

Petal Pusher

May-June 2011

NEWSLETTER OF THE MISSOURI NATIVE PLANT SOCIETY

Vol. 26, No. 3

June field trips center on Johnson's Shut-ins

Please join us for the annual meeting on June 10-12.

Our summer events will be in the St. Francois Mountains area of the eastern Ozarks. Events will be centered around Johnson Shut-ins State Park.

Friday, June 10 – Meet at the Taum Sauk Mountain State Park Trailhead at 9 a.m.

From there we will take an off-trail hike to Wildcat Mountain on the other side of the Taum Sauk Creek valley. The adventuresome can continue on to Weimer Hill and then intersect the Ozark trail and finally return to the trailhead via Devil's Tollgate and Mina Sauk Falls. Others can return via the route taken to Wildcat Mountain. Bring lunch and water. This will take most of the day. We will be visiting Mead's milkweed sites and some acid seeps in addition to compiling plant lists as part of a MONPS commitment to support the MO Birds grant agreed to in 2009. Please be on time! This hike will require an early start.

Friday evening — Meet at the new Black River Visitor's Center at Johnson's Shut-ins State Park. Our program will be on the amazing restoration efforts at the park following the catastrophic flood caused by the dam breach at the upper reservoir of Ameren's Taum Sauk facility in December 2005.

Saturday, June 11 — Meet at the Fort Davidson State Historic Site parking lot at 8 a.m.

We will travel to Johnson's Shut-ins State Park where several hiking and exploration opportunities are offered. We should be at the park by 9 a.m. for those of you that would like to catch up with the group there. In the morning, we'll take a new trail to Horseshoe Glade. Following lunch in the park we'll have options to explore the restored fen at the park, the Scour Trail



Johnson's Shut-ins State Park is the focal point of the MONPS field trip on June 10-12.



and view the recovery from the Ameren reservoir failure in late 2005, see the new visitor center, hike the boardwalk trail and continue adding to our plant lists for the weekend.

Saturday evening — Meet at the Black River Visitor's Center at Johnson's Shut-ins State Park. The annual meeting will start at 7 p.m. and will be followed by the quarterly MONPS board meeting.

Sunday, June 12 — Meet at the Fort Davidson State Historic Site parking lot at 8 a.m.

We will travel to the USFS Marble Creek campground on Hwy E and arrive there by

Lodging

● Fort Davidson 210 S McCune St, Pilot Knob. (573) 546-7427, <http://www.fortdavidson.com>. The motel is located along Old Highway 21 in Pilot Knob, just N of the Fort Davidson State Historic Site.

● There are also several motels in Farmington. For example:

Super 8 Motel, 930 Valley Creek Dr, Intersection of Hwy 67 & 32, Farmington. 573-756-0344, http://www.super8.com/Super8/control/Booking/property_info?propertyId=08044&cid=carat_search-Super_8.

● Alternatively, there is camping available at both Johnson's Shut-ins and Taum Sauk Mountain state parks.

For information on camping reservations in Missouri State Parks, visit: <http://mostateparks.com/page/54942/camping-reservation-system>.

Reservations may be made online at: 877-422-6766 (toll-free) or visit: <http://www.icampmo.com>.

● There are also 25 campsites (first-come first-served) at the Marble Creek Recreation Area of the Mark Twain National Forest (along Hwy. E).

9 a.m. There is a parking lot for an Ozark Trail trailhead at the entrance to the campground. Nearby is a site where Scott George has been doing some study and restoration work, Darwin's Woods, along Crane Pond Creek below the dam at Crane Lake. After that, Nels Holmberg will guide us to Guetersloh's Woods, farther south on Hwy F, just east of Hwy 49. Both of these properties are in Iron County.

Calendar of Events

Hawthorn Chapter

Monday, May 9 — Regular meeting 7 p.m. at the Unitarian Church, 2615 Shepard Blvd. Lea Langdon will present the program on edible wild plants.

Saturday, May 14 — USFS/Paris Fork (Callaway County): orchids and other woodland spring flowers. Meet at MDC Research Center for carpools to leave at 9 am.

Saturday, May 21 — Clifty Creek NA (Maries County): A little off the beaten path; a real treat for the adventurous. Meet at MDC Research Center for carpools to leave at 8 am. Bring camera, water, snack, sunhat, any other personal comforts. Lunch after at Native Stone Winery south of Prairie Home.

Saturday, June 4 — Jean Graebner's prairie planting in Rocheport. Meet at MDC Research Center for Carpools to leave at 9 a.m. Visit McDermott Memorial planting [do some weeding] in park in Rocheport on First Street. See Jean's prairie about 10:15 a.m.. We can talk about habitat reconstruction and challenges. Bring lunch fixings (hot dish to a large cut-up sub, fruit or salad) to share. If you want to do only the planting tour and potluck, you may contact Jean at Graebner@centurylink.net.

Thursday, June 16 — Quail & Native Plants at Bradford Farm, 4-8 p.m. Set up at 3 p.m. Please volunteer to help with booth.

Saturday, June 25 — Mule Shoe Conservation Area (Hickory County) small fens, dolomite glades, John George (member and MDC Regional Naturalist) leader. Meeting time TBA.

Kansas City Chapter

May 3, 7 p.m.— Meeting at the Discovery Center, 4750 Troost, Kansas City, MO. Program to be determined.

May 14, 8:30 a.m. — Field trip to the property of Doug Keever. Meet at the Liberty Wal-Mart at Highway 150 and I-35 to carpool. Bring water and a lunch.

Osage Plains Chapter

No dates submitted

Ozarks Chapter

Sunday, May 15 afternoon — Field trip

to see Cupola Pond and Coward's Hollow, located where Oregon, Ripley and Carter counties come together. This will likely extend into the late afternoon/early evening, so bring plenty of snacks and water! Contact Susan Farrington to sign up and get details on where to meet – see back cover for contact info. Home number is (573) 226-3004.

Tuesday, May 17, 6 p.m. — Our regular chapter meeting is replaced by a field trip to tour the Mountain View Rotary Park Nature Park and Outdoor Classroom. This park is still being developed, and showcases natural habitats and plants native to the Howell County area. We'll also have time for some informal visiting and socializing after the tour. Meet at the parking lot at the MDC Ozark Regional Office, 551 Joe Jones Blvd, West Plains. Note earlier starting time. For more information, contact Susan Farrington (contact info on back).

Tuesday June 21, 6:30 p.m. —Chapter meeting at the MDC Ozark Regional Office. We will have an informal plant identification evening. Bring plants and/or photos of plants that you would like to identify!

Perennis Chapter

Saturday, April 16, 9 a.m. — Spring Nature Hike at Morris State Park, Malden. Contact Chris Crabtree at 573-649-3149 for more details.

Saturday, May 7, 10 a.m. — Wildflower Hike at Trail of Tears. Join Park Naturalist Steve Schell as he leads us through the beautiful woodlands at Trail of Tears State Park. Wear sturdy shoes and meet at the Visitor Center for a brief introduction to the park. Contact Allison Vaughn for more details at allisonjv@yahoo.com

Saturday, May 21, 10 a.m. — Fieldtrip with the St. Louis Chapter: Hike and Potluck at Peggy & Ken Lefarth's property, near Sprott, Ste. Genevieve County. We will hike a small stream lined with sandstone bluffs, hay-scented fern, and a state record liverwort, and end at a restored glade. Ken has volunteered to cook brats after the hike and everyone is invited to bring a dish to share.

Sat., June 4, 9 a.m. — Summer Wildflower Hike at Morris State Park, Malden. Contact Chris Crabtree at 573-649-3149 for more details.

St. Louis Chapter

April 27, 7:30 p.m. — Danelle Haake, Restoration Ecologist with the Litzsinger Road Ecology Center will be speaking on some of the restoration and preservation work underway at the LREC. Additional topics may include some of her restoration work with the River Des Peres Watershed Coalition. The program is scheduled for the Powder Valley Nature Center, 11715 Cragwold Road, Kirkwood, MO.

May 25, 7:30 p.m. — Nick Krekler of DJM Ecological Services will speak on orchid and other native plant propagation, as well as some of the results of his Master work on bottomland hardwood restoration in the Mingo and Duck Creek area. The program is scheduled for the Powder Valley Nature Center, 11715 Cragwold Road, Kirkwood, Mo.

June – field trip TBD.

July 27, 7:30 p.m. — James Locklear will be discussing some of the results of his book "Phlox: A Natural History and Gardener's Guide." A description is available at <http://www.timberpress.com/books/phlox/locklear/9780881929348>. The program is scheduled for the Powder Valley Nature Center, 11715 Cragwold Road, Kirkwood, Mo.

Southwest Missouri Chapter

May 14, 9 a.m. — Linda Ellis will give a walking tour of her farm near Aunts Creek. Meet at the Springfield Conservation Nature Center to carpool to the site.

May 21, 9 a.m.-1 p.m. — Young Sprouts at the Springfield Botanical Center.

May 24, 6-8 p.m. — Monthly chapter meeting. Malissa Underwood will talk about the pros and cons of patch-burn grazing prairie management.

June 25, 8 a.m. — Prairie Ecology and Management with Mike Leahy, with field trips to Taberville and Wah Kon Tah prairies. Meet at the north Lowe's on MO 13 to carpool to the site.

Roadside Wildflowers Poster Committee forming

At the Dec. 4 MONPS annual business meeting, a committee was formed to begin looking into the feasibility of creating a MONPS poster/brochure of "Roadside Wildflowers of Missouri," possibly in conjunction with the Missouri Department of Transportation.

Volunteering for the committee: MONPS members John Oliver, Robin Kennedy, Paul McKenzie, Malissa

Underwood, George Yatskievych and Stacy Armstrong from MODOT.

The committee seeks other volunteers who are interested in helping to create such a poster (that could fold up as a brochure on the back side), particularly anyone who is experienced with graphic design or layout.

If you are interested, contact George Yatskievych by e-mail:

george.yatskievych@mobot.org

Photographs for the poster will be solicited from MONPS members in the near future.

Be aware if a member of the committee submits photos to be considered for the poster, that member will not be able to participate in selecting the final photos.

New book covers genus

Phlox

By Chuck Robinson
Petal Pusher editor

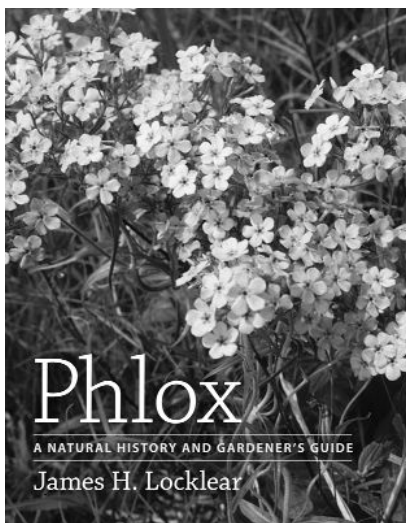
One of North America's loveliest gifts to the world must be phlox. A new book from Timber Press gives the genus its due and at times even offers a poetical touch.

"Phlox: A Natural History and Gardener's Guide" was written by James Locklear, who is a fairly recent addition to the staff of Lauritzen Botanic Garden in Omaha, Neb., as director of conservation. Before that he was director of the Nebraska Statewide Arboretum for 14 years and was director of the Dych Arboretum of the Plalns in Hesston, Kan., before that.

His book is divided into two parts. The first is the shorter one, and it offers a brief botanical history of phlox and then a horticultural one. Then there is a key the genus.

The second part of the book is composed of 61 species accounts. Each account is introduced by a lyrical, well-written two- or three-paragraph introduction to the species that helps information stick in the studious reader's mind. That is followed by a botanical description, and then notes on taxonomy, geography, environment, associations and cultivation of the species. There aren't any drawings, but there are 24 pages of color photographs.

When hiking in the field it is always lovely to come across the familiar five-lobed flowers of our native phloxes that remind us of its cousin in our gardens. While waiting for spring, it has been nice to ponder on the accounts in this book and day-dream of hikes to come.



Author James Locklear

Orchid search and plant inventory

Our friends at the Mark Twain National Forest have invited MONPS to help with botanical inventory at an 80-acre site near Poplar Bluff on Wednesday, May 25.

This wooded location is close to the single historical site for the endangered small whorled pogonia orchid (*Isotria medeoloides*), which has not been seen in Missouri since 1897.

The search will be led by Paul Nelson and Lynda Mills of the U.S. Forest Service.

Plans are for the group to meet at 10 a.m. at the Suds N Spuds in Cherokee Pass. Cherokee Pass is on U.S. Hwy. 67, just south of Fredericktown.

Bring food and water, as well as any appropriate tick protection. The inventory will involve relatively easy walking, but will mostly be off-trail.

New members

- Bill Fessler, Kansas City
- Dennis Fitzwilliam, Waterloo, Ill.
- Betty Drees, Overland Park, Kan.
- Alex & Kerry Burciaga, West Plains
- Jackie Leatherman & Carol McCorkle, Mountain Home, Ark.
- Suzie Dowell, Willard
- Mary Hogle, Mountain Home, Ark.
- Denise Wallace Campo, Kansas City

Hawthorn Chapter

Submitted by John White, chapter representative

The monthly lunch meetings were held in February and March. The chapter meeting for March 14 was canceled because of an 8-inch snow and very slick roadways, and was re-scheduled for March 21. No other chapter events had been scheduled for February or March and the remaining April schedule was still in process.

Kansas City Chapter

Submitted by Daniel Rice, chapter representative

The Kansas City Chapter had a great meeting on March 1 at the Discovery Center in Kansas City. Professor Doug Martin was our speaker, and his topic was native orchids of Missouri. He started with a brief overview of the orchid family (over 25,000 species worldwide), the anatomy of the orchid flower, and then focused on the 38 species of orchids native to Missouri. It was a fascinating presentation, and lasted nearly the entire meeting!

Our next event will be a field trip to Richter Holler on April 16. This is a 92-acre property in Ray County owned by chapter members John and Lisa Richter. John has cataloged 380 species on the property, so it will be exciting to see the early spring plants found there!

The next chapter meeting is planned for May 3 at the Discovery Center in Kansas City. A speaker for the meeting has yet to be determined.

Also in May, on the 14th, we will have a field trip to the property of Doug Keever, to see the native orchids found there. This should be a great trip and is a good follow-up to our March speaker.

We will not be selling native plants at the Powell Gardens Springfest this year, but we will be selling our own plants later in May. Please watch for further details in the chapter newsletter, or contact me for more information. We did this last year, and had good sales despite the cold rain that fell most of the day!

That's all the news for now from Kansas City. If you have any questions, or want more information, please feel free to contact me.

Osage Plains Chapter

Submitted by Sharon Warnaca, chapter representative

Nothing to report at this time.

Ozarks Chapter

Submitted by Susan Farrington, chapter representative

Our February meeting and March meetings were both well attended (about 30 attendees each). We were happy to welcome some new faces, as well as many returning members.

February featured an interesting program about Ozarks history and culture by MSU history professor Brooks Blevins, and March featured master herbalist Sasha Daucus, who told us some wonderful but lesser known hiking areas to explore this spring and summer (two of which we will visit for our May field trip).

We discussed options for making donations to worthy native plant causes in our local area, and will finalize our decision at the May meeting. Some interest in work projects was expressed, and Susan Farrington will look into setting up a work day to start us off.

Perennis Chapter

Submitted by Allison Vaughn, chapter representative

On Friday, April 1 at the Delta Research Center in Portageville, chapter president Kent Fothergill spoke at a seminar on the benefits of native plant gardening. The following day, Kent and Perennis member Kelly Tindall held a seed swap at a day long fair in Portageville and manned a booth promoting native plants and the chapter. Kelly and Kent have been propagating milkweeds in a greenhouse, and they offered three species, bee balm and Rudbeckia plants to new members as welcome gifts.

The St. Louis Chapter invited Perennis Chapter to join them on a field trip to the Ste. Genevieve area in late March. Foul weather interfered, and the field trip was postponed until May 21. This area features rich woodlands and sandstone canyons with flora typical of the region. After the hike, we plan to meet for a cookout featuring freshly grilled brats. This is a wonderful opportunity to meet the fine folks of the St. Louis Chapter. Food, fellowship, native plants and sandstone woodlands!

Directions from Hwy. 67:

at Bonne Terre go east on Hwy. K for 6.6 mi to Hwy. D. jog left the right, continuing east on Hwy. C.

take Hwy. C 4.3 miles to Hwy. EE and turn south.

take Hwy. EE south to Wallis Drive on the right, which is 0.7 mi past Sprott Road on the left.

in 0.1 mi Wallis Drive splits, take the right branch (sign posted Lefarth)

The Lefarth's house is just over 1 mile down this Drive.

Directions from I-55

at Exit-157 take Hwy. Y 7 mi west to Roth Road on left.

take Roth Road 0.1 mi, then turn south on Lawrenceton Cutoff Road.

Lawrenceton Cutoff 2.3 mi to Hwy C.

Hwy C. east 1.3 mi to Hwy. EE.

south on EE as at left.

St. Louis Chapter

Submitted by Pat Harris, chapter representative

The highly informative February meeting was presented by noted authors Dr. Peter Bernhardt, biology professor, and Dr. Retha Meier, assistant education professor, both of St. Louis University, Missouri. Their topic was Pollination Ecology of the Lady Slipper Orchids. They did their study on *Cypripedium reginae* in Shannon County. (An article accompanies this chapter report in the *Petal Pusher*.)

There are about 45 *Cypripedium* species in the United States. *Cypripedium reginae* is the third largest *Cypripedium* species in

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the Western Hemisphere, (Luer, 1975).

C. reginae loves fresh spring water: streamside, wet bluffs, damp environment. There are usually one or two flowers per plant and an individual flower lasts nearly seven days. When reproduction does occur it does so in a capsule containing a million seeds. They can't pollinate themselves but they can be hand pollinated.

Dr. Bernhardt and Dr. Meier spent the first and second weeks of May 2007-09 observing the plants to see which insects were visiting and/or pollinating. They waited for insects to come, and waited, and waited.

In 2007 and 2008, one orchid was pollinated each year. In 2009 four orchids were pollinated. Out of 70 plants in the study population, only four capsules were formed over the study period.

Out of 54 bees, 14 taxa were represented. Most bees were either too large or too small. The showy lady slipper orchid needs a pollinator that's just the right size to touch both the stigma (deposits pollen) and the anther (picks up pollen to transfer to another flower), to achieve pollination. The honey bee (*Apis mellifera*) is just the right size, as are a few other insects. As Dr. Bernhardt and Dr. Meier said, pollination event depends on the size of the bee. That is a statistically uncommon event.

A group of 32 native plant aficionados gathered to listen to our March program, "Natural Communities & Flora At Graham Cave State Park." It was presented by Bruce Schuette, naturalist at Cuivre River and Graham Cave state parks.

A brief illustrated review of the archaeological history of the site described how attention resulted in park status. The area has an interesting natural history. The cave is under an arch of sandstone that historically provided a natural shelter. There is archeological evidence of continuous human occupation for 10,000 years. While it was still privately owned, excavation was ongoing by archaeologists from the University of Missouri in 1949-50. Findings from this work brought important attention to the site.

The area became a state park in 1964. The park consists of 386 acres. Several detailed graphics showing the geology and landtype association of the parks natural communities were described.

There is rich bottomland forests, oak hickory woodlands and rocky glades. The glades are made up of sandstone, dolomite and some limestone glades that have a wide diversity of glade species. Each type of rock substrate produces its own characteristic plant species. These remnants glades led to a designation of an 80-acre tract as the Graham Cave Glades Natural Area.

Some of the rarer plants there are *Floerkea proserpiacoides* (false mermaid), *Trifolium stoloiferum* (running buffalo clover), and *Perideridia americana* (wild dill) were highlighted. There is also a robust population of *Aplectrum hyemale* (Adam and Eve orchid).

The park has 456 native plants and a total of 482 counting the exotics. The Natural Area has 380 native plants, 392 counting the exotics. The overall coefficient of conservatism value is 4.37 overall and 4.4 counting only natives.

George Yatskiyevych, MONPS president, announced that the St. Louis Chapter president, Steve Buback has resigned his MONPS position. He has accepted a position with MDC as the natural history biologist of northwest Missouri in St. Joseph and will be mov-

ing very soon. Congratulations, Steve and good luck.

A chapter election was conducted for chapter president, and by acclamation John Oliver was appointed the new chapter president. Kevin Bley was elected to fill the vice president position vacated following John Oliver's election.

Rex Hill is conducting a class at Meramec Community College on Missouri's glades. There's one classroom session on 28 April, and two field trips: 30 April at Victoria Glades and 14 May at Hughes Mountain. Good for beginners.

Southwest Missouri Chapter

Submitted by Brian Edmond, chapter representative

On our perpetual quest to avoid conflicts with like-minded groups, we have moved our monthly meeting again. Starting in April and continuing for at least one month, our meetings will be scheduled 6-8 p.m. on every fourth Tuesday.

At February's monthly meeting, Sherry Leis talked about fire management in South Africa's Kruger National Park in a presentation titled "Fire Ecology Amidst Lions, Giraffes, Elephants and Rhinos." The park, at nearly 2 million hectares, serves as an outdoor laboratory for fire ecology and management and Sherry talked about some actual large-scale burn experiments carried out during her visit. Unlike most parks in the United States, this park is managed primarily for the mammalian megafauna to promote tourism.

As a result, the fire management regimes are designed to maximize the production of native grasses. As such, most of the park's staff are very familiar with the different species of grasses but mostly do not trouble themselves with the identification of the various forbs and wildflowers. Of course, no presentation about Africa would be complete without photos of zebras, hippos, giraffes, lions and elephants. Sherry had these and more along with videos.

Interestingly, much of the park is surrounded by tree farms that grow species of trees native to North America. But, in a historical savannah environment, these tree farms are akin to our own corn fields and pastures of tall fescue: not so good for the native wildlife. The photographs and stories left us all longing for a trip to South Africa, a place that was never particularly high on my list of destinations before this meeting.

A lineup of lepidopteran lectures was given at the March monthly meeting. Rose Atchley started with a request for native seeds, cuttings, plants, or ideas for the Bill Roston Butterfly House at the Springfield Botanical Garden. Who knew that anyone would actually want to grow prickly ash? The Roston Butterfly House is the largest native Missouri butterfly house in the state and is sponsored by the Friends of the Garden.

Then Dr Roston himself talked about several native species of butterflies, moths, and their larval forms, caterpillars. He also discussed several garden plants that can be used to attract butterflies and moths and provide nutrition for developing caterpillars.

Finally, Lisa Bakerink talked about Monarch Watch, a well-established citizen scientist project that trains citizens to tag monarchs in the United States. The tagged monarchs are recovered

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Christmas Fern

By Barbara Fairchild

Deep in winter, it's difficult to remember the gregarious green of summer.

A reminder, however, is as close as the nearest woodland, where you may find the green, leathery fronds of *Polystichum acrostichoides* splayed over a carpet of autumn leaves. Commonly known as Christmas fern, it is one of Missouri's few evergreen plants and its most easily recognized fern.

For some, ferns and baskets overflowing with feathery fronds are synonymous. For others, ferns conjure up visions of stream-banks flush with lush ferns. During the Victorian era, Christmas ferns were used extensively for holiday decorations, which some say gave the plant its common name.

According to Gerald Klingaman, retired extension horticulturist, the fronds of Christmas fern were once harvested by the tons, baled into bundles and sold to florists for Christmas wreath making. Harvest was so intense that by the 1930s that it was hard to find Christmas fern in some areas. Today it is on the "threatened" list in Minnesota and New York.

Christmas fern is native to all of the Eastern United States, including each of the states that border the Mississippi River on the west and extending into Texas, Oklahoma and Kansas.

Resilient plants

Laura Jones of the Ohio Department of Natural Resources writes that ferns have been part of the landscape for millions of

years, predating both dinosaurs and flowering plants. She notes that ancient ferns played a significant role in the development of large coal deposits throughout the U.S.

Like other native plants, Christmas ferns are hardy and resilient. They're useful for erosion control on slight slopes and as groundcovers in shady, woodland gardens.

Christmas fern prefers light shade, moist to slightly dry conditions and soil that is loamy or rocky with abundant organic material. It, however, will survive in poor soils and tolerates dry soil if shade requirements are met. In nature it is found on wooded slopes, moist banks and ravines.

For gardeners seeking deer and rabbit resistant plants, Christmas fern is a good choice. Deer may browse it lightly in the winter, but otherwise avoid the lance-shaped fronds.

The fronds, which grow from a crown, stand erect throughout the summer, start to slump as days shorten and sprawl after the first hard frost. Although the plant is rhizomatous, it doesn't spread or naturalize. Clumps, however, increase in size over time and can be divided.

Dissecting the name

The genus name, *Polystichum*, comes from the Greek for many (poly) and rows (stichos) and refers to the rows of fruitdots covering the undersides of fertile leaflets. Ferns produce no flowers, fruits or seed, but reproduce by spores that are released from these fruitdrops.

"*Acrostichoides*" comes from the genus

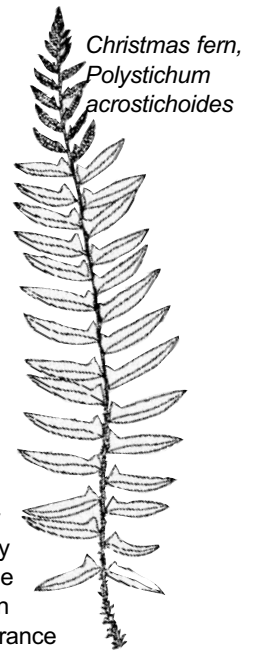
of tropical ferns that have dense fruitdots like the Christmas fern. The tips of Christmas fern pinnae (leaflets), where fruitdrops occur, look brown during the spore producing seasons.

The magic of Christmas fern doesn't end with its winter display of fine greenery. It continues with the unfurling of hairy fiddleheads in early spring. Finding these daintily coiled shoots on an April day is reassurance that spring is on its way.

Even though Christmas ferns do not produce flowers, their year-round greenery that adds interest to a winter landscape, fascinating spring display and hardiness are reasons to include them in gardens.

In addition, their leathery fronds are useful in cut-flower arrangements and you can take a note from the Victorian era and include them in Christmas decorations, as a winter reminder of summer greenery.

Barbara Fairchild is the communications specialist for Grow Native. For more information about native plants, visit www.grownative.org.



CHAPTER REPORTS

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near their mountainous wintering grounds in Mexico and provide lepidopterists with migration information. Despite tagging hundreds of butterflies over the past several years, only two of Lisa's butterflies have been recovered, an indication of the massive numbers of butterflies that must be tagged to obtain meaningful results. To encourage recovery and reporting, a "bounty" of \$5 per butterfly is paid, often to Mexican schoolchildren.

Many spring field trips and gardening sessions are planned. Right now we're having a bit of trouble actually nailing down dates, so the calendar entries do not adequately reflect our spring plans. Expect another trip to both Lead Mines and Rocky Barrens. Yellowwood trees and Aunts Creek, near Branson, are on the agenda for some date in April. We'll also do the first bit of work on our wildflower and fern garden in April and May.

Our newest member, Julian Bowe Edmond, was born Sat 26 March 2011 at 1355 hours. He weighed in at 7 pounds, 1 ounce and was some 20 1/8 inches in length (3.2 kg and 51 cm for our international readers). Mother and baby are fine, father is simultaneously ecstatic and bewildered, and we have it from independent and unbiased sources that the baby is absolutely adorable. Expect to see him start attending MONPS events as soon as it gets warm enough outside for his old man.



A three-year study on *Cypripedium reginae*

By Retha Edens-Meier
St. Louis Chapter

Scientific questions remain unanswered about many of our Missouri native plants. In a time when the environment is changing, bees are disappearing and organisms are becoming threatened and endangered, there is a need to document basic biological information. Why? We need to establish a base line from which to make decisions concerning conservation and preservation.

For these reasons, Drs. Retha Edens-Meier and Peter Bernhardt of Saint Louis University studied populations of *Cypripedium reginae* from 2007-09, just outside of Eminence, Mo. Our first question was: "Will *C. reginae* accept its own pollen"? To answer this question, Peter and I hand-pollinated (crossed and selfed) *C. reginae* flowers in 2007. Buds were covered with tulle to prevent insects from transferring pollinia between flowers. By covering the buds and flowers, we were assured that our tests were legitimate and pollinating insects were excluded. Once the flowers opened, clean toothpicks were used to pick up and apply pollinia from the same flower to its own stigma (self) or transfer pollinia from one flower to another (cross). All bagged flowers were labeled with jewelers tags. Flowers were harvested, preserved and transported to the laboratory, where the samples were softened, squashed, stained, viewed under an epifluorescence microscope and photographed. What we found was that the flowers will accept their own pollen. Our results were then combined and published with the work of Chinese scientists who were doing the same research on four species of *Cypripedium* growing in Sichuan, China. For additional information, please refer to our 2010 publication, "Pollen-Pistil Interactions in North American and Chinese *Cypripedium* L. (Orchidaceae)."

In 2008, a new population of *Cypripedium reginae* was discovered growing on a steep hillside downstream from the first site. Seventy-four plants and 45 flowers were documented in this new site. In the original population, we counted 51 plants and 33 flowers. A total of only three pods formed that year between the two sites. However, two of the three pods were eaten

and destroyed. In 2009, a total of 13 pods formed between the two sites containing a combined count of 56 flowers and 141 plants. I think that we will all agree that a 23% pod set for 2009 was a definite improvement from the previous year.

In 2009, floral escape routes were blocked during the night by clipping a strip of narrow ribbon around the back part of the flower. This was done to check for night pollinators. By using this technique, it was determined that we were working with a day-pollination system. It rained a lot during the 2009 floral season, usually several times a day. Since Larry, my husband, accompanied me on these trips and carried our supplies, we were well-equipped with camping chairs and umbrellas. Sitting under the umbrella one day during a downpour, I videotaped "*Cypripedium reginae* in a rain storm" and later posted it on You-Tube. What I noticed was that the dorsal sepal serves as a type of umbrella to keep the labellum from filling with water during these frequent spring showers.

Frequent guests

Another observation was that *C. reginae* was well-visited by a variety of animals. Why is there such a variety of visitors to the flowers of *C. reginae*? There appears to be a number of reasons for frequent and varied visits to these orchid flowers. Beetles, flies, grasshoppers, butterflies, skippers and bees of all sizes were observed either in or on *C. reginae* flowers. A hawkmoth and hummingbird were even spotted checking out the population. *C. reginae* flowers are showy and attractive, with white and magenta coloration. Stripes and dots lining the labellum make me wonder what



Photo by Retha Edens-Meier

The showy lady slipper, *Cypripedium reginae*, is a large, multi-stemmed plant with stems up to 35 inches long and three to five leaves per stem. The flower is mostly white with a rosy lip and white petals and sepals.

the bees really see when they look inside. Occasionally I could detect a faint, sweet floral fragrance. It is believed that the combination of color, floral size and fragrance serve as attractants to visitors. Bees able to pass through the labellum and exit through one of the two small openings in the back of the flower were probably searching for food in the form of nectar and/or pollen. Of course they didn't find anything to eat. Perhaps this is one reason for the low conversion of flowers into fruit. Bees might learn that the flowers offer no edible rewards and are therefore reluctant to return for another trip through the precipitous pouch. Once in a while, various insects would become trapped inside the labellum and die, but not that often.

The great spangled fritillary (*Speyeria cybele*) was especially attracted to senescent flowers. They could have been gathering senescent tissue molecules, as explained by Dr. Boppre (1990). Skippers extended their probosces into the labellum after rainstorms and appeared to be drinking. Sometimes they even entered the labellum, stayed for a while, and then left.

see CYPREPIIDIUM, next page

CYPRIDIUM, from the previous page

Bombus spp. were also observed entering and leaving the labellum.

To me, they seemed to be “guarding” the flowers. On several occasions I observed bumblebees chasing other bees away from *C. reginae* flowers. We were also “investigated” when, on more than one occasion, a bumblebee would hover in front of us, as if to question our presence in their territory as well as our intentions.

Pollination

The architecture of *C. reginae* is not designed to allow the flower to be self-pollinated. Anthers are located behind and above the stigma. This means that the pollinator contacts the stigma first, depositing any pollinia that it might be carrying on the back of its thorax. Then, on its way out of one of the two rear exits, the pollinator contacts the anther picking up sticky pollinia on the back of its thorax. After observing some insects easily passing through the labellum while others struggled to squeeze through the exit openings, our Chinese colleagues suggested that we measure the flowers and insects. Our questions were: “Which insects are able to carry pollinia?”; “What physical measurements do these pollinia vectors have that allow them to carry pollinia?”; and “Does a physical ‘fit’ exist between the flower and the pollinia vector?”

We counted and measured leaves and stem length. Using digital calipers we measured labellum length and width; entrance length, width, and depth; and exit hole length and width. We discovered that the labellum was large enough for *Bombus* spp. to enter and exit through the large opening of the labellum without any difficulty. However, these big bees were far too large to escape through the tiny rear orifices. We also found that small bees, such as *Augochlora pura*, zipped into the labellum and out through the exit holes without ever contacting the anthers. Only insects with a mean length of 10.87 mm, a mean width of 4.44 mm and a mean depth of 3.41 mm (*Anthophora abrupta*, *Anthophora terminalis*, *Apis mellifera*, *Hoplitis spoiliata* and *Megachile montivaga*) were just the right size to squeeze through the rear exit holes, picking up pollinia on their way out of the labellum.

Insects entering and exiting the labellum were captured using plastic baggies. A clean baggie was placed over the entire



Photo by Retha Edens-Meier

Cypripedium reginae has physical restraints that limit which pollinators distribute its pollinia.

flower after an insect entered the labellum. Once the insect crawled out of one of the flower's exit openings and flew up into the bag, the bag was quickly closed. The insects were euthanized in their individual bags and were then pinned, labeled, measured, washed to dislodge pollinia and handed over to Mike Arduser (MDC) for identification.

We captured a grand total of 54 bees, excluding the *Bombus* spp. over this three-year period, but only six insects carried *C. reginae* pollinia. They included one *Anthophora abrupta* (2009), one *Anthophora terminalis* (2009), two *Apis mellifera* (2008, 2009), one *Hoplitis spoiliata* (2009) and one *Megachile montivaga* (2007).

Size matters

C. reginae can afford to attract a large number of insects because *C. reginae* is extremely selective about which bees come in contact with the pollinia. Selection in this flower is for bees of a certain dimension. Pollinia are not wasted on very small or very large bees, or on insects visiting the flowers for other reasons. Only bees the correct size are able to contact the anthers and serve as pollinia vectors. For additional information about our research, please refer

to our 2011 publication, “Pollination Ecology of *Cypripedium reginae* Walter (Orchidaceae): Size Matters.”

What about the fate of *C. reginae* in Missouri? It's true that many of the flowers have disappeared because of collectors. Suitable habitats are also being destroyed through the processes of logging and construction. A need exists to find out as much biological information as we possibly can about our existing populations so that we can conserve, preserve and protect them.

During a recent presentation, David Shilling, a member

of the St. Louis Native Plant Society, asked an extremely important question: “Do you think that flooding and erosion will have a negative effect on the future existence of *C. reginae*.” Some of the plants literally live on the edge of a stream, with their roots exposed and dangling in the flowing water. It is very possible that flooding will erode the stream bank, washing some of the plants downstream. Hopefully, if this happens, the plants would wash ashore and eventually establish a new population.

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Zen and the art of growing milkweeds

By Casey Burks
Osage Plains Chapter

Last November, while opening more boxes from our old home in Iowa, I was overjoyed to find bags of seeds I'd collected in '08 and '09 of the large orange butterfly milkweed (*Asclepias tuberosa*) and Mexican milkweed (*Asclepias curassavica*), a large stemmed plant with beautiful dark orange and yellow blooms.

By March my grow lights were on and I was eager to try my luck growing these seeds. Monarch larvae had munched all my milkweeds to sticks last summer so there were no seed pods from my 2010 butterfly garden on our Henry County, Mo., acreage. However, the Iowa seeds had been stacked in the back of our storage building, where last summer's temperatures reached over 100 degrees. I suspected age plus that kind of heat could quite possibly squelch viability.

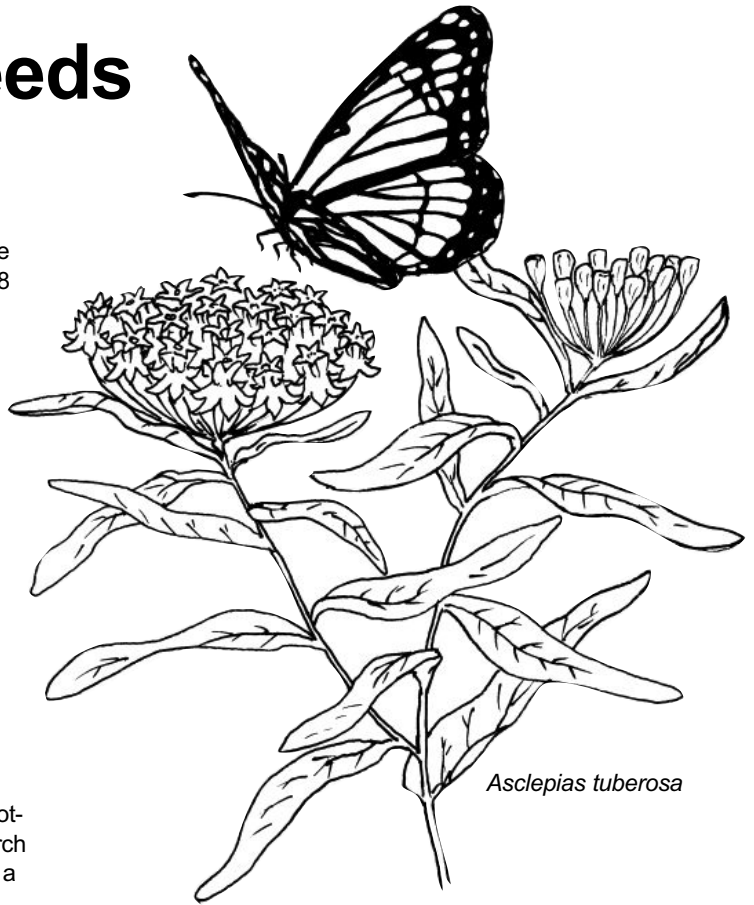
Lance Jesse of the Kansas City MONPS chapter kindly shared his growing technique with me: "place the seeds in a plastic bag of moist peat moss, and then pot up the ones that germinate."

Since I wasn't sure if anything would germinate, I put a large handful of seeds of each species in separate bags with a wet potting mix composed mostly of peat moss. They were started March 8. I started checking them every day, pouring out each bag into a pan and pawing through it looking for signs of life.

On March 16, I looked in the bags and saw roots everywhere. Within a few days I had potted over 80 *A. tuberosa* seedlings and approximately 230 *A. curassavica* seedlings. Some nights, I was up until 3 a.m. putting sprouts in every type of container I could get my hands on!

Working by the grow-lights gave lots of "light therapy," and I was practically giddy with such an abundance of sprouting milkweeds. What a joy in the midst of winter!

Since then I have also tried germinating *Asclepias hirtella*, *Asclepias purpureascens*, *Asclepias incarnata* and *Asclepias*



Asclepias tuberosa

quadrifolia, but none to only a few of these have sprouted. I've tried rubbing them with sand but perhaps germinating these species takes something extra that I have yet to learn.

In the meantime, I'm dreaming of making new butterfly gardens and having a banquet of *A. tuberosa* and *A. curassavica* ready for the 2011 monarch migration. If even half of them survive, I'll gladly share them from the Osage Plains table at the Cole Camp Octoberfest and Prairie Day!

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