



TALLGRASS PRAIRIE CENTER



Tallgrass Prairie
CENTER



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2021 – 2022 Highlights



University of Northern Iowa
College of Humanities, Arts & Sciences

Front cover: Migrating monarchs flock to the meadow blazing star at the Tallgrass Prairie Center. Photo by Laura Walter.

Above: Research Assistant Damien Lindsey documents the increased early-season flower abundance in dormant-seeded pollinator plantings using photo points. Photo by Justin Meissen.

Back cover: Young visitors enjoy the public trails at Irvine Prairie. Photo by Anne Phillips.

Tallgrass Prairie Center

STAFF (September 2021 – August 2022)

Laura Jackson

Director

Kristine Nemec

Iowa Roadside Management

Justin Meissen

Research and Restoration

Laura Fischer Walter

Plant Materials

Andy Olson

Prairie on Farms

Anne Phillips

Community Engagement

Mary Weld

Grants and Programming

Daryl Smith

Professor Emeritus/Volunteer Advocate

IOWA STEM TEACHER EXTERN

Travis Angell

ARTIST IN RESIDENCE

Erin Anfinson

**AMERICORPS SERVICE
MEMBERS**

Andrew Rust

Bri Hull

Will Kopp

Karlee Ostendorf

The Weekly Weeders

STUDENTS

Laura Spies – Research Assistant

Damien Lindsey – Research Assistant

Tristan Murphy – Graduate Assistant

Eva van de Mortel – Summer

Undergraduate Research Program





From our director

The roots of the Tallgrass Prairie Center go back to the 1980s, when UNI Biology Professor **Daryl Smith** began to collaborate with the Black Hawk County Secondary Roads Department. It was passion for prairie, combined with practicality, that drove this unusual partnership. Then in 1988, the Iowa Legislature wrote a powerful idea into the Iowa code: that it is in the public interest to manage Iowa's roadsides for multiple purposes using ecological principles.

The Native Roadside Vegetation Center at UNI was formed to meet the practical challenges of that idea. Subsequently renamed the Tallgrass Prairie Center, we empower people to value and restore resilient, diverse tallgrass prairie. Our audience has expanded beyond county roadside managers to include county decision makers, native seed producers and buyers, federal natural resource agencies, conservation professionals, farmers, and landowners.

We could claim our mission is important because of the need to sequester carbon, improve water quality or restore pollination services. All true. But unlike these abstract ecosystem services, it is possible to love a prairie, to participate in its rich cycles of life, and to be elevated by that relationship.

To learn more about the Tallgrass Prairie Center, please visit tallgrassprairiecenter.org

To support our important work through the Friends of the TPC, please visit the [Friends](#) page at the UNI Foundation, or call (319) 273-3836.

As Aldo Leopold says in *A Sand County Almanac and Sketches Here and There* (1949):

“Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language.”

As awareness of the TPC grows, we are tempted by exciting new opportunities to collaborate. While we are grateful, it would be a mistake to accept all of them. This summer, Center staff created our second 5-year plan that helps us to stay focused on our priorities. Most of all we are proud to be a part of UNI, applying scholarship and community service to address local, state and even global problems, while helping our students to achieve an exceptional education.

It is my pleasure to share this year’s Highlights from the Tallgrass Prairie Center!

Sam Jackson



“Iowa Peace” photo by Pauline Schaffner.



IOWA ROADSIDE MANAGEMENT

Enhancing our public roadsides

Iowa's over 800,000 acres of county and city roadsides provide a lot of potential area for native plants. Forty-seven counties and twelve cities now have roadside vegetation programs. Led by **Kristine Nemec** with assistance from **Bri Hull**, over the last year the IRM Program has notched several accomplishments:

- Cedar Falls became the first city ever to receive native seed from the Iowa Roadside Management program, and Mills County established a new roadside vegetation program.
- With **Tara Van Waus** and **Kody Unstad**, Iowa DOT Living Roadway Trust Fund, IRM began holding virtual meetings about how to start a roadside vegetation program. Over 30 people from 21 counties and one city attended to learn more.

- Kristine shared Iowa's approach to roadside vegetation management with 267 people at the Best Practices Summit, organized by Minnesota's Pollinator Friendly Alliance.
- High-impact publishing spread the word. Kristine's article in *Popular Science* provided backyard gardening tips for attracting butterflies. Her article in *Environmental Management* shared how engineers and roadside vegetation managers maintain roadside vegetation in Iowa.



Kristine Nemec, here at Irvine Prairie, has been the IRM program manager since 2015.



FUNDING

- Iowa Department of Transportation Living Roadway Trust Fund (LRTF)
- Federal Highway Administration Transportation Alternatives Program

RESEARCH AND RESTORATION

Improving prairie plantings in agricultural landscapes

We live in an intensively managed agricultural landscape where original, remnant prairies are extremely rare. Our research focuses on prairie restoration — planting seeds from native plants, often on cropland of marginal value. Assisted by UNI senior **Damien Lindsey**, a biology and environmental science major, Program Manager **Justin Meissen** investigates methods that would be practical and cost-effective to implement at scale in intensively farmed landscapes. This year we made progress on several fronts:

- A 4-year-old experiment reveals that pollinator and diverse mixes need to be seeded in the dormant season to maximize pollinator habitat. If we can encourage farmers to try late fall or even winter planting instead of the usual spring planting, they may be pleasantly surprised by the results.
- Tens of thousands of acres of conservation plantings are scheduled to expire in the next decade, giving some farmers

an opportunity to “level up” their habitat using techniques approved by the United States Department of Agriculture Natural Resources Conservation Service. Two new plot experiments established in Floyd and Benton counties assess those techniques.

- Justin Meissen led the first-ever online botany course specifically for those who establish and manage agricultural conservation plantings. The archived videos on our YouTube channel will be an important training tool for years to come.
- We shared preliminary and published findings at many events, such as our spring **Ag Conservation Working Group** meeting, Roadman Farm field day, and Prairie STRIPS (Science-Based Trials of Rowcrops Integrated with Prairie Strips) stakeholder meeting.

UNI senior **Damien Lindsey**, a biology and environmental science major, assists Justin Meissen.





FUNDING

- Iowa Nutrient Research Center
- USDA Farm Services Agency
- USDA North Central Region Sustainable Agriculture Research and Education

PLANT MATERIALS

Iowa-source genetic diversity for Iowa's roadsides and beyond

High-quality restoration requires diverse, regionally adapted seed. The Plant Materials program serves that need by creating a “prairie pedigree.” We harvest small amounts of seed by hand from many plants in several remnant prairies across a region of our state. We propagate them and harvest a much larger quantity of seed, which becomes the genetic stock for commercial seed producers. On the west edge of the UNI campus, walkers on the **Tallgrass Trails** can find 62 plots of 41 species, ranging from 80-foot rows to half-acre fields. Since the first collections were made in 1990, the Plant Materials program has grown seed from over one hundred species of native grasses, sedges, wildflowers, legumes, and shrubs.

This year, Program Manager **Laura Walter**, assisted by UNI senior **Laura Spies**, an environmental science major, and AmeriCorps members, sought out early-flowering wildflowers, late-flowering species from wet prairies, and Leiberg’s panic

grass. These new species join the ever-changing cast of characters in our seed production plots, including older fields and fresh rows of species whose seeds have aged in storage and need to be grown out again to maintain seed quality.

Laura Walter also visited **Bill** and **Chelsea Buman** (western Iowa), **Blooming Prairie Nursery** (Des Moines area), and **Hoksey Native Seed** (southern Iowa), in an effort to understand the needs of the growers who use our stock seed.



Right: Laura Walter and Laura Spies transplant seedlings in the greenhouse.

Far right: Bri Hull and Laura Spies collect *Packera plattensis* (prairie groundsel) at Cedar Hills Sand Prairie.



FUNDING

- Iowa Department of Transportation Living Roadway Trust Fund (LRTF)

PRAIRIE ON FARMS

Making prairie practical

The Prairie on Farms program aims to scale up the use of prairie as a reliable, durable, and multifunctional conservation practice on agricultural lands. A few highlights:

- Program Manager **Andy Olson** developed four case studies of prairie strips, featuring the farms of **Randy Luze**, **Larry Roadman**, **Dick Sloan** and **Wayne DeWall**, to assist landowners and farm operators.
- The online **Botany Beginners** course was centered around the needs of crop consultants and other conservation professionals who are assisting farmers with Conservation Reserve Program plantings.
- We made in-person and virtual presentations for landowners in Iowa, Kansas, Nebraska, Missouri, Illinois, Wisconsin and Minnesota.
- The Iowa Watershed Approach project neared completion. Since 2017, we have provided technical support for seven

watershed coordinators on the use of prairie, including investigations of tile lines under prairie and crop fields.

- We hosted an in-person field day at Roadman Farm to examine prairie strips and an online panel discussion on prairie enhancement for pollinator and monarch habitat.
- We published an updated list of prairie seed and service providers and surveyed them to determine typical custom rates for prairie-specific services.
- Andy Olson assisted **Justin Meissen** with prairie site preparation and seeding, gaining more hands-on experience with site preparation, planting methods, and stand assessment.



FUNDING

- USDA North Central Region Sustainable Agriculture Research and Education
- Bia-Echo Foundation
- Iowa Watershed Approach



Andy Olson demonstrates how to investigate tile lines under a prairie at a field day.

IRVINE PRAIRIE

Restoring a piece of the original Iowa landscape

This year we completed the planting of Irvine Prairie. In 2018, **Cathy Irvine** donated 77 acres to the UNI Foundation in memory of her husband, David. The Iowa Natural Heritage Foundation holds the conservation easement, protecting the prairie from any future development. With Cathy's support, we have applied everything we know about seed mix design and seeding, learning and adapting each year.

Justin Meissen ably leads the project, but it's a group effort.

- UNI students **Damien Lindsey** and **Taylor Murray** mixed the seed for the last 15-acre planting. Half the seed was broadcast into a nurse crop of oats in late November 2021, a promising new technique. All told, 120+ species have been introduced as seed, with 80+ species found.
- Benton County Roadside Management and **Daryl Smith** helped with a 25-acre burn.

- **Union High School** students transplanted 280 plants of 14 species, under the direction of science teacher **Craig Hemsath**. Species included slender-leaved false foxglove, a hemiparasite; American water horehound, whose seed came from a remnant prairie 10 miles away; and Virginia bunchflower, which was discovered in the road ditch a half mile away. Cathy gathered seeds, and UNI students **Laura Spies, D.J. Brooks, Jon Nzombo** and **Kate Sinnott** tended the slow-growing plants over three years.

As word spreads, we are starting to see more visitors. The trails are open year-round — please add your name to the guest book!

Irvine Prairie, 1173 55th Street, Dysart, Iowa, is free and open to the public from sunrise to sunset. No hunting or motor vehicles are permitted.

Justin Meissen and **Brian Pippert**, farm operator, review plans for Irvine Prairie.





Cathy Irvine, founder of Irvine Prairie, was named the **2022 Iowa Conservation Woman of the Year** by the Conservation Districts of Iowa.

Seeding on Irvine Prairie began in 2018 and was completed this year. Irvine says her goal for the area is to be educational. “Having the university involved with the research and students being a part of it – even at the high school and elementary levels – is a natural fit for me.” Cathy is a retired special education teacher for the Waterloo Schools. She mows the trails and the Irvine parking area and plays an active role in educational programs at the site.

Congratulations, Cathy!



GREEN IOWA AMERICORPS

Land and Water Stewards expand TPC capacity

Each September, TPC welcomes another crew of Green Iowa AmeriCorps service members from the Land and Water Stewards program. This was our third year hosting AmeriCorps under the leadership of **Kristine Nemec**. Since 2019, 15 AmeriCorps members have greatly expanded our capacity in education and outreach about the tallgrass prairie ecosystem. For example:

- Communications Associate **Bri Hull** stimulated all of us with her creativity, organizing photo contests for Iowa Roadside Management, researching and writing social media posts, and designing posters for volunteer events. Her talents as an artist became apparent as she painted a Prairie Plinko game, illustrating the values of the prairie ecosystem, and produced a coloring book of prairie plants, birds and insects, featuring many Meskwaki names as well as precise identification marks.

- Volunteer Coordinator **Andrew Rust** helped us to fulfill the TPC's newly designated role as manager of the UNI Biology Preserves, especially Daryl Smith Prairie. Andrew organized a well-attended volunteer work day removing tree saplings. And, together with Bri, Andrew laid the groundwork for TPC to expand our use of volunteers. His detailed trail maps created more opportunities for community enjoyment of UNI natural areas, including the Tallgrass Trails through TPC seed production plots.



- Part-time AmeriCorps Members **Will Kopp** and **Karlee Ostendorf** arrived just in time to pitch in with late spring tasks like transplanting new species into seed production plots and organizing thousands of bags of prairie seed for county and city roadside programs during the annual seed pickup. They joined UNI research students for a week of Botany Boot Camp in June and later went on to conduct summer vegetation surveys of roadside planting locations in Chickasaw County and of Prairie on Farms demonstration sites.
- On Friday mornings during the field season, several AmeriCorps members from other host sites arrived for Weekly Weeders. Transplanting, weeding and other tasks are always more fun in a group, and the mornings would typically conclude by sharing a watermelon.

Being a local AmeriCorps host site is a privilege. We return service members' hard work with abundant opportunities for professional development, such as pursuing certifications for prescribed fire and herbicide application. We are deeply grateful to the AmeriCorps "class" of 2021-2022 who served us so well!



AmeriCorps Service Member Bri Hull ignites a prescribed prairie burn at the TPC plots.

PRAIRIE ROOTS PROJECT

A deeper appreciation of the prairie ecosystem

Part of the TPC's mission is to inspire a greater awareness and appreciation of the tallgrass prairie ecosystem. To this end, we grow common prairie plants and then preserve their amazing root systems. The project, led by **Laura Walter** with assistance this year from **Damien Lindsey**, has distributed over 40 specimens and 250 banners to nature centers, museums, and schools. This year Iowa Public Broadcasting System borrowed a root to show at the Iowa State Fair, and we lent one to the Waterloo Center for the Arts for its exhibition "Tell the Bees: Works by Erin Anfinson."

Here are answers to some frequently asked questions about prairie roots:

- Each specimen takes 2-3 years to grow and another six months to preserve.

- Warm-season grasses, tap-rooted wildflowers such as compassplant, and prairie shrubs such as leadplant and prairie rose make the most impressive specimens.
- Root depth is not a fixed number for each species; our roots fill up the 10" x 10' pot they are grown in, but in nature they would spread out and intermingle with other species.
- Banners are made from a series of digital images taken right after harvest, when the aboveground plant is still looking fresh.



TPC PUBLICATIONS AND OUTREACH

Publications

Nemec, Kristine. Butterflies drink more than nectar – here's how to turn your yard into an oasis. *Popular Science*, September 3, 2021

Nemec, K., Stephenson, A., and Losch, M. 2022. How engineers and roadside vegetation managers maintain roadside vegetation in Iowa, USA. *Environmental Management*

Glidden, A., Sherrard, M., Meissen J., Myers, M., Elgersma, K., and Jackson, L. In press. Planting time, first-year mowing, and seed mix design influence ecological outcomes in agroecosystem revegetation projects. *Restoration Ecology*

Wen, A., Elgersma, K., Sherrard, M., Jackson, L., Meissen, J., and Myers, M. 2022. Wild bee visitors and their association with sown and unsown floral resources in reconstructed pollinator habitats within an agricultural landscape. *Insect Conservation and Diversity*

Outreach

Native Seed Stakeholders Meeting — The TPC hosted the stakeholders meeting in March at UNI with 27 attendees. To sign up for the Native Scoop newsletter, visit [this link](#).

Iowa Roadside Conference — Iowa Roadside Management co-hosted this event in September in Calmar. Over 110 roadside vegetation managers and others gathered to learn about Driftless region ecology, stormwater infrastructure, GPS technology for sprayers, how to interact with legislators and more. To sign up for the Iowa County Roadside newsletter, email kristine.nemec@uni.edu.

Meskwaki Youth Summer Camp — TPC staff members were lucky to be involved in the Meskwaki Youth Summer Camp held on the UNI campus. Campers explored the plants and insects of the tallgrass prairie and learned about efforts to conserve and restore Iowa's biodiversity.

FRIENDS OF THE TPC

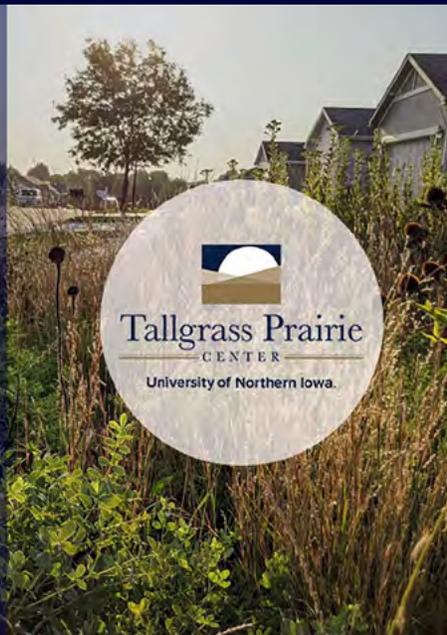
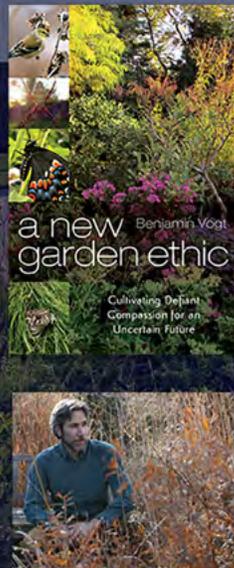
Supporting the TPC's mission

The Friends of the Tallgrass Prairie Center supported varied and valuable activities this year.

The Friends-sponsored Restoration and Management Series kicked off in January with a presentation by author and prairie advocate **Benjamin Vogt** on "A New Garden Ethic." The seminar series also included presentations by **Erin Anfinson**, the TPC's artist in residence, on "The Tallgrass Prairie: Through an Artist's Eyes;" **Lance Brisbois** of Golden Hills Resource Conservation and Development on "Iowa's Unique Loess Hills;" and from **Jim Weimer** of the Black Hawk County Conservation Board, and **Todd Derifield** and **Jacob Geller** from the City of Waterloo on "Monarchs in the Cedar Valley." The seminar series was attended virtually and in person by more than a thousand people.

The Friends Group also supported the TPC Help Desk. Maria Urice fielded many inquiries on seeds and seed mixes, CRP and rural acreages, and savanna pastures.

Visitors to the TPC this year included **D.J. Brooks** (right), a former plant materials research assistant who now works at Valent BioSciences in Chicago; and **Nicolas Lirio** and **Kent Boucher** (far right) from the "Prairie Farm" podcast and Hoksey Native Seeds in Lynnville. They recorded a podcast with **Laura Walter**.



THE PRAIRIE IN ART: ERIN ANFINSON — *Tell the Bees*

A new body of work by **Erin Anfinson**, *Tell the Bees*, was exhibited at the **Waterloo Center for the Arts** through November. The exhibit featured a variety of media, including printed canvas, macrophotographs, and collages using beeswax-based encaustic paint with hues derived from the soil and ash after a prescribed burn at Daryl Smith Prairie.

A UNI alum and professor of art and design at Middle Tennessee State University, Erin was an artist in residence at the

Tallgrass Prairie Center in the summer of 2021.

Erin has exhibited her work nationally and internationally in galleries, museums and film festivals and has been a recipient of several awards and grants. In addition to her creative work and research, she also regularly teaches mixed media encaustic workshops at the Arrowmont School of Arts and Crafts in Gatlinburg, Tennessee.

Visit www.erinanfinson.com to learn more.



IOWA STEM TEACHER EXTERN — *Travis Angell*

Travis Angell, a sixth-grade teacher at Waverly-Shell Rock Middle School, spent five weeks at the TPC as part of the Iowa Governor's STEM Council Externship Program. The program provides teachers with work experience in the community to use in the classroom and develops vital partnerships with community stakeholders.

Travis participated in aspects of each TPC program, but spent most of his time here

working with Plant Materials Program Manager **Laura Walter** learning about seed production and remnant prairies.

"The passionate and caring people who work at the TPC helped me learn what being a scientist in the real world looks like," Travis said. "This experience has allowed me to take all the science lessons I use in the classroom and see them in practice."



BOTANY BEGINNERS

Free online course attracts professional farm advisors

It is now possible to look up the names of common plants on a smartphone. However, many people still find it valuable to learn and retain their knowledge through close observation of key plant characteristics. In 2020, we offered our first Botany Beginners course online, focused on wildflower identification. Students could attend the webinars from anywhere and then go out and practice in their own neighborhood using the course textbook. In 2021, we offered a second course, Grasses for the Masses.

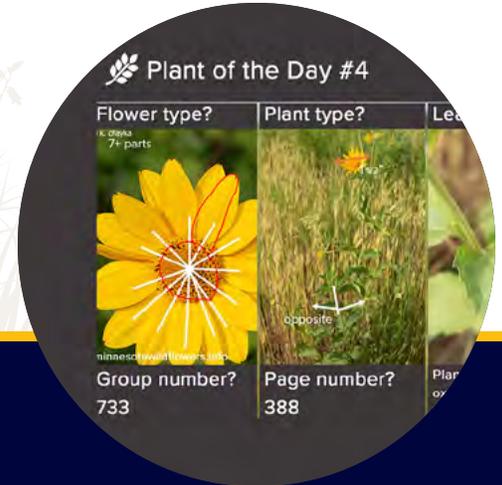
This year, Botany Beginners was designed for farmers, landowners and conservation professionals working with CRP plantings such as prairie strips (CP43), a practice that offers cost-share and yearly payments to plant native, perennial vegetation on both the field edge and in-field. The list of plants was based on UNI student surveys of over 60 CRP fields across eastern Iowa and commonly published seed mixes.

Led by Justin Meissen, the course focused on essential skills like evaluating young and mature stands. By popular demand, Justin methodically tested several popular plant ID apps and shared their strengths and weaknesses with the class. After five virtual lectures, it was fun to finally meet in person near Dike, Iowa, for a field day at Roadman Farm.

A total of 135 people registered for the live online classes, and more than 200 viewed them on the [TPC's YouTube channel](#).

FUNDING

- Bia-Echo Foundation





UNI STUDENTS STUDY MONARCH HABITAT ON FARMS

With monarchs in decline, it is critical to find ways to support their habitat. The US Department of Agriculture's Conservation Reserve Program (USDA-CRP), with several hundred thousand acres enrolled in the tallgrass prairie region (the upper Midwest corn belt), is a prime opportunity for improving the quality of this habitat.

In 2021, UNI graduate student **Tristan Murphy** (Biology), and a group of three other students surveyed the vegetation of 17 sites within a 90-minute drive. All sites were expected to re-enroll in the CRP program. This summer, Tristan teamed up with UNI freshman **Eva van de Mortel**, a biology major. They resurveyed six areas where the farmers were asked to enhance their field's habitat quality in order to re-enroll in the program.

Combined with **Justin Meissen's** experimental data, Tristan's study will help us to make recommendations on national CRP program design and hopefully increase the quality of agricultural conservation plantings over a large area of the tallgrass prairie region.

Tristan will defend his master's thesis in spring 2023.



FUNDING

- USDA Farm Services Agency
- UNI College of Humanities, Arts & Sciences in support of the Summer Undergraduate Research Program

Right: Tristan Murphy and Eva van de Mortel survey in the field.



Tallgrass Prairie CENTER

The Tallgrass Prairie Center Highlights is an annual publication of the University of Northern Iowa Tallgrass Prairie Center.

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