



The Blue Mounds Area Project

Promoting Ecological Restoration and Stewardship of Native Habitats

Happy 20th Anniversary!

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More Than Meets the Hand Lens

Kathleen Thompson

As a lichenologist, or someone who studies lichens, the most common question I encounter is, "What is a lichen?" Lichens are something we encounter every day – whether we realize it or not. Have you ever noticed how the bark of trees takes on a greenish hue after rain or on a foggy morning? Perhaps you have wondered why the tops of wooden fence posts appear to be "rusted" while cruising down a gravel road. Ever strolled down a sidewalk randomly speckled with various colors? Well, my friends, all are the result of lichens. But what is a lichen?

Lichens are the poster children of mutualistic symbiotic relationships, or those in which both associated partners benefit. In the case of lichens, these partners are a fungus (mycobiont) and a photosynthetic organism (photobiont), which can be a green alga, a cyanobacterium – or both. (Yes, that is right; lichens are not plants.)

Lichens can be found in virtually every terrestrial habitat on Planet Earth. They influence local hydrologic and nutrient cycles as well as provide food, shelter, and camouflage for a number of animal species. They provide soil stabilization in southwestern deserts through the formation of soil crusts and have been used traditionally by humans as sources of medicines, dyes, and survival foods. Currently, they are important and well known for their use as bioindicators and monitors of air and water quality.

Sounds simple enough, right? (Maybe.) Well, thanks to relatively recent research, this description is too simple. Let's unpack this a bit.

First of all, are lichens truly an example of a mutualistic relationship? The best answer we have is: maybe, but probably not. Much of the evidence supporting the mutualistic nature of relationship is weak. Furthermore, there is a growing body of evidence that the mycobiont may – in fact – be exerting a controlled parasitism over the photobiont in a variety of ways. The evidence suggesting this parasitism includes the allocation of photosynthetic products of the photobiont to the fungus via haustoria (the same type of apparatus used by plant pathogenic fungi), control of the photosynthetic rate of the photobiont by the mycobiont, fungal regulation of photobiont access to water and nutrients, fungal control of

the size, rate of growth, and reproductive capacity of the photobiont, and the sheer fact that we have yet to find a normally lichen-forming fungus living freely in the wild (Richardson, 1999; Nash, 2008).



Xanthomendoza sp. (darker lichen)
Physcia sp. (light grey lichen)

Photo by Kathleen Thompson

What are the arguments supporting the mutualism? Although most of the photobionts found within lichens can live freely (as opposed to the mycobionts), in a "lichenized" state they are able to grow in habitats in which they may not normally be able to survive, such as exposed surfaces with high levels of UV radiation and desiccation and perhaps suboptimal temperatures. Many times the same goes for the fungus. In fact, not only can the lichen association tolerate some of the toughest extremes on Planet Earth, it can also withstand the brutal conditions of outer space (Sancho et al., 2007).

Another oversimplified aspect of the traditional description of a lichen is the duality of the relationship. It is often emphasized that a lichen is composed of a single species of fungus and a

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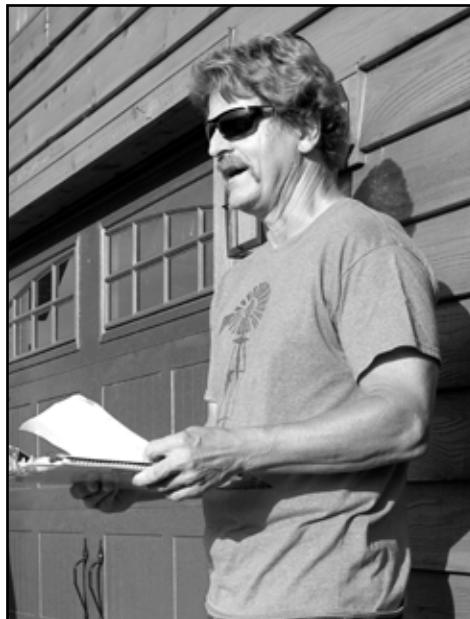
Greetings from the Blue Mounds Area Project Board of Directors

Paul Ohlrogge, BMAP Board President

It is one of those glorious fall days with not a cloud in the sky. How lucky we are to live in such a special area. We had a great summer and I hope you had an opportunity to connect with other members at one of the wonderful summer outings. Thanks to Barbara Borns, Jerome and Jackie Helmentsine and Dick and Kim Cates for hosting our summer picnics. It is always fun to hear the stories from landowners who are doing some remarkable work on their properties.

The mission of the Blue Mounds Area Project (BMAP) is "we seek to inspire, inform and empower private landowners in the Southwestern Wisconsin region to enjoy, protect and restore native biodiversity and ecosystem health". This mission is something the board of directors is continually looking at as we creatively do outreach to you and other landowners. We think about this and value our work with you and fully realize we cannot do this on our own. We value YOU, the members, as you are the people who keep us going. Thank you for your support and your eagerness to do good work on land in our area. We are constantly amazed at the number of people who turn out for our summer, fall and winter events.

In this newsletter we have the renewal envelope for your membership. Please consider renewing your membership now. We rely on the generous contributions from you. As a working board we like choosing projects and initiatives that focus on community betterment. We are at the table for strong collaborative efforts with our partners. An example of this is in the past year we participated in a national grant on Monarch Habitat improvement in our area. BMAP contributed to the effort and we will work with our Ecologist



next summer in helping landowners plan for more monarchs. We could not be as active as we are if not for your membership contributions. We are a small non-profit and we run an efficient operation dedicated to serving you. Your tax-deductible gift allows us to do a lot for conservation education in SW-Wisconsin. We look forward to working with and for you.

By the time this reaches you it will be near Thanksgiving and the start of the colder seasons. We look forward to seeing you at the winter events in Mount Horeb. Check the calendar as we have lined up some great speakers on key topics for you as landowners.

Thank you again for your continuous support. 

Welcome New BMAP Board Member Jennifer Thieme

Jennifer brings rich knowledge and experience to BMAP. She has worked for the Wisconsin Land and Water Conservation Association for 2 years managing the Standards Oversight Council Program. This program creates and revises statewide criteria for biological monitoring programs, such as manure storage facilities on farms or infiltration basins in urban areas. She has also volunteered for Upper Sugar River Watershed Association. Prior to moving to Wisconsin, she worked at The Nature Conservancy in Ohio managing NW Ohio's biological monitoring program. Jennifer received a BS in Environmental Science from Carroll University and an MS in Fisheries and Wildlife Biology from Ohio State University, where she studied how grassland birds respond to predators in urban parks. In her spare time Jennifer enjoys hiking and backpacking, birding, exploring Madison's restaurants, and converting her tiny urban lot into a producer of food for herself and pollinators. Jennifer is excited to join BMAP's board of directors in expanding the positive impact our organization has in conserving the unique and beautiful Driftless Area.

Ecologist Report

Amy Alstad, BMAP ecologist

In the spring of 2015, I was feeling cooped up and tired of my desk. While I watched with dismay, my schedule became increasingly dominated by computer work, as my graduate school responsibilities shifted away from field work and data collection and towards data entry, analysis and writing. When a job posting for a seasonal ecologist with the Blue Mounds Area Project came across my desk, I jumped at the opportunity to inject more time outside into my summer plans.

Two and a half years later, I'm so grateful I took the plunge. Being the BMAP outreach ecologist for these past three summers certainly fulfilled my original goal of loading my calendar with more time spent outside in our spectacular Driftless region. But it also enriched my life in ways I hadn't expected.

By the numbers, I did site visits on 40 private properties totaling 1,109 acres over three years. Each of these site visits was an opportunity to connect with a different landowner committed to stewardship of their property. In theory, I was the "expert" showing up to help people navigate the challenges of their ecological restoration and management goals. In reality, every single visit was a two-way exchange of information, ideas and motivation. I gained a real appreciation for the diverse reasons people choose to steward their land, and took home a handful of new tricks that I now use regularly on my own property.

Conservation efforts on private lands are critically important, yet the scope of the work can feel daunting given the relentless threats of invasive species and other forces of environmental degradation. Providing landowners with the inspiration and information required to do good stewardship is essential to support private lands conservation. To my mind, this is exactly the service BMAP contributes, along with the welcome bonus of building a sense of community and camaraderie among private landowners.

When this newsletter hits your mailboxes, I will be 5 months into my new position at the Driftless Area Land Conservancy. I feel extremely fortunate to have landed a job that will keep me right in the middle of all the good conservation work happening in our Driftless region. My primary responsibilities are helping landowners protect their lands through

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The Rewards of Restoration

David Cordray, BMAP board member

Flying cigars, "box elders" of the hardwoods, and the mystery fish of the East Branch Blue Mounds Creek. These are just a sampling of what I learned from BMAP's last Summer Event at Jerome and Jackie Helmenstine's 305-acre property located at 4785 County Highway FF in Blue Mounds.

With the threat of rain and its possible impact on turnout, I was relieved to see the fleet of Priuses (or Prii – according to Toyota) arrive at the 6:30 p.m. hour. All eagerly greeted by a 13-year-old "birthday dog" boxer named Beau.

Jerome, speaking to 30-plus people at the floor level of a beautifully restored dairy barn, informed us that the land was settled in 1896 by his great-great-grandfather. Jerome took over the farm operations from 1979 to 1999 and milked 44 cows. He talked about how his passion for the land developed as a kid cutting firewood, making white oak fence posts, picking wild strawberries and blackberries, and fishing and swimming in the East Branch Blue Mounds creek.

Jerome explained how he and Jackie's inspiration for undertaking ecological restoration started with the desire to return the oak woodlands back to their original open understory, and the East Branch Blue Mounds Creek back to the open, meandering, cold, clear-water trout stream it once was. As those of us who have ventured down this "ecological restoration" journey know, Jerome's and Jackie's inspiration quickly grew to planting prairies, installing wildlife nesting boxes and platforms, supporting scientific

research field studies, building ravine water retention basins, and modifying a chimney to ensure safe refuge for their "flying cigar" residents (chimney swifts).

After the introduction, Jerome leads us up a steep east-facing ridge. Two large, beautiful, open-grown bur oak trees stand sentry above the start of our hiking path. The brush is freshly cut around these sentry oaks triggering a Pavlovian response in my body of sluggish muscles and clingy, sweat-soaked clothes that come from summer-time brush clearing. Part way up the hill, Jerome stops and points out several endangered purple milkweed plants – one of the first victories of their brush-clearing efforts. Jerome informs us that they gathered many seeds from these milkweeds after their first bloom, but few ever since.

From here, we enter into thicker timber with large amounts of shagbark hickory and various species of oak trees. The understory has significant amounts of buckthorn and honeysuckle re-sprouts. Jerome explains that when they confined the cows for efficiency and fed them chopped hay and silage, the abandoned wooded pasture filled up with impenetrable amounts of buckthorn and honeysuckle within 15 years. To deal with the invading brush on such large acreage, they had the brush forestry mowed and hoped that fire would keep it at bay. Unfortunately, fire has been spotty, especially on north and east aspect slopes, allowing the invading brush to accumulate several years of growth and requiring more mowing. Future plans include more fire and forestry



Photo by Denise Sullivan

Jerome Helmenstine

mowing followed by herbicide treatment.

As we top the crest and head North towards the Ferry Bluff overlook vista (a 300-foot bluff towering above the Wisconsin River), I notice "dents" in the invasive brush armor and find plants such as small panic grass, pussytoes, muhly grasses, fringed brome, tall anemone, columbine, horse gentian, hog peanut, and pointed-leaved tick trefoil.

After looking at the 5-mile distant Ferry Bluff, we drop down the west face of the ridge to a remote, large valley bottom planted with lush, dark-green alfalfa. A bowhunter's paradise, I think. Jerome points out a retention dam with a pole-mounted bat house. This is one of five bat houses located around the farm.

From here we travel North again along the base of the ridge and stop at the north end of the ridge overlooking the East Branch Blue Mounds Creek. Jerome shares his childhood memories of baling hay all day followed by a refreshing dip in the clear, cool stream water. And later, as farm manager, seeing the riparian stream-side rich soils as an economic resource and converting the area to corn and soybean fields.

Jerome's and Jackie's stream restoration efforts began in 2012 with the removal of



Photo by Denise Sullivan

Nature Is Not Neat

Andrew H. Williams



Here it is Labor Day weekend in Wisconsin. Rebecca and I drove down the Wisconsin River to Boscobel to cut some brush at the Simes' place. We are trying to open up and expand a tiny, hill prairie remnant. Jim and Rose Sime had used fire here some years ago and there are some standing dead trees now, upslope from the prairie remnant. Directly under the dead trees is a hazel thicket, with prickly-ash, some gray dogwood, some sumac, both smooth and staghorn, some bittersweet and three species of *Rubus*. It's quite a tangle, but the key is that the dead trees stand up in an opening on the wooded slope.

I do some resting while working this way and I see many things as I take in my surroundings. This time, an olive-sided flycatcher flew in to perch near the top of a dead tree, staying only briefly before it flew away toward the south.

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streambank box elders and willows, reshaping of the banks, rock armoring of streambank inside corners, and the installation of log weirs and trout lunker structures. The streambanks and neighboring agriculture fields were planted with prairie species. Jerome points out a kestrel nest box (one of five on the farm) and an isolated, slightly elevated, copse of trees where Native American artifacts have been found. Jerome keeps a path mowed along the creek for easy fishing access. Brown and rainbow trout are the usual prizes, but one angler was recently surprised with the catch of a northern pike. The "mystery" fish that Jerome alluded to at the beginning of our evening event. Jerome explains that the fish likely came down from the Wisconsin River.

As we head South back to the barn, several smaller discussions break out as folks anticipate food, drink and dinner conversation. Someone calls out: "Hey Jerome, glad you did the

We were working at this spot three weeks earlier when an immature red-headed woodpecker did the very same thing. Yesterday, two eastern wood-peewees were using these dead trees as perches over most of the several hours we were present. These few bits of observational data got me thinking.

Much of my concern over what seems to me to be an over-use of fire in prairie and savanna management results from repercussions of habitat simplification. Mowing is similar: the more often one mows, the fewer plant species remain and the more sward-like the habitat becomes. Grazing works this same way: most of the grazed sites you and I encounter are over-grazed, leading to simplification of the habitat. This is because they are subjected to economic grazing, as opposed to conservation grazing, wherein habitat diversity is increased by very moderate and/or occasional grazing. Having fewer plant species assures fewer animal species can exist in any terrestrial habitat. Having fewer heights of vegetation means loss of habitat diversity. Loss of standing stems, living or dead, herbaceous or woody, means loss of habitat diversity.

In our compulsion to be neat, we tend to cut trees into pieces and then burn them in piles. But, as Jonathan Wilde pointed out to me a

quarter-century ago, "Nature is not neat." By leaving dead trees standing, we provide habitat diversity that will benefit the insects and fungi that habitually live in standing dead wood of different species. We may provide nest sites for woodpeckers and other birds, even kestrels. And we may provide a momentary respite to migrating red-headed woodpeckers and olive-sided flycatchers, among other birds. This particular habitat is so often used by olive-sided flycatchers that the National Geographic's *Field Guide to the Birds of North America* points it out: "Often perches on high, dead branches, including in migration."

We would be wise to leave more dead trees standing. They will stand for some years, providing habitat for many species, before they fall and make a little more disturbance, which is fine. We will provide more diverse habitat for other living things, increasing the biodiversity in our midst. And we will save the labor, the noise and so our own hearing, the use of limited fossil fuel, the quick carbon release to the atmosphere of the burning itself, the time and expense of cutting up the wood quickly and burning it in piles. This will give us more time to simply enjoy what we observe where we are working outdoors which is, after all, our primary motivation to be there. 

hill first!" Several of us are discussing black walnuts and what to do about them - leave them for timber, remove them to help the oaks and juglone sensitive flora, and so on. Jerome shares what his forester told him years ago. "Black walnuts are the box elders of the hardwoods." Meaning, like box elders, walnuts are prolific seeders and quickly colonize forest real estate.

The events of the evening remind me that what we've lost through the passage of time is now what we seek. I think of my own childhood experiences of jumping frogs, cane pole in hand, fields of lightning bugs, and the sweet smell of fresh earth.

Thank you Jerome and Jackie. Because of your restoration efforts, the red-headed woodpecker reigns again, and the chant of the whip-poor-will can be heard once more echoing through the valley on a warm summer's night! 



Jerome Helmenstine

photo by Denise Sullivan



Photo by Kathleen Thompson

Long, pendulous hair-like lichen: *Usnea* sp.

single species of alga or cyanobacterium and that mycobionts are highly specific in their choice of photobiont. Occasionally, there is mention of the ability to encompass both an alga and a cyanobacterium in the same thallus. However, there are certain lichen species that can associate with an alga – and take on a particular morphology, or with a cyanobacterium – and take on a completely different morphology. We call these different forms photo-symbiodemes. Furthermore, there is evidence that a single lichen thallus can contain different species of photobionts (Nash, 2008). It has also been found that lichens contain a diverse community of microbes within their thalli and that these communities are distinct between lichen species (Bates et al., 2011). More recently, a ground-breaking study was published in Science revealing a secondary fungal partner to the “original” mycobiont, whose abundance sheds light on previously inexplicable variations in phenotype (Spribille et al., 2016). Although a seemingly single organism being comprised of many species is not a new concept (take humans and their associated gastrointestinal microbial communities, for example), the emphasized duality of the lichen association is most certainly oversimplified.

Surprising? A bit. It is not every day that a field encounters a major paradigm-shifting discovery as lichenology did this past summer.

Yet, in a field that was only relatively recently separated from the study of plants, there is still a lot of work that needs to be done. In fact, we still don’t have an accurate understanding of which lichens live where in terms of species distribution, and lichen taxonomy continues to change rapidly. Much of this type of work was done decades to centuries ago for other taxonomic groups, and although molecular work comprises the majority of current lichen research, there are still researchers doing field diversity and distribution studies, myself included.

My research involves furthering our understanding of the lichen diversity within Iowa. A total of 465 lichen species have been recorded for Iowa, but the majority of these are based on a single accession, collected prior to 1960 – or both. I am currently conducting a lichen species diversity survey of White Pine Hollow State Preserve (WPH) located in the Driftless Area in northwest Dubuque County. My goals are to compare current findings to past accessions in an attempt to identify new lichen species for WPH, Dubuque County, and Iowa, as well as species at risk of extirpation from the state, including *Lobaria pulmonaria* – a species of lichen that was last collected in WPH in 1901. In addition to the diversity survey, I currently have an experimental setup in a campus greenhouse assessing the success of establishment and growth of *L. pulmonaria* asexual propagules on tree bark from WPH. The study is set up to provide insight as to if a potential reintroduction of *L. pulmonaria* to WPH would be feasible – at least based on available substrate.

For more information on species of lichens in Iowa, visit the Ada Hayden Herbarium webpage at www.public.iastate.edu/~herbarium. Select “Iowa Lichen Project” in the left-hand column, and select the bold-faced heading of which database you wish to view. Even better – grab your hand lens and get outside! Winter is one of the best times to notice and examine lichens. You do not need to travel far; in fact, with lichens living right under our

feet (literally) you barely need to travel at all!

For those in central Iowa, however, a “Lichen Trail” has been established at Ledges State Park. A pdf containing a description of the Lichen Trail and another with photographs of the lichens that might be found while following the Trail are linked within this website: www.iowadnr.gov/Places-to-Go/State-Parks-Rec-Areas/Iowas-State-Parks/ParkDetails/ParkID/610148. Scroll to the second paragraph under the “Trails” heading on this page. 🍁

Literature Cited:

Bates, S. T., G. W. Cropsey, J. G. Caporaso, R. Knight, and N. Fierer. 2011. Bacterial communities associated with the lichen symbiosis. *Applied and Environmental Microbiology* 77: 1309-1314.

Nash, T.H. III. 2008. Introduction. Pages 1-8. In: T.H. Nash III (ed.), *Lichen Biology*. New York: Cambridge University Press.

Richardson, D.H.S. 1999. War in the world of lichens: parasitism and symbiosis as exemplified by lichens and lichenicolous fungi. *Mycological Research* 103: 641-650.

Sancho, L.G., R. de la Torre, G. Horneck, C. Ascaso, A. de los Rios, A. Pintado, J. Wierzchos, and M. Schuster. 2007. Lichens Survive in Space: Results from the 2005 LICHENS Experiment. *Astrobiology* 7: 443-454.

Spribille, T., V. Tuovinen, P. Resl, D. Vanderpool, H. Wolinski, M. C. Aime, K. Schneider, E. Stabenheimer, M. Toome-Heller, G. Thor, H. Mayrhofer, H. Johannesson, and J. P. McCutcheon. 2016. Basidiomycete yeasts in the cortex of ascomycete macrolichens. *Science* 353:488-492.



Photo by Kathleen Thompson

Shrub-like fruticose lichen in vegetation: *Cladonia stellaris*

Effects of Species Interactions: A Spider's Tale

by Paul Kaarakka

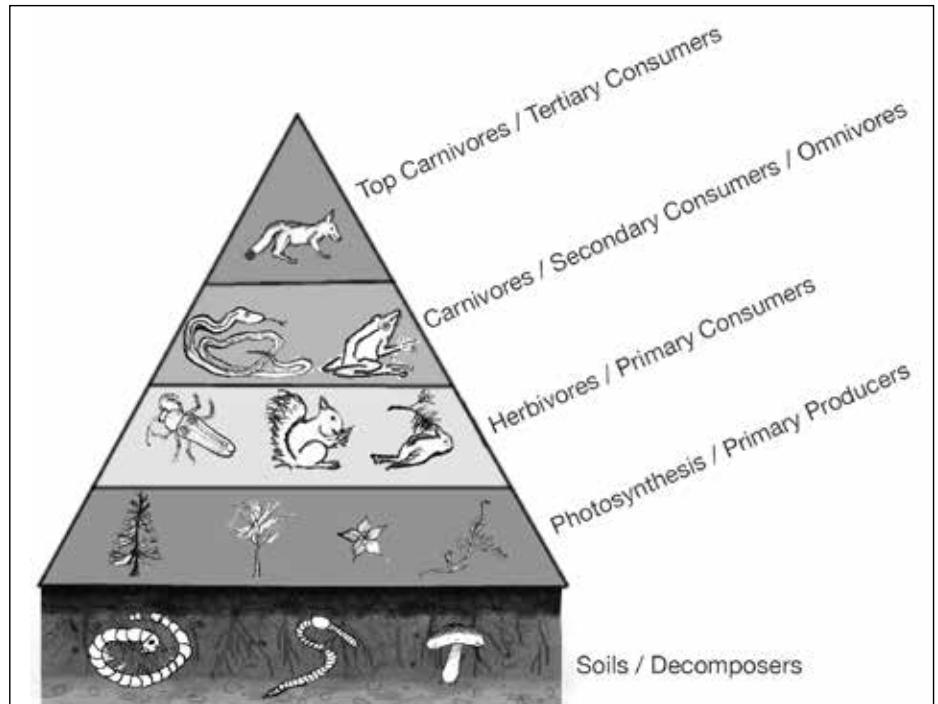
In our restoration work we often focus on seeds and plants. But the plants we grow are part of a much larger system of biotic and abiotic players which influence each other. This article will explore a small part of those relationships and tell a story about how spiders can change plant species diversity in a meadow.

Research generally supports the idea that an ecosystem is stronger and more resilient when it has a high diversity of plants and animals. For instance, with a large number of species, variations in conditions such as weather may affect some, but not usually all species present¹. Physical diversity in a habitat can also increase biological diversity by providing more micro-habitats for different species to live in.

Ecology is about relationships. A high species diversity increases the number of potential interactions between species. These relationships might be predatory, competitive, symbiotic, parasitic, or commensal. The strength of these relationships may be dependent on conditions and can change over time. And there are indirect relationships where one organism influences another through one or more intermediaries. These are exceedingly complicated networks. Because the total number of potential interactions is so huge, it's not really possible to comprehensively describe the ecological state of a place at a point in time or to predict everything that might happen in the future.

A simpler way of understanding an ecological system is to group a subset of species in a food chain pyramid with primary producers (soil organisms and plants) at the bottom, one or more levels of consumers above the producers, predators on top of consumers and finally an apex predator which has no predators itself. These categories in the food chain are called trophic levels (the word trophic comes from the Greek word for food), and together they represent a simplified view of the composition and relationships of a particular habitat as a trophic pyramid. Changes happening at one level may affect another level, an effect known as a trophic cascade². A keystone species is a species which has (or disrupts) many connections within and between trophic levels resulting in a disproportionate influence on the interactions throughout the whole trophic pyramid³.

A trophic cascade can be bottom up, as when a primary producer population crashes for some reason and organisms at higher levels starve.



Trophic Pyramid

But it can also happen from the top down. An example might be the removal of wolves and cougars from an area which allows deer populations to increase which in turn changes forest plant composition due to increased (and selective) deer herbivory. In another example, a recent study⁴ looked at the effects of insectivorous bats on corn production and found that in plots where bats were excluded, corn earworm damage was more severe. In a fourth level indirect trophic effect (bat, moth, larva, disease), the exclusion of bats resulted in higher levels of corn fungal infection as well.

Trophic cascades can be an important part of invasive species damage. Imagine a trophic level with multiple species of producers. These might be negatively impacted and mostly replaced by a single invasive species which succeeds because it has no predators and potentially alters the soil biota or other habitat or biological conditions to its advantage. Organisms in other layers of the pyramid which specialize on the lost producers may not be able to adapt and so die. If a keystone species is defined as one that can have disproportionate effects on the whole trophic pyramid, then many invasive species fit that bill. If enough species are removed from the system, the whole system could collapse (at least in the short term) with subsequent loss

of the ecological services those species provide to the system, including humans⁵.

Top down cascades can reduce prey populations directly which in turn can reduce predatory or herbivory pressure on lower trophic levels. This leads to greater abundance at those levels, as in the deer example. But prey don't usually passively wait around to be eaten. They develop defenses which can include behavioral changes, and behavioral changes can also cause trophic cascade effects.

Dr. Oswald Schmitz⁶ of the Yale School of Forestry and Environmental Studies has been studying a top down trophic cascade system for over 20 years and he gave a talk about it at the 2017 Wisconsin Ecology symposium last spring⁷. The study area is located in old-field meadows in northeast Connecticut isolated from other meadows by extensive forest. Schmitz found 18 plant species in the meadow, but over 90% of plant biomass was contributed by 6 species: *Solidago rugosa* (Wrinkleleaf goldenrod), *S. raminifolia* (Grass-leaved goldenrod), *Potentilla simplex* (Common Cinquefoil), *Daucus carota* (Queen Anne's lace), *Trifolium repens* (White clover), and the grass *Poa pratensis* (Kentucky Bluegrass). The goldenrod, *S. rugosa*, tends to be the dominant forb both in numbers

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and stature, suppressing smaller plant species. Two species of grasshopper were found, a specialist *Chorthippus curtipennis* (Marsh meadow grasshopper) which feeds on grasses and sedges, and the generalist *Melanoplus femur-rubrum* (Redlegged grasshopper) which feeds on grasses and forbs from mid-summer through late September. Several hunting spiders were present in the meadow, but the two important ones in this story are the nursery web spider *Pisaurina mira* and the active hunting predator *Phidippus claris* (formerly *Phidippus rimator*, the Brilliant Jumper).

Over many years, Schmitz did research^{8,9,10} to look at the effect these two spiders had on the grasshopper *M. femur-rubrum* and how that affected plant species composition, biomass production, ground level light availability, litter decomposition and N-mineralization (the process by which nitrogen in organic matter is converted to plant-available inorganic nitrogen). Experiments used grasshopper and spider-proof cages (aluminum window screen) set up in the meadow and sunk into the ground. Some contained grasshoppers, some had one or both species of spiders plus grasshoppers and some had neither spiders nor grasshoppers. Testing and monitoring was done to make sure the cages did not significantly differ in initial plant composition or environmental factors (such as light and moisture availability), and that spiders and grasshoppers were excluded as required.

Conventional ecological wisdom in the early 2000s was that top down trophic cascades had weak effects on total plant biomass and number of species. Schmitz's research confirmed that this was the case, but he also showed that this was not the whole story. Research with the spider *P. mira* and the grasshopper *M. femur-rubrum* in cages showed that the grasshopper changed its feeding behavior in the presence of the spider. *P. mira* hunts in the top level of the plant canopy with a sit and wait hunting mode. *M. femur-rubrum* prefers the grass *P. pratensis*, but is more vulnerable to that spider when feeding on it, so it shifted to feeding more on the goldenrod *S. rugosa* which provides better leafy cover. Increased feeding on *S. rugosa* suppressed its growth which resulted in a more open and patchy environment in the test plots. *P. pratensis* abundance increased due to reduced feeding by the grasshopper, but so did the abundance of previously shaded forbs which now had more light. Hunting by *P. mira* does not reduce grasshopper numbers more than natural mortality, so the mere presence

of this spider (in the absence of other spiders) caused changes in plant species abundance!

The jumping spider *P. claris* hunts throughout the canopy so the grasshopper cannot change its behavior to avoid it. Hunting by *P. claris* reduces grasshopper numbers, which increases biomass for both *S. rugosa* and *P. pratensis* and negative effects on other species. When both spiders are present, the abundance of *S. rugosa* goes down with increasing proportions of *P. mira*.

Recent research¹¹ suggests that changes in plant community composition due to the presence of *P. mira*, also resulted in changes in soil properties including decreased carbon and decreased mineralization of nitrogen. These changes, though statistically significant, cannot be entirely attributed to the spider-caused trophic cascade because other soil and biological processes may be involved. But the evidence suggests there may be trophic effects in this system beyond just plant species composition.

So how can you use this information?

- First of all, appreciate the complexity of ecological systems and wonder about what else might be happening around you in a "simple" field or forest.
 - Learn the natural history of as many species as you can. Look for and enjoy any stories you can find about the interactions between species, especially those on your property.
 - Look for organisms other than plants on your site. Get or make a sweep net and see what arthropods you can find. Set up a moth light. Get a trail cam. Use your camera to document behavior. Keep notes.
 - Strive for diversity in your planting. Hopefully critters will move in.
 - Think about the effects of management practices on different species and balance harm with benefit where possible. Your natural history and life cycle knowledge can help you with this.
 - Understand that Earth is experiencing a major extinction event^{12,13} and that many current ecological relationships are being disrupted. This has consequences for habitat restoration.
 - Know that life on Earth will be fine. The planet has been through worse times before and life has survived. Many species will evolve to adapt to new conditions. Will humans?
- All three of the study arthropods are found in Wisconsin ("Guide to the Grasshoppers of Wisconsin"¹⁴, "Spiders of the North Woods"¹⁵ or bugguide.net). You can go out on your own property and look for them. According to the WisFlora web site¹⁶, Wisconsin has 30 species of goldenrod, *Solidago rugosa* among them, but there are no records of it from the Driftless Area.
- So do you suppose results would be different if the experiment was done in Wisconsin? On a species rich remnant versus a goldenrod dominated old field? 
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- 1) <https://prairieecologist.com/2017/03/14/should-we-manage-for-rare-species-or-species-diversity>
- 2) <https://www.nature.com/scitable/knowledge/library/trophic-cascades-across-diverse-plant-ecosystems-80060347>
- 3) -2024119621 <https://wildlandsnetwork.org/keystone-species-trophic-cascades>
- 4) <http://m.pnas.org/content/112/40/12438.full.pdf>
- 5) https://www.researchgate.net/publication/299343423_Invasive_species_triggers_a_massive_loss_of_ecosystem_services_through_a_trophic_cascade
- 6) <http://environment.yale.edu/profile/schmitz/>
A short video on this research can be found at this link.
- 7) Wisconsin Ecology <http://ecology.wisc.edu>
- 8) http://environment.yale.edu/forests/files/Schmitz_etal_1997_Ecology.pdf
- 9) <http://onlinelibrary.wiley.com/doi/10.1890/08-1919.1/full>
- 10) <http://science.sciencemag.org/content/319/5865/952>
- 11) [http://onlinelibrary.wiley.com/doi/10.1890/0012-9658\(2001\)082\[2072:EOTPSO\]2.0.CO;2/full](http://onlinelibrary.wiley.com/doi/10.1890/0012-9658(2001)082[2072:EOTPSO]2.0.CO;2/full)
- 12) https://en.wikipedia.org/wiki/Holocene_extinction
- 13) <https://www.theguardian.com/environment/2017/jul/10/earths-sixth-mass-extinction-event-already-underway-scientists-warn>
- 14) Guide to the Grasshoppers of Wisconsin: <http://dnr.wi.gov/files/pdf/pubs/ss/ss1008.pdf>
- 15) Spiders of the North Woods: <http://www.kollathstensaas.com/book.php?bookID=4>
Note: there is a new 2017 edition.
- 16) WisFlora web site: <http://wisflora.herbarium.wisc.edu>

Cardinal-Hickory Creek Opposition is Growing

Chuck Tennessen, Community Organizer, Driftless Area Land Conservancy

Three transmission companies, ATC, ITC and Dairyland Power propose building a high-voltage 345kV transmission line from Dubuque County to Middleton. This \$500 million project would cut a 125-mile swath through the heart of the Driftless Area. The 150 ft. tall concrete and steel towers would dwarf 60 – 70 ft. mature trees and dominate the visual landscape for miles.

Projections made years ago anticipating the need for additional electrical generation for Wisconsin have proven inaccurate. Because of increasing efficiencies, electricity usage in Southwest Wisconsin and generally across the upper Midwest is flat and is expected to remain so. A growing number of ratepayers oppose the project and are confident that the cost and the environmental damage of this project can be avoided without jeopardizing Wisconsin's energy needs. Even if additional generation were needed there are many options including distributed energy, accelerated energy efficiencies, and load management that could address this need without the industrial-scale infra structure the CHC project proposes.

At least 15 conservation and environmental groups in southern Wisconsin have stated opposition or deep concerns about this project.



Photo by Bruce Noble

Several solar companies have done the same advocating instead for locally produced energy that provides jobs and grows the economy here in Wisconsin. The Iowa County Board has studied the issue and passed a resolution in opposition to this project, as have other local municipalities.

Currently, the draft Environmental Impact Statement is being written and is expected to be completed sometime in spring 2018. At that time, there will be opportunity for citizen input as the final EIS is compiled. Once that is written, if the transmission line companies decide to proceed, they would likely submit an application to the Public Service Commission in the winter of '18 - '19, which would be reviewed and decided upon sometime in late 2019.

Opponents of the project feel that citizen involvement right now is the most effective way to delay or stop the project because the transmission line companies are still evaluating its viability. If the companies do decide to file an application, opposition becomes primarily a legal issue.

The Driftless Area Land Conservancy invites businesses and environmental/conservation groups to join its CHC opposition coalition. Find out more by contacting charles@driftlessconservancy.org. In addition, opponents to the project are encouraged to write letters to decision-makers and newspapers. Sample letters, talking points and addresses can all be found at <https://driftlessconservancy.org/protect-the-driftless>. Scroll down to Letter Writing Packet. 

Plant Seeds Now To Help Monarchs and Other Pollinators Next Year

The main threats facing pollinators in general are habitat loss, degradation and fragmentation. As native vegetation is replaced by roadways, manicured lawns, crops and non-native gardens, pollinators lose food and nesting sites necessary for their survival.

To get more info and sign up for periodic email or texts, go to <http://dnr.wi.gov/topic/endangeredresources/pollinators.html>

Landowner Incentive Program Accepting Proposals for Driftless Area Private Lands Restoration

LIP grants have helped improve more than 12,000 acres of habitat for more than 240 at-risk species. The program is competitive, and landowners should visit the Landowner Incentive Program website to review details of the application process, project ranking criteria, and eligible work.

Funding is provided to highly ranked projects on a first-come, first-served basis, and projects generally last one year. Applicants may request up to \$25,000; however, most awards are around \$4,000 to \$6,000. DNR reimburses a landowner up to 75 percent of the cost for on-the-ground practices. Landowners are required to contribute the remaining 25 percent share through out-of-pocket costs (cash match), or as an in-kind labor and equipment match.

<http://dnr.wi.gov/topic/endangeredresources/lip.html>

"An understanding of the Natural World and what's in it is a source of not only a great curiosity but great fulfillment."

— Sir David Attenborough

Thank You New and Renewing Members and Donors

Member Changes and Donations Since the Last Newsletter

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ECOLOGIST *from page 2*

conservation easements and good stewardship, as well as managing a project to promote monarch conservation. If you'd like to discuss either, please be in touch with me at amy@driftlessconservancy.org.

BMAP will be hiring a new ecologist for 2018. We'll post a position description to our website when we officially begin the search; in the meantime, if you know any promising candidates, please feel free to let us know.

Thanks to each of you for all the good work you do! 🦋

"In every walk with nature one receives far more than he seeks."

— John Muir

Announcements

Funding for Prairie Research

Michael Anderson, PBR Vice President

Prairie Biotic Research (PBR) is an all-volunteer, scientific public charity established in 2000 to foster biotic research in prairies and savannas. To achieve this goal we offer a Small Grants Program that funds grants up to \$1500 for the study of any grassland taxon anywhere in the USA. Since 2002, we've awarded 275 grants worth \$264,236 to researchers in 37 states to study insects, plants, mammals, reptiles, slime molds, mycorrhizal fungi, spiders, snails, amphibians, birds, fish, invasive species, effects of management, and the human dimensions of conservation.

In 2018, we expect to fund at least 20 grants of up to \$1500 each, including some restricted by donors for work in IA or WI. We support natural history and experimental projects. Visit prairiebioticresearch.org for grant details, the proposal form, and a sample researcher agreement form awardees must sign. You'll also find several winning proposals for use as a model and a searchable catalog of project summaries with images. The application deadline is December 20, 2017.

If you're not a researcher but value our efforts, you can provide tax-deductible financial support through our website: prairiebioticresearch.org. Any amount is welcome. We're 100 percent volunteer-run so our overhead is extremely low. Please help us help others!



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Advertise in the Blue Mounds Area Project Newsletter

Deadline for ads in the spring newsletter is March 1, 2018

1/6 page vertical (2 3/8" x 4 7/8") \$35.00
1/3 page squarish (5 1/8" x 4 7/8") \$55.00
1/2 page horizontal (7 7/8" x 4 7/8") \$75.00
Contact editor Marci Hess,
mhess5599@gmail.com, for more details.

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Conservation Conversations 2018

Free and open to the public. For information email info@bluemounds.org or visit our web site at www.bluemounds.org. All talks will be held at the Mount Horeb branch of the State Bank of Cross Plains, 1740 Business Hwy 18-151 E. (Main Street) in Mount Horeb (next to Culver's Restaurant). Directions are on our web site. Refreshments will be served.

Conservation Easements: A Voluntary Tool for Protecting Private Lands

Thursday, January 25, 7:00 pm

David Clutter, Executive Director of the Driftless Area Land Conservancy will outline several different tools for protecting your property. The talk will focus primarily on conservation easements, including the legal, financial, and long-term protection implications of these agreements.

Stewardship Funding for Private Lands

Thursday, February 8, 7:00 pm

Learn about the different opportunities to seek funding for projects on your own private land. Hear about successful projects and successful applications for funding. Mike and Darcy will share their experiences of working with landowners in the Driftless area that used an array of funding sources.

Darcy Kind, WI DNR and Mike Engel, US Fish and Wildlife.

Overview of USDA Federal Programs; Specifically CRP, CREP and EQIP

Thursday, February 22, 7:00 pm

Brandon Soldner is the Agricultural Program Specialist in charge of the CRP program at the Wisconsin State FSA Office. He will talk about what the Conservation Reserve Program has to offer landowners in the current farm bill. He will discuss the purposes of the program as well as who and what land types are eligible. He will explain the history and purpose of the original program which was signed into law by president Reagan.

The Wisconsin Managed Forest Law (MFL)

Thursday, March 8, 7:00 pm

Jason Sable, DNR Tax Law Forestry Specialist will give an overview of the Wisconsin Managed Forest Law. He will highlight recent changes in the law and what forest landowners can expect if they enroll their property in MFL.

"The wealth of the nation is its air, water, soil, forests, minerals, rivers, lakes, oceans, scenic beauty, wildlife habitats and biodiversity... that's all there is. That's where all the economic activity and jobs come from. These biological systems are the sustaining wealth of the world."

— *Gaylord Nelson*

Our Mission:

The Blue Mounds Area Project is a community-based organization that seeks to inspire, inform and empower private landowners in the Southwestern Wisconsin region to enjoy, protect and restore native biodiversity and ecosystem health.

Our Objectives:

- 1) Promote understanding, appreciation and conservation of native woodlands, prairies, wetlands and savannas and their special species in an economically viable manner, through community outreach programs and private contacts.
- 2) Act as a clearing house for information from people and organizations involved in preserving native biodiversity including information about plant, animal and habitat identification, management, restoration, seed sources, native plant nurseries and invasive, nonnative species.
- 3) Encourage cooperative, volunteer restoration and management activities.
- 4) Identify public and private land use changes that may affect ecosystem health and promote community-based stewardship of the unique natural heritage of the Blue Mounds and the Southwestern region of Wisconsin.

The Blue Mounds Area Project Newsletter is published three times yearly.

We welcome your comments, submissions, and advertisements.

Deadlines for submissions for 2018 newsletters: Spring Newsletter — March 1, 2018
Summer Newsletter — July 1, 2018
Fall Newsletter — October 15, 2018

Send submissions to: newsletter@bluemounds.org

Editor: Marci Hess, mhess5599@gmail.com — Designer: Julie Raasch, jul@creative-zoo.com

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If you are interested in assisting or volunteering for the Blue Mounds Area Project, please contact us:
info@bluemounds.org

New BMAP number is
608-561-2627 (or, 608-561-BMAP)

Blue Mounds Area Project Membership Form

Name(s): _____

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City: _____ State: _____ Zip: _____

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Student \$15 Basic \$30 Contributor \$50 Supporter \$100 Sponsor \$500 Patron \$1000

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All contributions are tax-deductible to the fullest extent of the law.

Yes, I would like to receive information about site visits.

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"One individual cannot possibly make a difference, alone. It is individual efforts, collectively, that makes a noticeable difference – all the difference in the world!"

— Dr. Jane Goodall



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