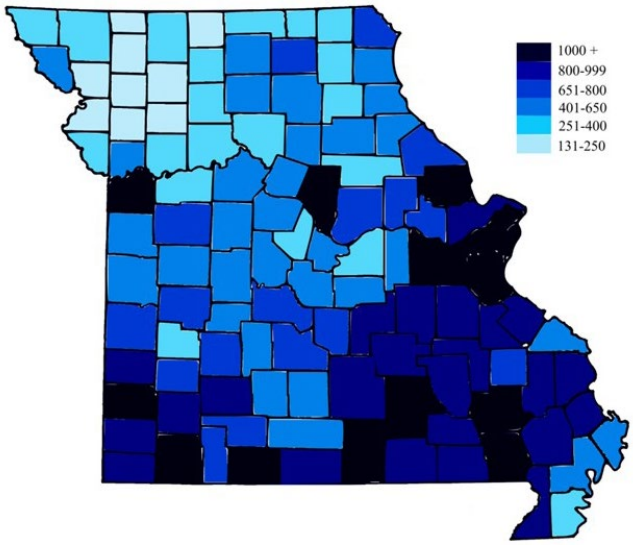


Figure 1. Heat map showing the distribution of native species documented from each county in the state.

Figure 2. The number of collections from each county including native and non-native taxa from a total of approximately 208,000 total databased collections.

to a particular geology that is not present in Missouri. A few examples include: *Arisaema triphyllum* subsp. *pusillum* in a few southern Illinois counties; *Juncus coriaceous*, which is common, but scattered south and east of Missouri; *Nemophila aphylla* along the southern and SE counties but not yet found in the state; *Scutellaria integrifolia* which might occur in the Bootheel in sandy soils along Crowley's Ridge; *Silene ovata* found east of the flora region and to the south in Arkansas; *Uvularia perfoliata* which has been recently discovered in two border counties of Arkansas; and *Viola canadensis* known from the adjacent Boston Mountains in Arkansas. Another example that exhibits a distribution around the state, but has not yet been documented for the flora is *Phemeranthus rugospermus*. It should be expected in sandy glades or prairies though it has yet to be documented for the flora. Likewise, but much rarer, *Micranthes palmeri* might occur in a few remnant high quality sand prairies in the southwest portion of the state though it has been searched for and may be associated with a specific geology not present in the state.

With the specimen data present for the state showing the total number of collections and also those of native species known combined with national distribution maps we can target regions for floristic studies or specific species based on their distributions in neighboring states. These methods will produce a better basic understanding of our flora which is vital to making informed conservation decisions.

Spring field trip reminder

The Spring Field Trip at and near Meramec State Park is coming up soon (May 3-5)! For a detailed itinerary and directions, visit the links below. A block of rooms is reserved at the Baymont by Wyndham in Sullivan, MO. You can call them at 573-860-3333 to see if rooms are still available. There are other hotels in Sullivan as well. We hope to see you there!

Itinerary
Google Map
Facebook Event Page
MONPS Website - https://monativeplants.org/events/

Summer field trip

Come celebrate the 40th Anniversary of the Missouri Native Plant Society at our Summer Field Trip! Excursions to various sites will take place on June 21-23 in the vicinity of Fulton, MO. Potential field trip sites include Prairie Garden Trust, Tucker Prairie, Graham Cave, Danville Conservation area and/or others. We will have a 40th anniversary celebration on either Friday or Saturday night. Details, including hotel options, will be posted on our website and on the Facebook Event Page in the coming weeks, so keep an eye on these links for more details!

MONPS Website - https://monativeplants.org/events/
Facebook Event Page

Habit of *C. cumberlandensis*- Crane Pond Creek- Iron County, Missouri- 5 June 1993. Photo by Bill Summers. (see article by Paul McKenzie, p. 8

Dues are Due

By Ann Earley, Membership Chair

Membership renewals for the July 2019-June 2020 year are due. If you receive your newsletter by postal service delivery, please check the top line of your mailing label. If it shows the date 20190630, your dues are now payable. When renewing, please remember to include your contact information including email address, and your society and chapter dues preferences. Membership renewal online is also available via our website at **www.monativeplants.org** which offers the option of online payment via PayPal.

For those members receiving their newsletter by email without a mailing label, or for others with questions about their membership status, please contact me or your chapter representative (see back page for contact details) for information about your membership expiration date. We value our members and urge you to renew today!

New Members

Kansas City and Osage Plains Chapter
Eric Christensen, Garden City

St. Louis
Christine Winters, Dardenne Prairie
Suzanne Smith, Columbia, Illinois

Hawthorn
Michelle Pruitt, Columbia

Paradoxa
Marcia Baumgartner, St. James

State Level Membership
Lynda Miller, Hollister
Samuel Brayfield, Linn Creek

Chapter Events

Hawthorn

05-11: Arrow Rock Garden Festival, 10a.m.-4p.m.

5-16, 6-20, and 7-18: Chapter Lunches, 11:30 a.m.

Chapter lunches are held on the third Thursday of each month just south of Broadway Street in downtown Columbia at Uprise Bakery inside the lobby of the RagTag Theatre, 10 Hitt Street, Columbia, Missouri.

05-13, 07-08: Chapter Meetings, 6:30 p.m.

Chapter meetings are held on odd-numbered months on the second Monday. Please check your email for additional scheduled speakers on even numbered months. Meetings are held at the Unitarian Church, 2615 Shepard Boulevard, Columbia Missouri. Newcomers and friends are welcome to attend.

05-18: Columbia Bass Pro Shop/ MPF Plant Sale 10a.m.-p.m.

05-19: Mosey to explore Big Sky near Wilton 1p.m.

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

Kansas City

05-07: Chapter Meeting, 7:00 P.M.

05-16, 06-20: Botanical Walk, 5:30 P.M.

Our chapter meetings are held on the first Tuesday of odd-numbered months except July at the Anita B. Gordman Conservation Discovery Center, 4750 Troost Ave., Kansas City, Missouri.

Our Botanical walks of 2019 are held every third Thursday at 5:30pm, April to October. Meet at the Eddy-Ballentine Trail Head on Blue River Road, 1/2 mile North of the firefighter memorial on 87th St. Parking is limited to 2 little areas on the East side of the road and larger parking area next to the utility substation on the West side of the road.

Call John Richter 816-519-8201 or email richterjc@bv.com, President of Kansas City Chapter of Missouri Native Plant Society for more information.

Paradoxa

Paradoxa schedules meetings and walkabouts at a variety of locations in the Rolla area. Watch our chapter page on the monativeplants.org website for updates, or email us at paradoxarolla@gmail.com, and ask to be added to our email list, as dates and locations may change. Workdays for the Bray CA Botanical Collection and Herbarium Project are generally held on the first and third Thursdays of the month. Please contact us at the above email if you would like to join the crew.

05-11: Native Plant Sale, 8 a.m.

Paradoxa Chapter co-sponsors this annual sale at the downtown Rolla Farmers Market. Sale hours will be 8 a.m. to noon but volunteers are needed for set up and tear down. Volunteers are needed to grow or pot native plants, unload and arrange the vendor's plants, and assist shoppers with plant selection.

05-17: Walkabout, Audubon Trails Nature Center, 5:30 p.m.

Meet at the Nature Center parking lot. We'll look at what's growing and share our knowledge.

06-15: Field Trip, Solomon Hollow Glades Natural Area, 9:00 a.m.

Meet at the Rolla Kroger parking lot at 9:00 a.m. to carpool to this area of extensive sandstone glades, 16 miles south of Rolla. A staff member from Mark Twain National Forest will accompany us.

Perennis

Watch for announcements by e-mail, the MONPS Facebook page, and the MONPS website.

Saint Louis

05-22: Meeting

Susie Van de Riet, a certified arborist associated with Grow Native! Wild Ones, and Master Naturalists, will present “Gardening for Pollinators.” We hope to offer a follow-up field trip to view a "Platinum Certified" native plant garden shortly thereafter.

Our meetings are held at 7:30 p.m., on the fourth Wednesday of the month in the Sunset Hills Community Center, 3915 South Lindbergh Blvd.

Hudson Award winners

We are happy to announce the recipients of our 2019 Hudson Fund Awards. This year there are two awards of $1,000 each which will assist with funding for research projects conducted by college or university students under the supervision of a faculty member. The award honors the late H. Stanton Hudson (1921–2002), a long-time member of the Missouri Native Plant Society whose passion for the flora of Missouri and its conservation inspired his friends and family to create a small grants program in his memory.

This year’s Hudson Research Awards go to **Eva Colberg,** of UM St. Louis, whose project involves the effect of prescribed fire on ant-dispersal of seeds, and **Rachel Becknell**, of Washington University who will work on the role of soil microbes in the establishment of hard-to-establish plant species and the restoration of grassland communities. Upon completing the projects, award winners will prepare the results for publication in a peer-reviewed journal and present their findings at local and regional scientific meetings including the Missouri Botanical Symposium. **Congratulations Eva and Rachel!**

AmazonSmile Donates to MONPS When You Shop!

AmazonSmile is an easy way to support MONPS. Every time you shop on **smile.amazon.com**, the AmazonSmile Foundation donates 0.5% of your purchase of eligible products to MONPS.

Simply visit **smile.amazon.com** and search for Missouri Native Plant Society Inc. After you finish shopping, Amazon will automatically donate to MONPS. You may also click the AmazonSmile link on **monativeplants.org**.

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.

Rhodobryum onteriense, found on Moss Mosey (Hawthorn chapter)

Carex cumberlandensis showing glaucous, dark green culms, and perigynia on pendulous peduncles- Marble Creek. Madison County, Missouri- 26 May 2014. Photo by Paul McKenzie

Carex cumberlandensis- an Easily Overlooked Sedge In Section *Careyanae*

By Paul M. McKenzie

Carex cumberlandensis Naczi, Kral, & Bryson (Cumberland sedge) is a recently documented addition to the Missouri flora in the *Carex* Section *Careyanae*. It was not reported by Yatskievych (1999) because that treatment predated the description of the species new to science. It was originally collected 5 June 1993 by Bill Summers along a stream adjacent to Crane Pond in Iron County (Summers 5752: **http://www.tropicos.org/Specimen/2720886**) and by Alan Brant along Grassy Creek in Bollinger County on 11 May 1995 (Brant 3197: **http://www.tropicos.org/Specimen/952278**). Both specimens, however, were originally identified as *Carex digitalis* Willd. var. *digitalis* (Slender woodland sedge), which they would have keyed to based on the information known at the time. *Carex cumberlandenis* was described as a new species in 2001 (Naczi et al.) and the authors noted that the species has close affinities to *C. digitalis* and *Carex abscondita* Mack. (Thicket sedge), two species with which it has often been confused. Naczi et al. (2001) determined that the range of *C. cumberlandensis* extended from PA, south to GA and west to AR. The Summers and Brant collections were re-determined to be *C. cumberlandensis* by Naczi in 2003 (see Tropicos specimens above). The common name "Cumberland sedge" stems from the Cumberland Plateau that is the center of the species' distribution.

Subsequent to the Naczi et al. (2001) description and re-determinations by Naczi, *C. cumberlandensis* was collected by Brant in Bollinger, Madison, and Ste. Genevieve counties and by this author in Iron, Madison and Reynolds (see specimens in Tropicos). Section *Careyanae* is endemic to eastern North America and is most diverse in mesic deciduous forests of the southeastern U.S. (Naczi et al. 2001). Members of this section are characterized by having androgynous staminate spikes (i.e., well exserted above pistillate spikes), acutely triangular perigynia with usually 40 or more nerves, glabrous leaf and bract blades, long-sheathing proximal bracts, and glabrous perigynia (Naczi et al. 2001). *Carex cumberlandensis* is distinguished from several members of Section *Careyanae* by lacking purple culm bases and from *Carex laxiculmis* Schwein. var. *laxiculmis* and *C. laxiculmis* var. *copulata* (L.H. Bailey) Fernald by having the proximal most scale of each lateral spike subtending a perigynium (sterile or empty in *C. laxiculmis*) (Naczi et al. 2001). *Carex cumberlandensis* can be distinguished from *C. digitalis* primarily by having more obtuse staminate scales and flowering culms shorter than the vegetative culms, and being more caespitose (See photos p. 5 and 9). In their key to Section *Careyanae*, Naczi et al. (2001) determined that Cumberland sedge was most similar to *C. abscondita* but differed in having distichously imbricate vs. spirally imbricate perigynia and having the proximal peduncles usually erect vs. the noticeably pendulous peduncles on *C. cumberlandensis*. It is unlikely, however that the two species would be confused in Missouri as their ranges apparently do not overlap as *C. abscondita* is restricted to a few localities in the Bootheel, and Cumberland sedge is apparently restricted to the Ozarks.

Cumberland sedge is a dark green, densely caespitose or cushiony sedge that is similar in appearance to the habit of *C. laxiculmis* var. *copulata* (Spreading sedge). In both species, the leaves are dark green, the basal culms lack purple pigmentation, the perigynia are often hidden within the vegetative culms (especially when viewed from above), and the lateral proximal pistillate spikes are on pendulous

peduncles (see photo on p. 8). Based on personal field experience, *C. cumberlandensis* can be distinguished from *C. laxiculmis* var. *copulata* by its more tufted and caespitose appearance, and the lack of empty pistillate scales. Due to the dark green foliage, it is unlikely *C. cumberlandensis* would be confused with *C. laxiculmis* var. *laxiculmis* that has conspicuous glaucous, blue-green leaves. It is rather unfortunate that the illustration of *C. cumberlandensis* in Naczi et al. (2001:996) depicts Cumberland sedge as having erect leaves and culms because the species in the field is much more compact.

Carex cumberlandensis occurs in a wide variety of moist-mesic deciduous forests throughout its range (Naczi et al. 2001). In Missouri, Cumberland sedge is found primarily along cherty streams but can also be found along north-facing toe slopes and rich riparian corridors. *Carex cumberlandensis* is currently listed as a S1 in MDC's Species of Conservation Concern (Missouri Natural Heritage Program 2019) but it is likely that additional surveys along cherty streams in the Missouri Ozarks will yield additional populations. This fairly short, clump-forming grass sways gracefully in the wind, sending its seeds across the land to expand its presence.

Literature Cited

Missouri Natural Heritage Program. 2019. Missouri species and communities of conservation concern. Missouri Department of Conservation. Jefferson City, Missouri.

Naczi, R.F.C., R. Kral, and C.T. Bryson. 2001. Carex cumberlandensis, a new species of Section Careyanae (Cyperaceae) from the eastern United States. Sida 19(4): 993-1014.

Yatskievych, G. 1999. Steyermark's Flora of Missouri. Vol. 1- Revised ed. Missouri Department of Conservation in cooperation with the Missouri Botanical Garden. Jefferson City and St. Louis, MO.

Habit of *Carex cumberlandensis*- Grasshopper Hollow- Reynolds County, Missouri-14 June 2015. Photo by Paul McKenzie.

Seeking nominations for the Missouri Native Plant Society Awards!

Award nominations due June 1

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

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.

Arthur Christ Research Award, recognizing an individual's significant contribution in furthering the knowledge of Missouri flora.

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.

The John E. Wylie Award, recognizing individuals who have provided exceptional service to the Society.

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

Seeking nominations, continued...

planning, advocacy, or new ways of looking at old problems.

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 June 1. 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 at **Malissa.Briggler@mdc.mo.gov**

Nominations for MONPS Board

The Nominating Committee is pleased to announce that many open positions on the Board have been filled, but there is still one spot available for anyone wishing to provide service to the Native Plant Society.

Currently, there has only been one nomination for each of the spots listed below, and unless additional nominations are received, the nominated individuals will be elected by acclamation.

President: Dana Thomas

Vice-President: No Nominations

Secretary: Malissa Briggler

Treasurer: Bob Siemer

Board Positions:

Bruce Schuette ('19-'22)

Aaron Floden ('19 –'22)

If there are additional nominees for these positions, please contact Steve Buback, **steve.buback@mdc.mo.gov** to discuss the possibilities. Discuss with your friends and family whether the time is right to help lead the Missouri Native Plant Society into the next decade as the pre-eminent source of native plant knowledge and exploration. The Vice-President is an important position that helps plan field trips, finding hotels and meeting room for the quarterly field trips. If you think you can assist, please contact me as soon as possible!

Chapter Updates

Hawthorn

By Cindy Squire, Chapter President

Our first Mosey was a Moss Mosey on March 16. We had 18 members join us for a tour of a beautiful moss garden. We then traveled to Rock Bridge State Park to view moss in its natural settings. We identified 10 different mosses. I would like to thank Louise for allowing us to tour her garden and lead the Mosey culminating at a beautiful glade in Rock Bridge State Park. Please see our April newsletter for more in-depth information about the mosses viewed. We have scheduled 2 more Moseys in April and May.

With education in mind, the Hawthorn Chapter will be selling native plants at 3 events in Mid-Missouri in April and May. We are experimenting with native plant walks during the Birds and Bees fair in the town of Arrow Rock.

Monthly lunches at the Uprise Bakery on 10 Hitt Street in Columbia are quite fun and educational. The food at the Uprise Bakery is scrumptious. Conversation is focused on native plants and local events. Please join us for lunch!!

Moss Mosey at Rock Bridge State Park. Photo by Cindy Squire

Kansas City

by Cécile Lagandré, Chapter Representative

We couldn't meet in January but had our regular meeting in March when we decided to meet, from April to October, every third Thursday at 5:30pm for a botanical walk in the Blue River Glades Natural Area. We are very proud to have now an out-of-doors monthly activity and we expect to change the location every year.

Paradoxa

By Pam Barnabee, Chapter President

March 28 is technically a week into Spring, but possibly premature for scheduling a spring ephemeral walk - at least it was this year at Beaver Creek CA in Phelps County. But when we're not distracted by those delicate spring blooms, we find ourselves taking a closer look at what else there is to see. Our investigations began before we had even left the parking lot. Why do some red cedars (*Juniperus virginiana*), like the one at the edge of the lot, have an orange cast while others don't? On taking a closer look, we found that the color came from the cones (that had fortunately already shed most of their pollen) lining the branches of this male specimen of the dioecious species. Our next observation was a brown twiggy shrub that had no leaves but was covered with yellow buds, some bursting open to reveal their yellow fuzziness: spicebush (*Lindera benzoin*). Two other thorny shrubs were leafing out but had no flowers: the Missouri native, gooseberry (*Ribes missouriense*), and non-native multiflora rose (*Rosa multiflora*). We started to see patches of grass-like leaves coming up through the leaf litter, and finally found leaves with a stem and white bud attached: spring beauty (*Claytonia virginica*). The distinctive leaves of toothwort (*Cardamine concatenata*) were also abundant. One of our group finally spotted a full-fledged bloom that most of us had walked on past: the well-camouflaged trout lily (*Erythronium albidum*) with its mottled leaves. It appeared to be one-of-a-kind until we looked a little closer and saw the trail of flowers winding up the hillside. Taking a closer look...a useful habit for students of botany.

Trout lily, photo by Pam Barnabee

PERENNIS

by Andrew Braun, Chapter Representative

Members of the Perennis and Ozark chapters met at Sand Pond Conservation Area / Pondberry Preserve on April 7. The group looked around the wooded area, then moved on to a population of state-rare corkwood (*Leitneria floridana*), a small aquatic shrub found more commonly to the south. Other swamp species found here included willow oak (*Quercus phellos*), pumpkin ash (*Fraxinus profunda*), and water locust (*Gleditsia aquatica*). The group moved to another natural pond on the area to find a few stems of pondberry (*Lindera melissifolia*), an endangered shrub restricted to just a few populations in the coastal plain, and was lucky enough to catch it in flower.

Watch for announcements by e-mail, the MONPS Facebook page, or the MONPS website.

Corkwood, *Leitneria floridana*, photo by Andrew Braun

Pondberry, *Lindera melissifolia*, photo by Andrew Braun

Saint Louis

by John Oliver

[The Chapter Representative position is vacant]

Our February meeting featured two speakers we know well – member Steve Turner and our President, Rick Gray. The two had visited different parts of Colorado over the summer, and combined forces and photos to illustrate some of the local flora in their program, "Two MONPS Botanists Go to Colorado". Steve's visit was to the area around Estes Park, and his slides were of the plants typically found in the montane valleys of that area. These are indeed valleys but average about 8,000 feet in elevation! Rick's trip was to the subalpine and alpine area of the White River National Forest. This area was farther south and at higher elevations than the ones Steve visited. Rick climbed a series of "fourteeners" (mountains higher than 14,000 feet) and photographed his botanical finds. He noted that this careful documentation allowed him a chance to catch his breath and rest while his younger companions surged ahead. Both Steve and Rick used photos to compare species unfamiliar to most of us with similar related Missouri natives.

In March our speaker was Dr. Paige Mettler-Cherry, Professor of Biology, Lindenwood University-Belleville who presented "Now you see it, now you don't – Population dynamics of *Schoenoplectiella hallii* and hybridization with *Schoenoplectiella saximontana*." These two bulrushes are widespread across the U.S.; nevertheless, they appear to have been historically uncommon throughout their range, although there is now some evidence they are being spread by migratory waterfowl. They are annuals which germinate on sandy shorelines as floodwaters recede and exhibit a "boom and bust" lifestyle, based on flood conditions. Missouri is situated between the centers of population of the two (*S. hallii* to the east of Missouri, *S. saximontana* to the west) and Dr. Mettler-Cherry and colleagues have identified suspected hybrid plants here.

Southwest

by Michelle Bowe, Chapter Representative

Early, on April 6, we had a table at the Nature Center in Springfield's annual native plant sale and seminar. Many people stopped by and several of us had some fun discussions, including that many people have lots of other nature-type activities (esp. Master Naturalists and the Audubon Society) going on. We hope to combine future meetings with some other groups so that more folks can attend.

Later that day, a lively group took a lovely early spring wildflower walk field trip to the Kipfer's Bull Mills property. Among the finds were abundant bloodroots, false rue anemones and "true" ones, spice bush in flower, yellow trout lilies, yellow and purple violets, trilliums, Jacob's ladder, and yellow corydalis. We hope to see a slightly different variety of species when we return on April 27.

From the Editor

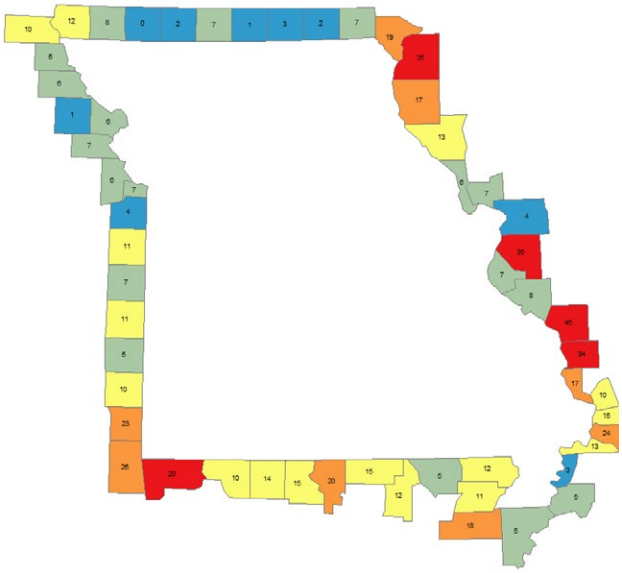
In Springfield, we have enjoyed the rush of spring ephemerals and the warm wind that brought them. I am greatly looking forward to seeing everyone in May and June during the MONPS meetings and field trips. It seems like it has been a long time! I'd also like to offer condolences to Casey Burks, who lost her husband during this time. This issue's "Conundrum Corner" seems to have expanded to include most of the document (see the previous main feature articles), leaving us in a conundrum of what to place there. So, this is it!

Thank you to Erin Skornia and our proofreading team, including Malissa Briggler (who put together the Chapter Reports and Events), John Oliver, Dana Thomas, and board members. Thank you to our authors, chapter representatives, and other contributors. Thank you for your time, dedication, collaboration and support! **-Michelle Bowe**

On Our Botanical Radar: Using BONAP Data to Identify Potential State Records

by Andrew Braun, Research Associate, NatureCITE

In the summer of 2016, Brett Budach and I were working our way through vegetation research plots on Wah'Kon-Tah Prairie when Justin Thomas excitedly called us over to where he was working. In a nearby swale, he had found white prairie rose (*Rosa foliolosa*), a species he long suspected might occur in Missouri, but until then, had yet to find. We made a quick survey of the population, notes on associated species, and discussed the differences between white prairie rose and other native roses. I was curious about its range, so I checked its distribution on the Biota of North America's (BONAP) North American Plant Atlas (NAPA, Kartesz 2015a). NAPA was started by John Kartesz in the 1970's as an attempt to map, at the county level, the range of each species that occurs in North America. This outstanding resource is used by botanists around the country to quickly check species distributions, and Kartesz continues to update and maintain it. Like many state records, white prairie rose was near the edge of its range--mainly eastern Texas and Oklahoma—but it didn't seem unreasonable for it to be found in Missouri. It got me wondering—what other plants could possibly be waiting to be discovered in Missouri? Is there an easy way to find out without scouring thousands of plant distribution maps?



PSR (Potential State Records) by county

I wasn't the first person to consider something like this. Julian Steyermark, in Flora of Missouri (1963), looked at distribution maps of species in adjacent states and listed those he thought most likely. Of the 265 taxa listed, about 17% had been discovered in Missouri by the time the Flora of Missouri was updated (Yatskievych 1999). Others not on the list had also been found. Some of discoveries predicted by Steyermark were made in only recent years, such as shining false indigo (*Amorpha nitens*), poke milkweed (*Asclepias exaltata*), and zigzag bladderwort (*Utricularia subulata*). More than a half-century of continual floristic discoveries in Missouri and nearby states have passed, and BONAP data could find many taxa Steyermark missed.

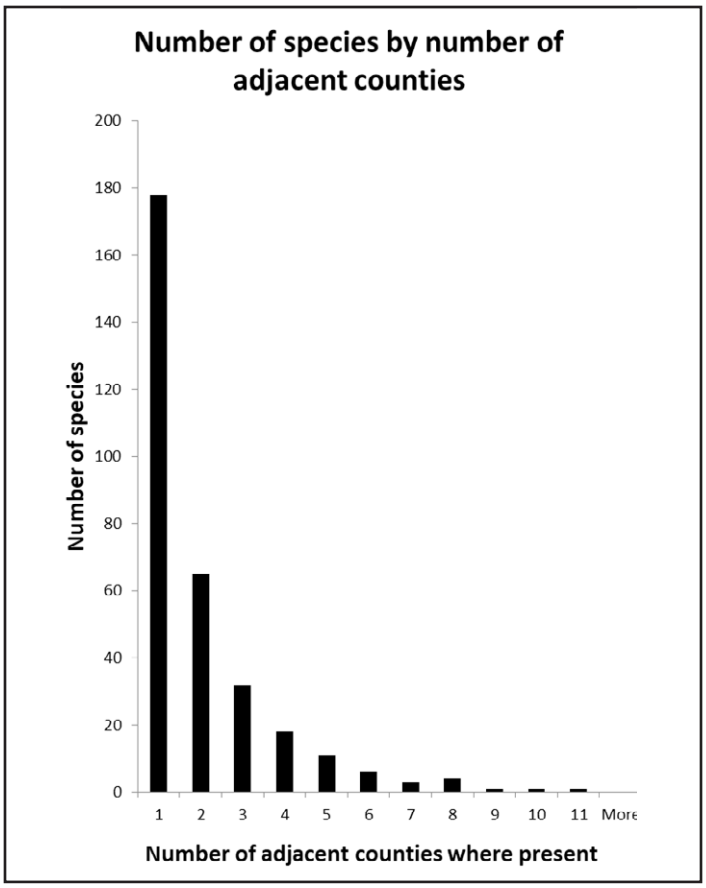
After chatting with John Kartesz and seeing a demonstration of software BONAP developed for floristic research, NatureCITE got a copy of BONAP's Floristic Synthesis program (Kartesz 2015b). I started learning how the program works, and soon had a list started. The program allows the user to make a species list using logic operators ("and", "or", and "not") on selected counties or states. I made a list of species that were not found in Missouri, but were found in at least one of the 56 bordering counties in Illinois, Kentucky, Tennessee, Arkansas, Oklahoma, Kansas, Nebraska, or Iowa. I entered each species into spreadsheet rows, and the counties in columns. If a species was recorded in a given county, a "1" was entered. I excluded taxa with historic, very rare, or questionable occurrences (such as a southern Illinois record for purple toadshade, *Trillium cuneatum)*, taxa with no apparent geographical affinity (such as pumpkin, *Cucurbita maxima*, which is more-or-less randomly scattered across the US), and hybrids. The counties were roughly grouped into regions named by the part of Missouri they were near (i.e., southwest Missouri). The sum was computed for each species and each county. Now, the spreadsheet could be ordered from greatest to least sum, and with the assumption that a greater sum meant an increased likelihood of discovery in Missouri, a list of likely state records was made. Botanists working in different parts of the state can filter the spreadsheet by region to concentrate on looking for those species most likely to be found. It was exciting to see how many potential state records there are!

Limitations to this process include taxonomic "lumping" (considering two or more closely related taxa to be the same), which obfuscates the ranges

of some groups, such as the rosette grasses (*Dichanthelium*), and disjunct populations, where the local occurrence of a species is not contiguous. Deeproot clubmoss (*Diphasiastrum tristachyum*), found in Missouri only in Ste. Genevieve county, is such a species. The next nearest populations are in central Kentucky.

In all, 325 taxa were counted, although more than half of these had a sum of one (found in only one county adjacent to Missouri). The highest sum was eleven for the non-native Tatarian honeysuckle (*Lonicera tatarica*) – not an exciting way to top the list. I was surprised to see that the great majority of the species on the list were native North American plants. Other likely state records include red-osier dogwood (*Cornus stolonifera*, east of Missouri), swamp mallow (*Hibiscus moscheutos*, eastern and western border), Short's aster (*Symphyotrichum shortii*, east of Missouri), groundsel (*Baccharis halimifolia*, surrounding the Missouri bootheel), and pale lobelia (*Lobelia appendiculata*, southern and western Missouri).

Eastern and southwestern Missouri seem especially likely to harbor some state records, but nearly all adjacent counties already had at least one record. Based on range maps, my perception of preferred habitat types, and the types of habitats available, some general suggestions can be made about where to look. In northeast Missouri, dry sandy areas and wetlands may harbor some northern species, and plants of the Great Plains may be found in the loess hill prairies of northwest Missouri and the dry upland prairies of western Missouri. Species from the Arkansas Ozarks may be found in our woodlands and glades. Some of these seem to have a preference for sandstone, but sandstone is not a common part of the extreme southern Missouri Ozarks. Several coastal plain species may be found in the wetlands of southeast Missouri, particularly riverfront habitats. Quite a few species seem to abruptly stop at the western Illinois border—these are common in deciduous forests farther east. The Mississippi River Hills region is the western extent for several species known to occur in Missouri, such as pennywort (*Obolaria virginica*), beech (*Fagus grandifolia*), and broad loose-flowered sedge (*Carex laxiflora*).



Although many species found in counties adjacent to Missouri likely do not occur in our state, we won't know unless we look for them, and we need to know what to look for. Many of the species on this list are only subtly different from common, well-known species. My hope is that this list can be used by botanists (amateur and professional) to familiarize themselves with some of these species – to put them on their botanical radar – so that if they do occur in Missouri, we will recognize them, and can therefore better know, enjoy, and protect the wonderful flora of our state.

The complete list of potential state records for Missouri can be found on NatureCITE's website, **www.naturecite.org**. Happy hunting! Kartesz, J.T. 2015a. The Biota of North America Program (BONAP). 2015. North American Plant Atlas. (**http://bonap.net/napa**). Chapel Hill, N.C.

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—Aldo Leopold