

Welcome to the first newsletter of 2019. Even if you are a winter lover like me you are probably ready for spring. While this edition has plenty in it to help you get ready for warmer weather it also has a review of our winter Conservation Conversations series, the last of which included our organization's annual report. The rest of this column is a summary of the report I gave at that meeting.

## Greetings from the Blue Mounds Area Project Board of Directors

The mainstay service of BMAP is the ecologist position. In his first year with BMAP ecologist Micah Kloppenburg visited 15 of our member's properties and wrote up reports on 565 acres. In addition, the monarch butterfly habitat project that we are partnering in with other area conservation groups went into full swing. Micah provided habitat site improvement recommendations for 30 landowners. The goal of the project funded by the National Fish & Wildlife Foundation

is to create 1,650 acres of new or improved monarch habitat in the SW Grasslands & Stream Conservation Area which generally lies south of State Highway 18/151 between Mount Horeb and Dodgeville. BMAP is proud to be just one small component of this landscape conservation effort. Twenty more site "plans" need to be delivered in 2019. If you contact Ecologist@bluemounds.org soon you might still be able to sign up and participate in this pollinator protection project.

As for complimentary community outreach our winter Conservation Conversations series once again had high turnout. Attendees learned about restoring oak savannas, planting prairies, and the importance of wetlands. In the summer season we traveled to New Glarus, Blanchardville and Argyle on Thursday evenings to visit member's properties, hike through their restoration projects and enjoy late summer evening picnic. A special Saturday walk took place at 2016 Bur Oak Award winner Mary Trewartha's Boblink Hill Farm.

In 2018 we also retired our BMP-list and replaced it with the BMAP E-Bulletin which will be sent monthly to provide more timely updates and information to our members. We included everyone we had an email for on the distribution list. If you don't want the E-Bulletin there are

instructions in it on how to unsubscribe. If you aren't on the list and want to be, send us an email and ask to be included.

The format change will retain the ability to announce events and workshops but also allows photos and provide more content. Look for pieces about other members, reflections on the Driftless Area and a stewardship calendar to remind you of when key management should occur and other tidbits. We are always looking for suggestions and contributors. If you have something you would like to provide, please contact Micah at Ecologist@bluemounds.org.

Our hardcopy newsletter will continue to be mailed 3 times a year in addition to our website and Facebook. If you miss the discussion feature of the BMP-list sign you might try starting a conversation on our Facebook site.

Marci Hess has been the editor of our newsletter working with Julie Raasch to produce an informative edition 3 times a year. After several years of volunteering, this will be Marci's last BMAP newsletter that she edits. We thank Marci for her passion and dedication helping to pull together a great education tool every 4 months. We have a "help-wanted" sign out for a new editor.

*cont. page 12, see GREETINGS*

## Ecologist Report

*Micah Kloppenburg, BMAP Ecologist*

No ecologist report...

Micah Kloppenburg and his wife Carrie welcomed baby Isla to the world in March! Isla was born weighing in at a proper 8lbs 12oz and 21.25 inches. All are doing well. Congrats to Micah and Carrie!



Isla Renae Kloppenburg



Micah and Isla Kloppenburg

The wood-betony (*Pedicularis canadensis*) plants invading the lightly vegetated sandy ground left behind by construction of a septic drain appear to be opportunists. But this species isn't simply exploiting an opening here and an opening there. Each rosette of feathery green leaves is paving the way for more of its own kind, and more than a few other species as well.

Wood-betony—which is found in dry to mesic prairies, savannas, and forests throughout much of Wisconsin—is a hemiparasite. It contains chlorophyll and can live as an autotroph, like other plants, or it can extract organic carbon, nitrogen, and additional useful chemicals from other plant species. Some hemiparasites are very choosy, relying on one or a few hosts. Others are generalists. Plant taxonomist Martin A. Piehl discovered that wood-betony can tap at least 80 different plant species in 35 families. A random selection of victims you might recognize include *Achillea millefolium*, *Allium cernuum*, *Aster laevis*, *Equisetum arvense*, *Rhus hirta*, *Rudbeckia hirta*, and *Trillium grandiflorum*. Wood-betony does this by means of haustoria that develop along lateral roots and establish connections with the host plant's roots. This occurs very early during seedling development, and water from hosts is likely essential for survival of young wood-betony growing in dry soil—something to keep in mind if you scatter the seeds in your prairie, savanna, or your perennial garden.

What does wood-betony acquire from this relationship? There are the basic products of photosynthesis. There are minerals. There's water. And there are alkaloids. Alkaloids? No one has looked at *P. canadensis*, but chemical analysis of tissue from five other *Pedicularis* species consistently revealed the presence of alkaloids also found in the host plant's roots. This could be a general feature of the genus and raises interesting ecological questions.

Alkaloids exhibit potent biological effects—often deadly—and can protect plants from insects or other herbivores. Can hemiparasites commandeer alkaloids for their own protection? Biologist Lynn Adler demonstrated just this by growing Texas paintbrush (*Castilleja indivisa*), a southern relative of our local *Castilleja* species, alongside “bitter” and “sweet” varieties of lupine. Texas paintbrush plants parasitizing “bitter” lupines, which contain high levels of alkaloids, were far less prone to insect damage and produced more viable seed. What are the implications for preserving hemiparasitic plant species? For each species, it isn't just a matter of securing a host, but identifying the appropriate host—or combination of hosts—to ensure the plant is prepared to resist the local array of herbivores.

Wood-betony also acquires an indirect benefit from its relationship with host plants. By weakening the competition—by diverting resources—this generalist can suppresses the growth of other plants and open up the canopy for itself and its comrades. Ecologists noticed a tendency for wood-betony to grow alongside relatively shorter populations of certain grasses and forbs, but there was the question of which arrives first, the wood-betony or the shorter competitors. It could simply be soil conditions. But research by Andrew Hedberg and others of Illinois State University clearly showed wood-betony reduces the above-ground growth of plants such as tall goldenrod (*Solidago canadensis*) and big bluestem (*Andropogon gerardii*). Not all species studied were affected, but it is clear wood-betony can shift the balance of power on a patch of prairie sod.

This is where the hemiparasite starts contributing to and building a richer prairie or savanna plant community. By opening the canopy for itself, wood-betony inadvertently opens the canopy for others and

promotes biodiversity. The researchers who demonstrated that wood-betony can suppress competition also discovered a positive correlation between wood-betony and species diversity. Three years

## Wood-betony and the Art of Preserving Ecological Communities

John A. Raasch



Wood-betony Flowers

Photo by Julie Raasch

earlier, Wisconsin DNR researcher Richard Henderson—based on observation and experiment—had suggested that wood-betony is one of several important keystone species that preserve Midwest prairie diversity. Introduction of the seed into a small established planting was followed by a substantial decline of dominant grasses and the appearance of fourteen native forbs. Richard Henderson pointed out that other factors might have contributed, but his call for further study deserves repeating. The right mix of plant species—as far as restoration and conservation are concerned—can set the stage for success or failure.

cont. page 13, see WOOD-BETONY