



TALLGRASS PRAIRIE CENTER NEWS

UNIVERSITY OF NORTHERN IOWA

The Tallgrass Prairie Center restores native vegetation for the benefit of society and environment through research, education, and technology.

AUTUMN 2017



Into the Weeds: The Pollinator Habitat Evaluation Project

Laura Jackson, Director
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Over the last 5 years, Iowa farmers have taken advantage of the federal Conservation Reserve Program, administered by the USDA-Natural Resources Conservation Service to set aside over 200,000 acres for the benefit of butterflies and other pollinators. Naturally, farmers wanted to find out how well their planting was doing, and we had questions about quality of the seed mixes and the long term success of these fields for pollinators.

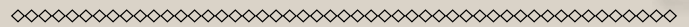
Working with the UNI Center for Energy and Environmental Education, we joined their Science in Action project, funded by the Roy J. Carver Charitable Trust. Biology professors Mark Sherrard, Mark Myers, Ai Wen and Kenneth Elgersma decided that we could address some interesting research questions, if we pooled our efforts and combined them with the Biology Department's Summer Undergraduate Research Program.

Botany Boot Camp kicked off in late May, with TPC Founder Daryl Smith, and long-time Friend of the TPC Bruce Stiles, conducting prairie walks for our nine UNI students. Then, faculty took turns leading the Boot Camp activities. Over two weeks, students learned to identify dozens of plants on the UNI campus and nearby prairies. Then, they developed a field protocol for measuring the density of wildflowers and weeds in each field. In addition, students learned how to establish random transects using Geographic Information Systems technology, and worked efficiently as a team, rapidly moving from quadrat to quadrat, ID'ing plants and entering data while

coping with heat, humidity, ticks and sunburn. Back in the lab, they entered and checked data, prepared data sheets and equipment for the following day's work, and worked on independent research projects.

By the end of July this team was an efficient data collection machine, and could identify over 100 species of native and weedy plants from leaves and stems alone. The crew also conducted butterfly and bee surveys. They finished thirteen sites on private land (as well as a few campus prairies), and also volunteered to help private landowners in the community with signage and brush control. Their research posters were presented to family and fellow students at the end of July, on a variety of topics (<https://www.tallgrassprairiecenter.org/student-research-posters>). The information gathered was compiled into a landowner report, which was printed, bound and mailed to each landowner this fall.

Next summer a grant from the US Department of Agriculture Farm Services Agency will allow us to expand this project, adding thirty new sites within an hour's drive of UNI. At least 5 new and 4 returning UNI students will form next year's Pollinator Habitat Evaluation Crew. For photos and more, see the project webpage, <https://www.tallgrassprairiecenter.org/pollinator-habitat-evaluation-project>



Enhancing Roadsides With Milkweeds and Other Prairie Species: Can We Do it Cost-effectively?

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Over the course of Iowa's 29 year old IRVM program, thousands of acres of roadsides have been enhanced with native prairie plants. Having prairie species in roadsides provides significant economic and environmental benefits. For example, diverse native vegetation is weed resistant, which saves time and money on weed control. With the decline of monarch butterflies, diverse roadside prairie plantings that include milkweeds and nectar sources are also becoming a tool of interest for conservationists. Roadside managers have several options for turning grass dominated roadsides into diverse native prairie plantings. In bare-soil situations such as ditch clean-outs, managers plant native grass and forb seeds using



Fayette County roadside prairie enhancement study site during the height of the growing season. A mowed plot is shown in the foreground, and an unmowed plot can be seen in the background.

techniques similar to prairie reconstruction in crop fields. When directly turning grassy roadsides into restored prairie, managers kill established grasses with herbicides, then plant prairie species into the dead sod. However, these methods can be costly and equip-

ment intensive. Restoration practitioners have shown that prairie species can be successfully seeded into native grass stands using mowing, without killing the established vegetation. Could this more cost effective method be used in roadside prairie enhancements as well?

This spring, we established an experiment in three separate Iowa counties to assess native seedling establishment in grassy roadsides, and see whether establishment could be increased only by mowing. We wanted to make sure site conditions were controlled, so we put all our experimental plots on similar soils, next to farm fields, and on relatively level ground. We planted a seed mix similar to the diverse seed mixes distributed to IRVM programs that included 71 species adapted to the mesic soil conditions at each site. We also increased the seeding rate for four milkweed species to create essential monarch habitat. Once the study sites were planted in May, we mowed every three weeks until September.

After the first growing season, we found that mowing was not very effective at increasing seedling establishment in grassy roadsides. We did not find any differences between the mowed and unmowed plots, and native seedling establishment was generally low. However, we did find some interesting patterns in which native species established the best. Milkweed species (mainly common milkweed and butterfly milkweed) established better than other species, and milkweed seedlings made up a disproportionate percentage of the emerging native plants (25% of seedlings encountered) even though they were not a large component of the seed mix (5% of seeds sown). When compared with other roadside enhancement studies that used herbicides to remove established grasses before planting, milkweed establishment was similar to what we found in our experiment.

Overall, our results from this year look promising for enhancing grassy roadsides with milkweeds for monarch habitat. Simply planting milkweeds in roadsides may be a cost-effective means of enhancement since they emerged as seedlings relatively well, even without any follow-up management. Still,



Butterfly milkweed (*Asclepias tuberosa*) seedling

we should be cautious about extrapolating too much from these first year results- many seedlings die during their first winter, and the milkweed seedlings we found ultimately may not survive to become the adult plants that monarchs need as habitat. There is reason for optimism though, since other studies have shown that 80% of seedlings that survive their first summer survive to adulthood.



New Brochures Address Common Questions about Roadside Vegetation

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What should landowners do if they want to plant native prairie plants in the roadside by their property or hay the roadside? How does integrated roadside vegetation management impact bees and butterflies? These are among the questions often received by roadside managers and the IRVM program manager. New brochures produced by the IRVM program with a grant from the Iowa DOT's Living Roadway Trust Fund answer common questions related to IRVM, and include websites with more information. The brochures are being distributed to Iowa DOT maintenance garages and Iowa counties with IRVM programs. They are also available as PDF files on the Tallgrass Prairie Center website at: www.tallgrassprairiecenter.org/irvm-brochures. Paper copies are available by emailing IRVM program manager Kristine Nemec at kristine.nemec@uni.edu. The brochures address the following topics:

Landowners and Roadsides: Frequently Asked Questions. Answers questions related to planting native plants, harvesting hay, collecting seed, spraying herbicide, and burning the roadside.

Iowa's Mowing Law for Roadsides. Describes Iowa's mowing law and how mowing affects birds, monarch butterflies, weeds, and deer.

Roadsides for Bees and Butterflies. Covers the role of roadsides in pollinator conservation, effect of collisions with vehicles on pollinator populations, and lists websites for seven organizations involved with roadside vegetation and pollinator conservation.

Integrated Roadside Vegetation Management: Enhancing Iowa's Roadside Resource. Includes a map showing levels of county participation in integrated roadside vegetation management and describes the benefits of having a county roadside manager and IRVM plan.

The Importance of Seed Storage for Seed Viability. Describes the importance of proper seed storage for seed viability and low-cost, medium-cost, and high-cost options that counties can use for storing seed.





New Zurn 150 research plot combine just being delivered on Friday, September 22, and has already been used to harvest several plots this fall.

New Equipment for Field, Lab, and Classroom at the Tallgrass Prairie Center

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The Roy J. Carver Charitable Trust Fund generously provided funding to the University of Northern Iowa's Tallgrass Prairie Center (TPC) to replace aging equipment as well as add new equipment and technology to support core programs at the Center, and to enhance student engagement with Center programs and activities. This provides essential infrastructure for student experiences in applied conservation science. The center piece of this program enhancement was the purchase of a new Zurn 150 research plot combine for harvesting native seed from production plots, from grasses to sedges to forbs to shrubs. This replaces a 40-year old Hege plot combine, donated to the Center 17 years ago from Hawkeye Community College. The new combine brings increased efficiency to harvesting and cleaning seed, and perhaps most importantly, greater safety for staff and students in operating the combine harvester. Other equipment essential to native seed production provided by Carver grant include a commercial grade Toro mower (pictured on previous page), a John Deere rototiller and rotary mower for nursery management and research, a Rainflo bed former/mulch layer for setting up seed nursery beds, a new Westrup air-screen cleaner, and a spiral seed separator.



Rainflo bed former/mulch layer for creating plastic mulch covered raised or level beds in tilled ground for transplanting seedling plugs into as seed nurseries.

Additional equipment associated with TPC program use provided by the Trust include: a 28 foot trailer to safely haul tractor and native seed drill for Research and Restoration and Prairie on Farms installations, an unmanned aerial vehicle (UAV) drone, standard and submeter GPS units for research, new overhead mounted projector, plant identification guides and regional floras for classroom and research lab.

2017 Prairie on Farm Field Days Photo Montage **Ashley Kittle, Program Manager Prairie on Farms** *- ashley.kittle@uni.edu*

Four Prairie on Farms field days were held in the Middle Cedar Watershed this year. Over 145 participants learned the environmental benefits that native vegetation provides on farmland for soil and water quality improvement efforts and for increasing quality habitat for wildlife and pollinators. Participants heard first hand testimonies from landowners and from TPC staff on lessons learned and proper steps to establishing and maintaining a successful prairie planting.





Coming Soon: Four Sensational Seminars

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The Tallgrass Prairie Center's Restoration and Natural Management Seminar Series will return in 2018 with several notable speakers from across the Midwest. The four-part series, which is scheduled January – April, includes topics such as habitat establishment and management, wetland mitigation, and landscaping with native plants.

January 11

Kristine Nemecek, Program Manager, Integrated Roadside Vegetation Management at UNI Tallgrass Prairie Center, will discuss "Creating the Case for Habitat in Rights-of-Way."

February 8

Jason Husveth, President/Principal Ecologist and Amy Husveth, Restoration Ecologist at Critical Connections Ecological Services, Inc. will present "Developing Wetland Mitigation Credits through Restoration of Exceptional Natural Resources."

March 8

Pete Berthelsen, Partnership Coordinator for The Bee & Butterfly Habitat Fund will present "Three Pillars of Pollinator Habitat."

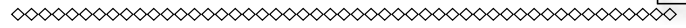
April 11

Dan Mays, Lifetime Master Gardener, writer, and native plant enthusiast, will share his tips and suggestions in his talk "Native Plant Success in the Home Landscape."

All seminars will begin at 4:00 p.m. in Classroom 09 at the Tallgrass Prairie Center. These seminars are free of charge and are open to the public.



On a sunny mid day in September nearly 100 adult monarchs graced the meadow blazingstar (*Liatris ligulistylis*) seed increase plot at the Center (above photos). About a month later, painted lady butterflies appeared en masse nectaring on goldenrods all around the mid-west. Little is known about their migration. A 70 mile-wide cloud appeared on weather radar over the great plains states this fall.



SAVE THE DATE!

-January 18-20 Practical Farmers of Iowa Annual Conference, Ames, IA

-January 23-25 Winterfest, Iowa Association of County Conservation Boards, Waterloo, IA

-January 26 Iowa Habitat Partners Meeting, Ames, IA

-January 27 Iowa Prairie Network Region 5 Winter Seminar, Ames, IA

-March 20 Rights-of-Way Workshop, Marion, IA

-September 12-14 32nd Annual Roadside Conference, Cedar Rapids, IA



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Tallgrass Prairie
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 NEWSLETTER

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