

PETAL PUSHER

July-August 2020 Newsletter of the Missouri Native Plant Society Volume 35 No.4

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

In this issue

Native Wildflowers for Lepidoptera.....	1
A letter to MONPS	3
Poetry Corner	4
Patience Pays Off:	4
In Memory of Brad Jacobs.....	5
Dues are Due.....	6
Missouri Oak Trees as Caterpillar Treasure Troves.....	6
Donate to MONPS When You Shop!	8
From the editor.....	8
Chapter Reports	9
Special Covid-19 Activities Announcement.....	10
Grass for the Skippers.....	10
Join Us! Become a New Member or Renew.....	12

Native Wildflowers for Lepidoptera

By Linda Williams

When I think of food plants for the larvae of moths and butterflies, trees and shrubs first come to mind since they support the largest number of species. But forbs are equally important since you can bet there's an evolutionary advantage to utilize all levels of vegetation to decrease competition for food among all those different Lepidopteran species.

There are close to 13,000 different species of Lepidoptera north of Mexico with possibly 2,700 in Missouri, a number that will never be known. Needless to say, they are a vital part of the terrestrial food web in all stages of metamorphosis.



Unexpected *Cycnia* on *Asclepias tuberosa*. Photo by Linda Williams

Paralleling the great diversity of species is a great variety of feeding habits, sheltering methods, camouflage or bright warning coloration, timing and number of life cycles, pupation methods and overwintering strategies. Food for caterpillars includes new leaves, old leaves, dead leaves, flowers, seeds, lichen, and woolly aphids (the carnivorous Harvester butterfly). Even poison ivy, cedar and pine are used. As if that isn't enough, there are actually moths with larvae that are aquatic and have gills! The life cycle and food plants for many moth species is still unknown.

Trees and shrubs tend to support species that are polyphagous (eat a wide variety of plant species) and the preference of an individual species may vary regionally. Some of those species may cross over to forbs but most polyphagous larvae tend to stick to woody plants. Most larvae that eat leaves from forbs tend to have more narrow requirements. It has been shown that non-native plants are mostly useless to vast numbers of Lepidopteran larvae. However, I was spraying invasive sericea lespedeza in my field a couple summers ago and ended up inadvertently spraying different groups of lo Moth caterpillars three times, washing them off each time, and successfully rearing them afterwards. But that's one species that will eat almost anything including paper!

Of course, the example everyone in North America is most familiar with is the Monarch (and Queen and Soldier) that exclusively eat milkweeds. Any milkweed will do but there do seem to be favorites, like *Asclepias incarnata*, and a female may show a preference for the healthiest plants when given a choice. Milkweed Tussock Moth and Unexpected Cynia Moth caterpil-



Gray Hairstreak on bush clover. Photo by Linda Williams



Variegated Fritillary on *Viola sororia*. Photo by Linda Williams

lars are also found commonly on milkweeds.

Legumes, such as *Desmodium* spp. (tick trefoil) and *Lespedeza* spp. (bush clovers) host different skipper species such as the Silver-spotted Skipper and Hoary Edge. *Chamaecrista fasciculata* (partridge pea) and *Senna marilandica* (wild senna) are known for various sulphur butterflies such as Cloudless Sulphur, Sleepy Orange, and Little Yellow in MO. Clouded and Orange Sulphurs and Southern Dogface prefer clover and other legumes.

The spring-flying Falcate Orangetip and Olympia Marble butterflies eat plants in the mustard family such as *Cardamine bulbosa* (bulbous cress), *Cardamine concatenata* (toothwort), and *Arabis laevigata* (smooth rock cress).

I include several plants in my gardens that tend to be aggressive and weedy in order to have certain butterflies in my yard. I allow some *Chenopodium album* (lamb's quarters) and am rewarded with Common Sootywing and Hayhurst's Scallopwing butterflies. *Croton monanthogynus* (prairie tea or goatweed) lets me enjoy Goatweed Leafwing butterflies. These plants are all easy to pull if they get out of hand.

Black Swallowtail butterflies are best known to most gardeners as having adapted to eat the leaves of non-native dill, parsley, fennel, rue, and Queen Anne's lace, but they also use our native *Zizia aurea* (golden alexanders), *Daucus pusillus* (American wild carrot), and *Polytaenia nutallii* (Nuttall's prairie parsley).

Everyone should learn that there are native thistles, and these are important food sources for Painted Ladies and other Lepidoptera. American Lady butterflies feed on *Antennaria* spp. (pussytoes).

Various violet species are eaten by Meadow, Variegated, Regal and Great Spangled Fritillaries. Regal Fritillaries are the picky eaters, laying eggs only on the prairie species like *Viola pedata* (bird's-foot violet) and *Viola pedatifida* (prairie violet).

Common Buckeye caterpillars can be found on *Agalinis* spp. such as *A. tenuifolia* and *A. auriculata*. They also show a strong liking for native plantains, like *Plantago rugelii*, *P. elongata*, and *P. virginica*.

Hardcore butterfly fans will even include nettles, stinging and otherwise, in their yards which are included in the diet of Red Admiral and Question Mark butterflies.

One of my favorite combinations in a planting and in the wild is asters and goldenrod. They provide nectar and pollen for so many species of Lepidoptera and other orders of insects in late summer and fall when their numbers are at peak. Asters, goldenrods, black-eyed Susans, wingstem, coneflowers, gaura, and sunflowers host many different species of moth and butterfly larvae.

One of my favorites to find is the camouflaged looper or caterpillar of the Wavy-lined Emerald Moth. The little brown patterned caterpillar chews off bits of petals and leaves and adorns its body with them making it look like an extension of the flower or just a bit of debris. It may appear yellow or pink or white depending on the species of flowers it is using.

Baptisia spp. host the Wild Indigo Duskywing, the caterpillar and chrysalis of which can be found inside leaves stitched together with silk, and the Genista Broom Moth, an interesting caterpillar that looks very shiny and golden.

Native plants and insects have held their relationships for many eons and I'm sure I don't have to tell many readers here that herbivory by insects is a good thing.



Goatweed Leafwing chrysalis on *Croton monanthogynus*

A letter to MONPS Members:

There is no room for racism and injustice in science or society. The Missouri Native Plant Society stands with all people and organizations working to end racism and injustice through peaceful protest, legal action, policy change, and systemic reform.

The senseless, violent deaths of George Floyd, Ahmaud Arbery, Breonna Taylor, and those of many other Black and Brown people of this country are merely the most recent, visible examples of systemic inequality and racial injustice in our country. These deaths and the depth of inequality they represent work against our mission to make the world safer for the diversity of life: both the human and nonhuman communities that make up our one wild and beautiful earth. Conservation organizations, including our own, have an obligation to unequivocally condemn racism in all its forms and to work towards an equitable, livable future for all.

Racism and injustice take many forms that are less obvious than those highlighted by recent news reports. Racism threatens our neighbors when society fails to protect the environment and provide clean and safe drinking water. We see the disproportionate effects in the incidence, morbidity and mortality of COVID-19. These are but a few examples of systemic human rights violations that all of society must engage in solving.

Diversity matters: human, floral, and faunal!

Poetry Corner

A Small Needful Fact

By Ross Gay

Is that Eric Garner worked
for some time for the Parks and Rec.
Horticultural Department, which means,
perhaps, that with his very large hands,
perhaps, in all likelihood,
he put gently into the earth
some plants which, most likely,
some of them, in all likelihood,
continue to grow, continue
to do what such plants do, like house
and feed small and necessary creatures,
like being pleasant to touch and smell,
like converting sunlight
into food, like making it easier
for us to breathe.

Copyright © 2015 by Ross Gay. Reprinted from Split This Rock's The Quarry: A Social Justice Poetry Database: <https://www.splitthisrock.org/poetry-database>

Read Eric Garner's story here: https://en.wikipedia.org/wiki/Killing_of_Eric_Garner

If you are interested in more information on anti-racist efforts, here is a non-exhaustive list of helpful resources:

[75 Things White People Can Do for Racial Justice](#)

[Unlearning Racism/Learning Antiracism](#)

[Coretta Scott King Book Award Winners: books for children and young adults](#)

[Children's books to support conversations on race, racism and resistance](#)

[PBS's Teaching Your Child About Black History Month](#)

[Your Kids Aren't Too Young to Talk About Race: Resource](#)

[Roundup from Pretty Good](#)

Patience Pays Off: American Columbo blooms after 28 years

by Don Kurz

Twenty-eight years ago, I scattered some seeds of American Columbo (*Frasera caroliniensis*) along a wooded edge behind my house in central Missouri. A couple years later, I noticed that 20-30 young plants had taken hold. Year after year the basal rosettes got larger but did not give any indication that they would be bolting and flowering anytime soon.



Preparing to bolt. Photo by Don Kurz

Known as monocarpic perennials, references report it takes anywhere from 7 to 15 years before flowering and then the plant dies, leaving the seeds to carry on the next generation. Dr. Julian Steyermark (1909-1988) author of Flora of Missouri, wrote that he transplanted a plant to his garden and after 15 years, it still had not flowered. Well, after 28 years, I am pleased to report that about a third of the population bolted and flowered in late May of this year! This is where patience pays off. There are probably few growers that stick around one place for 15+ years to see American Columbo flower!



Close up of the flowers and young fruit. Photo by Don Kurz

In Memory of Brad Jacobs

-a friend, an ornithologist, a naturalist, a botanist, and much more.

by Paul McKenzie

On 1 May 2020, I received the very sad news that Brad Jacobs, a very dear and close friend of mine had passed away after a valiant battle with cancer. Having talked to Brad on 30 April 2020, the news was hard to take, but I had witnessed my twin brother struggle with the same cancer seven months earlier and knew that Brad's brilliant life was close to ending.

Brad and I met in 1989, soon after I had moved to Missouri from Louisiana. Due to our passion for bird watching and bird conservation, we worked together on many projects: from the Missouri Breeding Bird Atlas, his Birds of Missouri book, to many field trips. Brad had an insatiable desire to learn new things and was a quick study on sedge and grass identification. In fact, he became so proficient at it that he was asked to provide plant identification workshops to Missouri Department of Conservation staff. Much of Brad's career was centered around sharing his knowledge with others. When the Missouri Bird Records Committee offered bird identification workshops to members of the Audubon Society of Missouri and the general public, Brad always wanted to assist in the presentations and leading field trips. His contributions to national and international bird conservation is legendary. He was actively involved in Partners in Flight, a network of over 150 organizations dedicated to the protection of birds in Missouri, Mexico and the Caribbean, as well as North, Central, and South America. He was instrumental in organizing the Association of



Brad Jacobs in Honduras. Photo by Rick Thom

Fish and Wildlife Agencies' Southern Wings Program that enabled state agencies in the U.S. to actively participate and promote bird conservation on the summering grounds of Neotropical Migrant Birds as well as migratory stop overs and wintering grounds south of the U.S. border.

Brad was kind, gentle, humble, unassuming, dedicated, committed, and eager to share what he had learned with others. He had a great sense of humor and never tired of telling stories. Brad spoke fluid Spanish and his enjoyment of speaking the language spurred him to know where every Mexican restaurant was in Missouri! On many an occasion, I enjoyed eating a Mexican meal with Brad as he shared his many stories and experiences. Brad was a family man who enjoyed highlighting the accomplishments of his wife Linda and his two children: Nathan and Fresa. Will Rogers once said that he never met a man he didn't like. Similarly, I never met a person who didn't love Brad Jacobs, enjoy his company, and benefit from his wealth of knowledge. I will miss his friendship, his companionship, his kind heart, and his zeal for life. His dedication to conservation and passion for life will remain an inspiration to countless individuals for many years to come.



Photo by Paul McKenzie

Dues are Due

By Ann Earley, Membership Chair

Membership renewals for the July 2020-June 2021 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 20200630, 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 or for others with questions about their membership status, please contact me or your chapter representative (see page 13 of this newsletter for contact details), or go to <https://monativeplants.org/ask-a-question/>, enter your contact information, select 'My Membership Status' as the topic, and click on 'Submit'. We value our members and urge you to renew today!

New Members

St. Louis

Rosalie Wilson, Wildwood
Krystal Coxon, Ballwin
Phillip Koenig, O'Fallon

Kansas City

Alexa McCue, Kansas City
Kelley Klor, Warrensburg

Hawthorn

Leah Easley, Columbia
Marian Minor, Columbia
Dan Bene, Columbia

Southwest

Laura Schulteis, Springfield

State Level Membership

Neil Bass, Lee's Summit

Missouri Oak Trees as Caterpillar Treasure Troves

Robert J. Marquis, Department of Biology
University of Missouri-St. Louis

Oaks dominate the uplands of the Ozark forested landscape; they are often the most numerous and largest of trees at any given location. This is not a surprise to anyone who has spent time walking in Missouri forests, especially forests south of the Missouri River. What might not be known, and perhaps the oak tree's best-kept secret, is that the leaves of oak trees serve as a food resource for a dazzling array of caterpillar species. These include caterpillars of silk moths, dagger moths, zales, sallows, pinions, underwings, prominents, sphinx moths, skippers, and hairstreak butterflies; loopers, inchworms, tent caterpillars, hornworms, and slug caterpillars. And the list goes on. They include pests of apple and apple relatives and other forest tree species, the infamous gypsy moth caterpillar, and the variable oakleaf caterpillar that infrequently goes through outbreaks that result in defoliation of hundreds of square miles of Ozark forest. Most caterpillar species, however, remain relatively low in abundance, kept in check by a combination of poor quality food, extreme weather events, and natural enemies, including birds, spiders, and parasitic wasps and flies.

The caterpillar, of course, is the larval stage of a moth or butterfly. According to the state database first developed by Richard Heitzman and now maintained by Phillip Koenig, there are some 2,500 total species of moths and butterflies known from Missouri, of which 199 are butterflies and skippers. Almost every child in the U.S. is familiar with the monarch butterfly caterpillar, but there are so many more species to learn about. Oak trees appear to be unique in the high number of caterpillar species that attack them. We estimate that there are approximately 330 species of caterpillars that feed on oaks in Missouri. Thus oak-feeding caterpillar species represent just over 12% of the total Missouri Lepidoptera fauna. We have recently documented 107 of these species in a book funded by the U.S. Forest Service and the Missouri Department of Conservation.

Caterpillars are little eating machines. Their goal is to turn a relatively low-quality food into insect tissue so that they can rapidly pass through the vulnerable caterpillar stage, and be on their way to becoming an adult moth or butterfly. Oak leaves as food are rela-



Variable oakleaf caterpillar (*Lochmaeus manteo* (Notodontidae)) on *Quercus alba* (photo R. J. Marquis)

tively poor in quality. They are low in protein, which is an essential nutrient for caterpillar growth. Most importantly, oak leaves have evolved various kinds of tannins, compounds that reduce the digestibility of the leaf tissue. Tannins combine with protein to form an indigestible complex. Tannins are also found in acorns, but humans can break down these tannins by boiling acorns before grinding them to make flour. We also use tannins to tan animal hides, preserving the hides from microorganisms that would otherwise use them as a source of food, causing them to rot. Caterpillars have evolved certain tricks up their sleeve to get around the tannin issue, including feeding on young leaves when tannins are low in concentration and having a high gut pH so that the protein-tannin complexes are less likely to form.

Caterpillars feeding on soft, spring foliage, which is relatively low in tannins and high in protein, can complete their development in two weeks or less. Caterpillars feeding on mature oak leaves in the summer are constrained to grow slowly, requiring a month or more to complete development. This long development time makes them sitting ducks to their natural enemies. Oak caterpillars show myriad ways to escape being found by those natural enemies. They match their background (camouflage), or appear as an inanimate object such as a twig or bird poop, or feed only at night to avoid birds, or build a shelter of leaves, twigs, or silk, or emit noxious chemicals when disturbed, or are covered in hairs that deter even the hungriest of insectivorous birds.

These caterpillars are parts of food webs that extend far beyond their interactions with the oak tree itself. The natural enemies of course are part of this web. On the one hand, the caterpillars support a host of insectivorous bird species and thousands of species of parasitic and predaceous arthropods in Missouri forests. On the other, these natural enemies largely control the populations of caterpillars, preserving the economic

value of the oak-hickory forest. It is estimated that in a given square mile of eastern deciduous forest, birds eat 1 million caterpillars per day. Populations of native caterpillar species only erupt when a certain combination of weather events and loss of top-down control by natural enemies occurs. A case in point is the variable oakleaf caterpillar. Two major outbreaks in the Ozarks occurred in the 1960s-1980s, apparently associated with droughts that might have weakened tree defenses. Also, each caterpillar of this species has a gland on the underside of the body, which emits chemicals when the caterpillar is agitated. The chemicals cause blistering in humans and thus may give partial immunity from insect-eating birds.

The food web gets further extended when we realize that the adults of these caterpillars almost always make their living consuming nectar from flowers. In so doing they provide the valuable service of pollination. Butterflies are well known as pollinators, but pollination by moths can be significant. In Missouri, the Missouri evening primrose *Oenothera macrocarpa* is pollinated by hawk- or sphinx moths. One of the caterpillars that feed on oak leaves in Missouri is that of the blinded sphinx, *Paonias excaecata*. The adult flies at night and has a long proboscis that extracts nectar from the long narrow tube of the flower, which begins opening at dusk.

There are moth species that do not feed at all as adults. They have no or very reduced mouthparts and reduced digestive systems. All eleven silk moth species that feed on oaks as caterpillars in Missouri do not feed as adults, living only a few days as an adult.

How do you find caterpillars on oak trees? Caterpillars can be found on oak leaves at any time of the growing season when there are leaves on the plant. They are more common in the spring, but in some years can be abundant throughout the summer and early fall. Fresh damage, indicated by a nice crisp edge to the damaged portion of the leaf, and the presence of frass, or caterpillar poop, on the leaves are excellent clues. Silkmoth caterpillars clip partially eaten leaves at the petiole. The leaves then drop to the ground. This behavior presumably is an adaptation to avoid discovery by birds. But you know the caterpillars are present if you see freshly eaten leaves on the ground, chewed at the leaf petiole. Most caterpillars are found on the underside of leaves, rather than on the top, but also can be found on twigs and bark. You can use a beating sheet or upside-down umbrella to 'mass sample' foliage by placing either under the branch you wish to sample, and then shaking the branch or beating it with a stick. Most cater-

pillars, if present, will fall from the branch onto your collecting device.

Why is it important to know about the native insect fauna of Missouri in general, and that on oaks in particular? Humans either intentionally or unintentionally continually transport exotic species from one part of the globe to another. In addition, species expand their ranges due to changes in climate. These exotic species often achieve the status of 'invasive', that is, cause economic harm and negatively impact native species. However, without knowledge of the abundance, distribution, and identifying characters of the native insects, managers will be hard-pressed to identify exotic species that have recently arrived in our state. As a result, exotic species can gain a foothold in the region before control efforts can be mounted. Although the gypsy moth is the only exotic Lepidoptera knocking on the Missouri door at this time that we know about, there are plenty of examples of exotic beetles that are causing widespread problems in our state, including the Asiatic oak weevil, the emerald ash borer, the walnut twig beetle, and the Asian longhorn beetle.

Of the 330 species of Lepidoptera known to feed on oaks and occur as adults in Missouri, my research group has encountered only about one-third as caterpillars. After 30 years of research, this missing component of the fauna remains a mystery of mysteries. Where are these 'missing' caterpillars? Perhaps we have encountered all the common ones, and the remaining species are exceedingly rare. Or these missing species are common in parts of the state that we have not sampled. Or perhaps they simply have become extinct in the state. There is much to be learned about this diverse and fascinating part of the insect fauna of Missouri, and their interactions with oak trees.



Automeris io on white oak, *Quercus alba*. (photo R. J. Marquis)



Donate 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.

From the editor

Wow, the world is a very different place today than it was at the beginning of March. Being stuck at home trying to move EVERYTHING online has been a real challenge, so I thank you for hanging in there with us!

Thank you to Erin Skornia and our proofreading team (especially Pam Barnabee); Malissa Briggler (who put together Chapter Reports), Dana Thomas, and other board members. Thank you 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 next Petal Pusher is "Focus on the Plant Family," but feel free to deviate from this and/or submit for other issues.

B. Send ONE email saying "here is my contribution," 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).

2) Two to 3 images, preferably in JPEG format

C. Use only one space between sentences

D. Even short notes with pictures would be great!

Thank you so much,

Michelle Bowe

Chapter Reports

HAWTHORN

Michelle Pruitt, Chapter Representative

During the month of April, there was a contest for alien species removal on member's own property, specifically cutting and stump treating. Instructions were to count stems and take a photo of the pile for proof. Although the membership participated with gusto, they did not follow the contest rules very carefully. Hmph, plant people.

One person sent a photo and reported counts only of bush honeysuckle when she cut many other species. One person gave ground area measurements without a photo of the work. One person sent lots of photos without a stem count. At least two others were working on it, but didn't send in a report. An estimated total might possibly be: species removed and stem counts included 433 stems + 1/10th acre + 20 large plants of bush honeysuckle, 9,373 sq. ft. and 589 linear feet of invasives on historic property, a dozen or so bags of garlic mustard numbering "a gazillion" stems, plus autumn olive, callery pear, burning bush, multi-flora rose, privet, wintercreeper, and honeysuckle vine. All contest entrants were declared winners and awarded four free plants.

Our regularly scheduled monthly meeting (May 11) included a presentation via zoom by Dr. Alice Tipton, Assistant Professor of Biology at Lincoln University. Despite some trepidation about this new-fangled technology, the meeting was a big success for the dozen or so members who attended. Dr. Tipton discussed her Ph.D. research on the effects of soil type



Blue-eyed grass. Photo by Casey Burks.

and land use on the species distribution and abundance of arbuscular mycorrhizal fungi (AMF), the most ancient and important of mycorrhizae. Research sampling sites in Missouri varied by habitat type (glade versus prairie), soil composition (sandstone versus limestone/dolomite), and land use history. For glades,

the biggest influence was found to be soil type, while for prairies, previous land use (whether the prairie had ever been used for pasture or cropland) was the most important. While there are some commercially available generic mycorrhizal fungi available for gardeners that feed weeds very well, the best mycorrhizal fungi additive for native restorations is "Mycobloom".



Spider milkweed. Photo by Casey Burks

OSAGE PLAINS

Casey Burks, Chapter Representative

*Note: The Osage Plains chapter was not aware that all MONPS field trips had been cancelled in May. We have since spread that news to them. Chapters should NOT have field trips until further notice!

On May 10th Osage Plains chapter celebrated Mother's Day together by attending a Field Trip at one of our favorite private prairies south of Clinton where we saw paintbrush, phlox, dainty prairie rose, blue eyed grass, and our "old friend" plants. We combined the great outing with a socially distanced meeting and a picnic. We brought our own drinks, chairs, sanitizer, then President Janetta used tongs to hand out fried chicken, deviled eggs, cookies, blackberry cobbler etc. Our meeting was about paying dues, officer assignments, and our next field trips. We had two wonderful guests and we dearly hope they will join.

Since having our meetings inside the Library this year is not recommended, we are combining field trips plus meetings outdoors and driving individually rather than car pooling. This is how we hope to go forth to enjoy the nature we love and as well as our friendships.

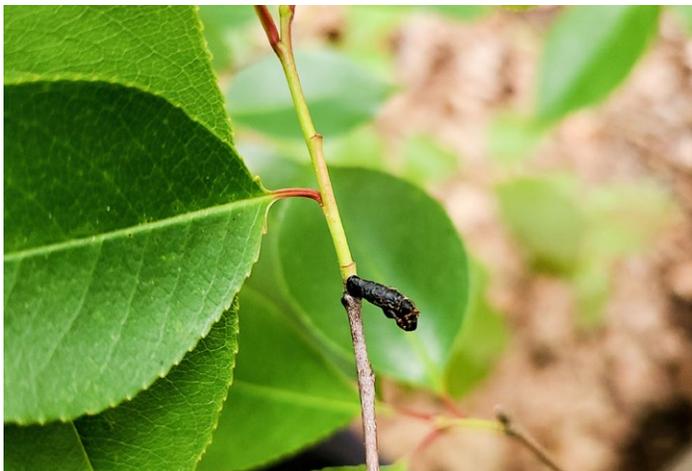
Special Covid-19 Activities Announcement

While we love field trips and while members of the Board are willing to endure each other during in-person meetings, we must keep each other safe. To this effect, all in-person MONPS events are cancelled for the rest of the year. But keep reading, for some exciting Zoom opportunities.

Save the Date for our Fall Webinar:

Summer flora is in full bloom and many of us are lamenting the loss of field trips with the Missouri Native Plant Society this year. Since our fall field trip is also canceled, we will host a webinar instead! Justin Thomas, Science Director at NatureCITE, will provide us with an online presentation entitled **Plants in Place: The Nature of Native**. How Missouri's native plants came to be, what they tell us about the places they live, and what they tell us about ourselves. The webinar will be held at **6:00 pm on Friday, September 25th**. All MONPS members welcome! Tune in for his talk and we will leave time for your questions at the end. It will be a great way for us all to connect and learn something new in a safe and socially distanced format. Watch your inbox or check the [event page of our website](#) for details and the webinar link. Don't forget to mark your calendar! We look forward to "seeing" you there!

Fall Board Meeting: Please note that our fall board meeting will be held virtually at 6:00 pm on Saturday, September 26th. All are welcome. If you're not on the board but would like to attend the meeting, please email Dana Thomas at mail@botanytraining.com.



Can anyone ID this larva? Photo by Casey Burks

Grass for the Skippers

by Steve Buback

The relationship between insects and plants is ancient, spanning back at least until the angiosperms developed as a lineage, somewhere around 150 million years ago. This relationship is often viewed as a friendly interaction with plants providing food for insects while the bees and butterflies provide pollination services. A better angle might be to look at the relationship as more manipulative, with plants trying to get as much work out of insects as possible, while providing little in return. Insects are likewise trying to use the plants for as much food and shelter as possible and are not trying to provide an ecosystem service. This ancient competition has helped drive the dizzying array of insects in the world and the commensurate diversity of chemicals plants produce to ward them off or attract them. The insects that rely on plants are often so specialized that they become dependent upon a particular plant species or genus, but the converse is often only true in very specialized cases such as orchids.

The plants we choose for our gardens or ornamental areas are no different, though they often have been selected for reasons other than maximum reproduction through human intervention over the years. Wise choices when selecting our plants can determine whether our yards act a haven for native insects, or as a barren space, pretty but ecologically worthless. Even among native plants there is wide variation in the diversity of insects that will use a given plant. I focus here mostly on butterflies and moths, but these complex relationships exist for most every taxa of herbivorous insects.

Grasses are an often overlooked aspect of supporting native insects because they don't have showy flowers, but they are critical for some species. Skippers (Family Hesperidae) are close relatives of butterflies that are often viewed as moths if they are noticed at all. These day-flying jet fighters of insects can easily be supported in yards and gardens because they are adapted to feed upon grasses, which is one thing most of us will allow in our lawns. All grasses, however, are not created equal. Byssus skipper (*Problema byssus*) is a native species that relies upon gama grass (*Tripsacum dactyloides*) for rearing its caterpillars. It is seldom found on any other grasses. Gama grass is a little large for most of us to use in a home



Ambylscirtes, Photo by Steve Buback

garden, but little bluestem (*Schizachyrium scoparium*) is a much more accessible species that can support at least 9 species of skippers. Prairie dropseed (*Sporobolus heterolepis*) has found a place in many native gardens because it is well behaved, but it is also the only known host for a rare moth (*Dichagyris obliqua*) which is only known from one site in the State and is considered rare in every State where it occurs. You are unlikely to get *Dichagyris* in your yard, but you can easily provide a home for the sachem skipper (*Atalopedes campestris*). Although considered a native species, the majority of sachem adults are likely raised on exotic grasses such as Bermuda grass (*Cynodon dactylon*) and crabgrass (*Digitaria* spp). Another species of grass that can support a wide range of species is creek oats (*Chasmanthium latifolium*). This woodland calcium-lover seems to support a wide range of species of butterflies and skippers. One group of species I have been working with a lot lately includes the roadside-skipper (*Ambylscirtes*). One of these, Linda's roadside-skipper (*A. linda*), has been petitioned for listing under the Endangered Species Act, and Bell's roadside skipper (*A. bellii*) is considered globally vulnerable. Both of these species use creek oats as a larval host and could conceivably show up in suburban gardens in the southern half of Missouri.

The Satyrs (Nymphalidae) are another family of butterflies that are dependent upon grasses as their larval

hosts. The satyrs as a whole are larger and showier than the skippers, but they can be more cryptic on the landscape as they tend to be low-flying and spend a lot of time sitting in the shade within the understory of woodlands and the prairie. The most wide-spread of the satyrs is the common wood-nymph (*Cercyonis pegala*). It will use bluestems (*Andropogon* and *Schizachyrium*) as well as poverty grass (*Danthonia spicata*) as hosts so it can be found statewide. Paul McKenzie has recently documented the northward spread of gemmed satyr (*Cyllopsis gemma*) northward in the Columbia area and it has recently been found in Platte County north of Kansas City. It uses Bermuda grass as a host, which may be facilitating its spread.

Most of our butterflies and moths are particular about the species they lay their eggs on and subsequently the food their larvae eat but are more catholic as adults. None of the species mentioned above use grasses as adults, but unless grasses are a part of the landscape, they won't be either.



Zabulon Skipper – *Poanes zabulon*, Photo by Steve Buback

Join Us!

You may become a member online at <https://monativeplants.org/membership/>, or you may fill out this form and mail to:

Missouri Native Plant Society
PO BOX 440353
St. Louis, MO 63144-4353

.....
First Name _____ Last Name _____

Street _____

City, State ZIP Code _____

Phone _____ E-mail _____

Company/Organization _____

Membership Status Choose one: New member Returning member



State Membership

(Choose one):

- Student (\$5.00)
- Regular (\$10.00)
- Contributing (\$20.00)
- Life (\$200.00)

Chapter Membership

In addition to society dues:

- Empire Prairie (Saint Joseph) (+\$5.00)
- Hawthorn (Columbia) (+\$6.00)
- Kansas City (+\$5.00)
- Osage Plains (Clinton) (+\$5.00)
- Ozarks (West Plains) (+\$5.00)
- Paradoxa (Rolla) (+\$5.00)
- Perennis (Cape Girardeau) (+\$5.00)
- Saint Louis (+\$5.00)
- Southwest (Springfield) (+\$5.00)
- None

Optional Contributions:

Hudson Fund:

I wish to donate an extra amount to the Hudson Research Grant Fund.
\$ _____

Other Contribution:

I wish to donate an extra amount to general Society business.
\$ _____

Newsletter Delivery:

- I wish to receive the complimentary email newsletter
- I wish to receive my newsletter by postal mail (+\$10.00)

.....
Total Membership/Donation Amount: \$ _____

Make check payable to: Missouri Native Plant Society



Missouri Native Plant Society

PO BOX 440353

St Louis, MO 63144-4353

monativeplantsociety.org

monativeplants.org



Please recycle!

RETURN SERVICE REQUESTED

President

Dana Thomas
1530E Farm Rd 96
Springfield MO 65803
mail@botanytraining.com

Vice President

Malissa Briggler
10297 CR 371
New Bloomfield, MO 65063
573-301-0082
Malissa.Briggler@mdc.mo.gov

Secretary

Pam Barnabee
pamela.barnabee@gmail.com

Treasurer

Bob Siemer
74 Conway Cove Drive
Chesterfield, MO 63017
636-537-2466
aee623@prodigy.net

Membership

Ann Earley
P.O. Box 440353
St. Louis, MO 63144-4353
314-799-3961
aee623@prodigy.net

Past President

John Oliver
4861 Gatesbury Dr
St. Louis, MO 63128
314-487-5924
oliverjcomo@msn.com

Board Members

Justin Thomas (2017–2020)
1530E Farm Rd 96
Springfield MO 65803
jthomas@botanytraining.com

Mike Skinner (2017–2020)
167 South Peachtree
Republic, MO 65738
Mike.Skinner6680@gmail.com

Bruce Schuette (2019–2022)
678 St. Route 147
Troy, MO 63379
636-528-7247 (w)
basch@centurytel.net

Rick Gray (2018–2021)
6 Montauk Court
St Louis MO 63146
314-993-6088
rgray@seilerinst.com

Steve Buback (2018–2021)
MDC NW Regional Office
701 James McCarthy Dr
St. Joseph, MO 64507
816-271-3111
Steve.Buback@mdc.mo.gov

Aaron Floden (2019-2022)
Missouri Botanical Garden I
4344 Shaw Blvd., St. Louis, MO
63110
afloden@mobot.org
(314) 577-9576

Missouriensis Editor

Doug Ladd
Missouri Botanical Garden
4344 Shaw Blvd.
St. Louis, MO 63144
dladd@tnc.org

Petal Pusher Editor

Michelle Bowe
901 S. National
Springfield MO 65897
417-836-6189
Mbowe@MissouriState.edu

Distribution Manager

Rex Hill
4 Grantwood Lane
St. Louis, MO 63123
314-849-1464
RexLHill@charter.net

Editorial Committee

Lisa Hooper
Jay Raveill and Tim Smith

Archives

Rex Hill
4 Grantwood Lane
St. Louis, MO 63123
314-849-1464
RexLHill@charter.net

Webmaster

Jerry Barnabee
34653 White Oak Rd
Plato, MO 65552
jerry.barnabee@gmail.com
www.monativeplants.org
www.monativeplantsociety.org

Environment and Education
John Oliver (Past President)

Chapter Representatives

Empire Prairie
Steve Buback (Board Member)
701 James McCarthy Dr
St. Joseph, MO 64507
816-271-3111
Steve.Buback@mdc.mo.gov

Hawthorn

Michelle Pruitt
1305 Overhill Road
Columbia, MO 65203
advocatefornature@gmail.com
573-446-6279

Kansas City

Cécile Lagandré
6040 Wornall Rd., KCMO 64113
cecilelagandre@gmail.com

Osage Plains

Casey Burks
914 SE Hwy ZZ
Deepwater, MO 64740
515-291-1550
mbugwoman@gmail.com

Ozarks

Susan Farrington,
Interim Rep.

Paradoxa

Jerry Barnabee
34653 White Oak Rd
Plato, MO 65552
paradoxarolla@gmail.com

Perennis

Andrew Braun
apbraun1s@gmail.com

Saint Louis

Unfilled
Interested?
Contact Dana Thomas!

Southwest

Michelle Bowe
901 S. National
Springfield MO 65897
417-836-6189
Mbowe@MissouriState.edu

“A thing is right when
it tends to preserve the
integrity, stability, and
beauty of the biotic com-
munity. It is wrong when
it tends otherwise.”
—Aldo Leopold