



# TALLGRASS PRAIRIE CENTER



Tallgrass Prairie  
CENTER

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2020 – 2021 Highlights



University of Northern Iowa  
College of Humanities, Arts & Sciences

Front cover: UNI Biology major **Jacey Meier** studies the impact of seed-eating birds, mice and insects on a new planting at Irvine Prairie. The sunflower in the background is part of a test treatment and will disappear as native plants take over.

Back cover: **Jacey Meier** and UNI Environmental Science major **Jared Randall** sow birdseed on a new prairie planting to distract seed predators.

# Tallgrass Prairie Center

## STAFF (Sept. 2020 – Aug. 2021)

**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

## AMERICORPS SERVICE

### MEMBERS

Aaron Sanderson

Andy Olson

Anna Perdue

Bailie Bautch-Breitung

Ethan Evans

The Weekly Weeders

## IOWA STEM TEACHER EXTERN

Matt Switzer

## ARTIST-IN-RESIDENCE

Erin Anfinson

## STUDENTS

Pryce Johnson – Research Assistant

Taylor Murray – Research Assistant

D.J. Brooks – Research Assistant

Laura Spies – Research Assistant

Tristan Murphy – Graduate Assistant

Alec Glidden – Graduate Assistant

Gretchen Steffensmeier – Summer

Undergraduate Research Program (SURP)

Schuyler Hop – SURP

## FORMER STAFF

**Andrew Dunham**

Prairie on Farms

**Staci Mueller**

Community Outreach

**Paige Shafer**

Interim Community Outreach





## From our director:

The Tallgrass Prairie Center empowers people to value and restore diverse, resilient tallgrass prairie. Our goals are to: 1) build the capacity of our partners and stakeholders to plant prairie and 2) expand public awareness of and appreciation for the prairie ecosystem.

The need for more diverse, native, perennial vegetation on the landscape has never been greater. Prairie is ideal wildlife habitat. Its deep roots hold the soil during even the heaviest rainfall, increase water infiltration and reduce nutrient pollution in our rivers. Over time, prairies can trap and store carbon. And let's not forget the mental health benefits of spending time in nature. There is a lot of work to do if we want to see enough prairie on the landscape to provide these important services to everyone.

The TPC is committed to the University of Northern Iowa's unifying goal: student success. Ultimately, our students can only be successful when Earth's ecosystems remain healthy.

On a more immediate level, the TPC provides hands-on experiences for students who want to pursue diverse careers in biology, conservation, ecological restoration, horticulture and environmental science:

- We hire UNI students and recent graduates to assist with our programs. Graduate and undergraduate students can pursue important research, with knowledgeable staff and impressive facilities at their disposal.
- Depending on the project, there are opportunities for students in business, the social sciences, education and the arts.
- Some undergraduates gain experience in scientific research in ecology and go on to apply that to research or practice in biomedical and allied fields.
- Since 2010, over 110 UNI students have been important, contributing members of the TPC team.
- These students have gone on to leadership roles in federal and state conservation agencies, private companies, and regional conservation nonprofit organizations; some have become high school teachers or community college instructors; and some pursue advanced degrees.

I am proud to share the highlights of this past academic year and summer (September 2020 through August 2021) in these pages.

Read on!

To learn more about the Tallgrass Prairie Center, please visit [tallgrassprairiecenter.org](http://tallgrassprairiecenter.org)

To support our important work through the Friends of the TPC, please visit [tallgrassprairiecenter.org/friends](http://tallgrassprairiecenter.org/friends), or call (319) 273-3836.



# RESEARCH AND RESTORATION

## *Testing new methods for large-scale prairie reconstruction*

The TPC aims to increase the capacity of practitioners to restore diverse, resilient prairie on the landscape. We only test methods that would be practical and cost-effective to implement at scale. This year we made progress on several fronts:

- Can restoration experiments be trusted to provide sound advice to farmers and roadside managers? In 2019 we established a carbon copy of a four-year Nashua, Iowa experiment on UNI land. UNI Biology master's student **Alec Glidden** compared years 1 and 2 of the two experiments. While cropping history, weeds, soils and weather were all different, the results were consistent: a balanced 1:1 forb:grass seed mix produces prairies with conservation benefits at reasonable cost, and first year mowing helps these benefits accrue faster.

- Grasses and sedges are good for the prevention of soil erosion and weeds, but too much can reduce habitat quality for pollinators and monarch butterflies. How much should we plant, and which species should be used? **Justin Meissen** planted a new demonstration site near Dike, Iowa in collaboration with Hertz Farm Management, the ISU STRIPS team, farm operator **Kyle Dudden** and the **Roadman** family. We'll share the results at future Prairie on Farms field days.
- Does seed size matter when it comes to how we seed prairie? A new technical report on our website shares the results of a Prairie on Farms demonstration site planted in 2019. Small-seeded species established much better when dropped on the surface compared to drilling at ¼" depth.



**Taylor Murray**, a UNI Biology and Environmental Science major, assists Justin Meissen. Her duties include seed mixing for restoration projects, maintenance of the

prairie roots pots and experiment areas, and monitoring progress at Irvine Prairie.



### 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*

Prairie restoration begins with native seeds. The Plant Materials Program, funded by the Iowa DOT Living Roadway Trust Fund since 1990, helps to bring affordable, genetically diverse and regionally appropriate native seed to the marketplace.

Led by **Laura Walter** and assisted by UNI student **D.J. Brooks** and the AmeriCorps Land and Water Stewards **“Weekly Weeders,”** this year the Plant Materials Program:

- Released 30 seed lots of Iowa source-identified foundation seed to native seed growers.
- Harvested 104 pounds of seed from 35 production plots.
- Started seedlings of 12 ecotypes to refresh aging or depleted seed lots.
- Transplanted about 8,000 seedlings into new production plots.

- Tested the use of polycultures for reducing pest and pathogen damage in butterfly milkweed and cream wild indigo.
- Developed and implemented a nifty new database to more easily serve seed growers while we protect the long term viability of our irreplaceable seed collection.

The Plant Materials Program also supports communication between seed growers and buyers. We hosted an online panel discussion of experienced native seed growers from three private companies and the Iowa DNR Prairie Resource Center. They shared a wealth of technical knowledge and discussed tough issues in the industry – matching seed production to demand, the variation in seed testing results, and the importance of genetic origins.



### FUNDING

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

# 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 seeding native plants. The TPC's Iowa Roadside Management Program serves the state's 47 county and 12 city roadside vegetation programs by facilitating communication and providing resources.

Led by **Kristine Nemec** with assistance from **Ethan Evans**, over the last year the IRM Program:

- Welcomed two new counties to the Iowa roadside community, Keokuk and Wapello counties, who hired roadside vegetation managers for the first time. Roadside managers plant and manage roadside vegetation using an integrated, ecological approach.
- Distributed 1,290 acres of seed for 40 counties to plant in their roadsides.
- Produced new two- to three-minute videos. Cedar Falls filmmaker **David O'Shields** profiled roadside vegetation

manager **Wes Gibbs** and engineer **Derek Snead** from Jones County. **Ryan Lange** with the UNI GeoTREE Center filmed a 360-degree video of the annual seed pickup, which Ethan narrated. All can be viewed on the program's new YouTube channel, "Iowa Roadside Management."

- Started a new quarterly e-newsletter, "County Roadside Vegetation News," which is distributed to county officials and others interested in roadsides.
- Collaborated with Trees Forever to implement Stewards of the Beautiful Land, a four-class webinar series that explores the importance of native plants and trees in Iowa ecosystems.
- Published articles in *Stormwater* and *Environmental Management* about biodegradable erosion control products and Iowa decision makers' perspectives of roadside management, respectively.

## PUBLICATIONS

Kristine Nemec, Andrew Stephenson, Eva Aizpurua Gonzalez, and Mary Losch. 2021. Local decision-makers' perspectives on roadside revegetation and management in Iowa, USA. *Environmental Management* 67:1060-1074.

Kristine Nemec. Saving mowers and wildlife. *Stormwater Magazine*. May 15, 2021.

## FUNDING

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



# PRAIRIE ON FARMS

*Making prairie practical*

What prevents prairie from being widely adopted as a conservation practice on farms? And how can we improve the quality of these conservation plantings?

This year we bought a sewer camera and Sonde locator to answer farmers' most frequent question, "Will these plants plug my drainage tile?" We began working with farmers to inspect their tile lines under crops, cover crops and native plantings. A video is in the works.

As this example illustrates, the Prairie on Farms Program creates practical resources to address important and sometimes overlooked questions. Watershed coordinators and Natural Resources Conservation Service (NRCS) soil technicians across the state are using our annually updated list of native seed and service providers. Crop advisors can visit our YouTube channel for a how-to video on dormant seeding, or check out our seed mix recommendation tailored to their county and soils. All of our resources are tied to research and hands-on experience.

## MEET ANDY OLSON

The Prairie on Farms Program will continue to evolve with the addition of UNI grad **Andy Olson** as our new Prairie on Farms program manager. Andy cites Midwest conservation legends Ada Hayden, Siggurd Olson and Aldo Leopold as his inspirations. His rural Iowa roots, ability to work with people and passion for effecting change are a good fit for the Prairie on Farms Program.

Andy says: "I envision an agriculture where there is a balance between reverence for our land, and making enough money to survive as a business. The TPC is unique in its relationship to environmental stewardship because we make prairie compatible with work, whether in roadside ditches or prairie strips on farms."

Andy earned his bachelor's degree in public history from UNI and a master's degree in cultural resource management from Colorado State University.

Over the last year, Andy served as an AmeriCorps Communications Associate, assisting staff with diverse projects like the virtual field day on dormant seeding, Botany Beginners webinars and transcription of case studies of farms with prairie strips.

In his new role, Andy will be working with farmers, landowners and conservation professionals to use prairie as a conservation practice.



### FUNDING

- USDA Sustainable Agriculture Research and Education
- Sitka Gear Ecosystem Grant
- National Disaster Resilience (Iowa Watershed Approach)

Andy Olson

# IRVINE PRAIRIE

Irvine Prairie is a 77-acre prairie-in-progress established on the farm of **Cathy Irvine** in memory of her husband, David. In partnership with Cathy and the farm operator, we are restoring an ecologically diverse tallgrass prairie that engages current and future generations of students and community members in learning about Iowa's prairie heritage, and appreciating the benefits provided by prairie.

This year **Justin Meissen** seeded another 13.5 acres of diverse, native seed to Irvine Prairie, bringing the total seeded acres up to 60. Helping him with the seed mixing were UNI students **Alec Glidden** and **Taylor Murray**. With the help of five AmeriCorps service members we burned the 2018 planting, and it responded with a terrific wildflower display. Other new additions include:

- A visitors' logbook to record your name and share your experiences.
- Photos are now on Google Maps.
- Boulders marking the entrance and perimeter of the parking area.

- A portable toilet (May – November).
- Mowed trails doubling as fire breaks.
- Wild strawberries and prairie violets planted along the trails.

Irvine Prairie is getting more visitors, especially after Cathy Irvine's silo mural by Dysart native son **Adam Eikamp** received a burst of attention on social media. Two groups of Union High School students, led by their teacher **Craig Hemsath** (MS, Biology) transplanted sedges on a chilly, wet day in May. A group of Oelwein High School ecology students explored the prairie with their teacher **Derek Kuennen**. **The Dysart Women's Garden Club** met and then quickly spread the word to their friends and family. **Carter Johnson** and **Luke Zilverburg** from Good Earth State Park, South Dakota took notes for their own restoration planning.

*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.*





# GREEN IOWA AMERICORPS

## *Land and Water Stewards expand TPC capacity*

When the TPC became an AmeriCorps host site in 2019, little did we realize how it would change us. This year we hosted five service members: UNI grad **Andy Olson**, **Ethan Evans**, **Aaron Sanderson**, **Bailie Bautch-Breitung** and **Anna Perdue**. Here is just a taste of the scope of their contributions:

- Oral histories of former and current TPC staff members.
- Carefully curated educator resources, serving teachers who may be “new to nature.”
- A native pollinator garden at the Peoples Community Health Clinic in Waterloo.
- A how-to video showing how to seed prairie into corn and soybean stubble in late November.
- Virtual flyover videos describing several TPC programs.
- Regular social media posts, including a testimonial from a successful county roadside program and an orientation manual for new roadside managers.

- A map of the public trails winding through TPC grounds.
- Assessments of vegetation in county roadsides and prairie strips – critical for understanding the impact of our programs.

Being a local AmeriCorps host site is a two-way street. We take pride in returning service members’ generosity with abundant opportunities for professional development while they are here.

We salute the AmeriCorps “class” of 2020-2021 who served with such intelligence and enthusiasm. We can’t wait to see what they’ll do next!



# UNI STUDENT RESEARCH

## *Can farmers’ favorite conservation program save the monarch?*

The Conservation Reserve Program is the largest conservation practice in Iowa – can we enhance its value to monarch butterflies? This question spawned a new \$300,000 grant from the USDA Farm Services Agency to the TPC.

Laura Jackson put together a UNI student team to conduct detailed vegetation surveys of CRP fields across eastern Iowa – grueling and meticulous work.

MS Biology student **Tristan Murphy** built on his previous training in geographic information systems to provide random transect locations for each site; **Pryce Johnson** (BA in Biology and Public Health, 2021) served as the research technician and organized equipment and field logistics, while leading the botany training. Summer Undergraduate Research Program participants **Gretchen Steffensmeier** (Biology) and **Schuyler Hop** (Environmental Science) got their first taste of

ecology field research, and ultimately will present preliminary results in a departmental seminar. Next year, UNI students will help us continue the study and deliver our findings to the USDA.

Schuyler says, “I find it very fulfilling that our work has a tangible impact on conservation research and practices, and hope that work I do in the future will continue to impact environmental management or community involvement in conservation.”

*Thanks to  
The Gary and Myrna Floyd  
Research Scholarship,  
and the UNI College of  
Humanities, Arts and  
Sciences.*



**Tristan Murphy**, graduate research assistant, is working with Laura Jackson on enhancing monarch habitat quality in CRP fields. Tristan has a bachelor’s degree in Environmental Science from Central College, in Pella, Iowa. He assists **Justin Meissen** with data collection and monitoring tasks.

# FRIENDS OF THE TPC *and* MORE!

Inaugurated by **Daryl** and **Sue Smith** and a small group of generous donors in 2013, the Friends of the Tallgrass Prairie Center is growing to provide significant and steady funding to support our mission.

The Friends of the TPC is the official sponsor of the TPC Restoration and Management seminar series. This year we were able to hold only one seminar, but it was a good one and well-attended! Prairie experts **Dianne Blankenship**, **Ruth Rose** and **Elisa Zappacosta** advocated for starting a Wild Ones chapter in eastern Iowa to promote native plants and native landscaping. They are chapter leaders of the Loess Hills Wild Ones in western Iowa.

While the TPC doesn't hold regular tours — and our work often takes us out of the office — we do want to encourage people to enjoy this part of the UNI campus. Tallgrass Trails is a newly designated trail system winding through the 64 acres we manage for the University. We hope everyone will take advantage of the designated visitor parking next to the greenhouse to walk through the prairies, seed production plots, seed mix experiment plots and adjacent natural areas. Look for the trails map in the “About the Center” menu on our website.

*Despite the pandemic, we did have a few visitors to the Center this year, including:*

- **Rusty-patched bumble bees** were spotted on the spotted joe-pye weed seed production plots.
- A group of fifth-grade English language learners from **Highland Elementary** in Waterloo explored our plants, courtesy of the UNI Culture and Intensive English Program.
- Forty county roadside departments picked up certified Iowa-source prairie seed for their roadsides.
- Students in Restoration Ecology held lab sessions on native seed production, prescribed fire and ecotypic variation in prairie plants.
- Former Plant Materials Research Assistant **Kate Sinnott** visited from Utah State University, where she is pursuing a master's degree in wetland restoration.
- UNI alums **Russell Baldner** and wife **Cathryn** from Spillville, Iowa visited. Russell was a student of Daryl Smith in the 1980s and an avid student of prairie settlement history, especially in northeast Iowa.



# TPC TRANSITIONS

Outreach Coordinator **Staci Mueller**, who had organized many field days, workshops and seminars since 2015, moved on to the UNI Office of Financial Aid and Scholarships.

After her initial 11 months with Green Iowa AmeriCorps, **Paige Shafer** was hired to assist the Roadside Program and worked on a variety of outreach and education projects. She recently accepted a position at Trees Forever as the southeast Iowa field coordinator.

**Alec Glidden** finished his master's degree in biology and then continued to collaborate with **Justin Meissen** and biology faculty to turn his thesis into a publication. Alec is evaluating PhD programs, as well as prairie-related employment.

After nine months leading the Prairie on Farms Program, **Andrew Dunham** moved his family to the Washington, D.C. area to manage the organic farm at Willowsford Conservancy in northern Virginia. In a short time, Andrew positioned this program for even greater impact on farmers and landowners.

**D.J. Brooks** has assisted **Laura Walter** with the Plant Materials Program since 2019. After graduating from UNI with a degree in environmental science, he accepted a position as a greenhouse assistant for an agricultural research company in Chicago. D.J. says, “The experiences I have enjoyed the most at the TPC were driving tractors, laying plot beds, tilling and combining production seed. Laura Walter is an incredibly patient teacher and has a contagious excitement for life.”

**Pryce Johnson** recently graduated from UNI with a bachelor's degree in biology and public health. Pryce managed the research lab, trained students in plant survey methods, helped to develop vegetation survey protocols and assisted with an online botany class series on native grasses. Pryce is now a research technician at the University of Minnesota, where she conducts surveys of plants and pollinators for the Cariveau Native Bee Lab.



Pryce Johnson

## COMMUNITY ENGAGEMENT COORDINATOR

*Anne Phillips*

**Anne Phillips**, Community Engagement coordinator, holds degrees in English literature and graphic design, as well as a master's degree in journalism and mass communications from the William Allen White School of Journalism at the University of Kansas, Lawrence. She worked

almost 20 years as a newspaper journalist and another nine years as a graphic designer at the VGM Group. She supports all aspects of TPC outreach and communications, but especially the Friends group, Irvine Prairie, and Prairie on Farms.



## IOWA STEM TEACHER EXTERN

*Matt Switzer*

**Matt Switzer**, a sixth grade teacher at Aldrich Elementary, Cedar Falls, spent five weeks at the Tallgrass Prairie Center as part of the Iowa Governor's STEM Council Externship Program. The program is designed to provide teachers with work experience in the community to use in the classroom, and to develop vital partnerships with community stakeholders. Matt spent his time

working with Plant Materials Program Manager **Laura Walter** learning about seed production, remnant Iowa prairie and maintaining viable native plants for production. Matt plans to use his experience to work with sixth graders to design and manage a native "prairie classroom" at his school, and to help students develop an appreciation for native Iowa prairies and plants.



## ARTIST-IN-RESIDENCE

*Professor Erin Anfinson shows us a new perspective*

The Tallgrass Prairie Center has been honored to welcome Cedar Falls native and UNI grad Erin Anfinson as our summer artist-in-residence. Erin, professor of art and design at Middle Tennessee State University, spent the summer visiting prairie sites to gather photos, video, audio and other inspiration for a new body of work that will be exhibited in 2022 at the Waterloo Center for the Arts.

Erin has been learning more about the life cycle of the prairie and strengthening reconnection with these endangered ecosystems in the collective experience, imagination and memory of Iowans. She typically uses a variety of media in her studio, but especially enjoys working with beeswax-based encaustic paint, which she infuses into paper for use in collage and animated works.

To watch a short animated film Erin created about exploring the insect world hidden in an Iowa tallgrass prairie, visit <https://vimeo.com/237101098>

To learn more about Erin and her work, visit [www.erinanfinson.com](http://www.erinanfinson.com)

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.



# BOTANY BEGINNERS

## Free online course attracts enthusiastic botanists

Universities have been shedding their botany courses for decades due to declining student interest and the need to “modernize” the curriculum.

So when the TPC offered a free webinar series on wildflower identification in 2020, we were shocked by the enthusiastic response of over 550 students from all over the midwest and beyond. This year, we decided to try teaching some of Iowa’s grasses. We expected a much smaller group, primarily conservation professionals, but our expectations were smashed once again by the more than 200 who signed up.

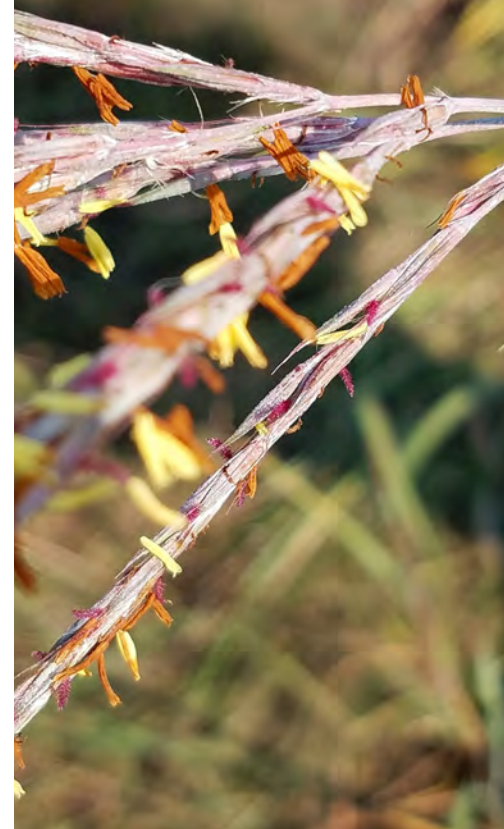
The textbook we chose, *Grasses, Sedges and Rushes: an Identification Guide*, by Lauren Brown and Ted Elliman, was perfect for a beginning agrostologist. Over seven webinars we covered cool- and warm-season grasses from sunny, disturbed habitats, conservation plantings and remnant prairies.

The Botany Beginners Facebook Group continues to provide a forum for students to practice their skills and help one another out. Anyone with an interest in plants can join. The recorded, closed-captioned webinars are available on the TPC Botany Beginners 2021 web page.

A future course will focus on the needs of those who are planting and managing prairie on farmland for conservation purposes. Botanists may be a little eccentric, but we are far from useless!

### FUNDING

- Leopold Center for Sustainable Agriculture
- Practical Farmers of Iowa
- Friends of the Tallgrass Prairie Center



## BOTANY BEGINNERS 2021

### Cool-season grasses

- Introduction: grass fundamentals
- Common and aggressive grasses found nearly everywhere
- Grasses of conservation plantings and roadsides
- Grasses unique to prairie remnants

### Warm-season grasses

- Grasses of disturbed areas and new prairie plantings
- Grasses of conservation plantings and roadsides
- Grasses unique to prairie remnants

*Photos by Botany Beginners students*





## 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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