SER SOCIETY FOR ECOLOGICAL RESTORATION
MIDWEST GREAT LAKES

2025 Annual Meeting

April 25–27, 2025 in Moline, Illinois
Stoney Creek Hotel & Event Center

16th Annual Society for Ecological Restoration
Midwest-Great Lakes Chapter Meeting

Engaging Agricultural and Rural Communities in Ecological Restoration

Stoney Creek Hotel and Conference Center
Moline, Illinois

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SER SOCIETY FOR ECOLOGICAL RESTORATION
MIDWEST GREAT LAKES

WELCOME

We chose the Quad cities region for two reasons. First, our Chapter covers a large swath of the Midwest from Ohio to Iowa. The Quad cities region is an excellent location to be close to the western side of our territory. Second, we wanted to focus our attention on the challenges of doing conservation and restoration in rural and agricultural communities. Too often, we focus on high population, metro areas. Then of course, there is the Mississippi river! Living now in rural southeast Ohio, I can attest that rural and agricultural areas have a different vibe. While often less resourced, they have found different avenues to promote conservation—through Soil & Water Conservation Districts, local and state agencies, and a myriad of local conservation groups. But as everywhere, success depends on collaboration--networking is an essential part of what you can do here. We hope this conference will educate and inspire you to continue to do the important work of restoring our beloved Nature wherever you call home.

–Mark Krivchenia, President, SER-MWGL Chapter

2025 ANNUAL MEETING COMMITTEE

The Chapter extends its sincere appreciation to the members of the Annual Meeting Committee for their time and effort in coordinating and developing the Fifteenth Annual Chapter Meeting: Katie Kucera (Chair), Megan Hansen (Co-Chair), Mary Damm, Fred Van Dyke, Mark Fuka, Martha Holzheuer, Mark Krivchenia, Brian Majka, Chris May, Nikki McDermond-Spies, Jessica Miller, Kevin Ptacek, Peter C. Smiley Jr.

ACKNOWLEDGEMENTS

We are incredibly grateful for the generous support provided by our meeting sponsors that enabled us to hold a sponsorship reception, support student participation, defray food costs, and make our Annual Meeting as environmentally friendly as possible. We greatly appreciate the contributions of the members of the Local Planning Committee, especially Rob Liva and Nina Struss, who have helped to promote and support this conference with presentations and local field trips. We thank Tony Ballard for his help with setting up the online registration page and help with maintaining the registration database. We thank Martha Holzheuer for her work in enabling us to offer continuing education credits through SER. We are thankful for the participation of the meeting presenters, moderators, tour leaders, field trip leaders, volunteers, and attendees at our Sixteenth Annual Meeting.

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MEETING SCHEDULE

All times Central Standard Time

Friday, April 25		Room
11:00 am – 1:00 pm	Registration	
1:00 pm – 3:00 pm	Concurrent Workshops	
	Workshop #1: Quality Control Oversight During Construction and Monitoring in Ecological Restoration	*Virtual*
	Workshop #2: Basics of Native Seed Mix Design	*John Deere*
	Workshop #3: Painting with Soil	*Blackhawk*
3:00 pm – 4:30 pm	Presentation & Roundtable Discussion with Quad Cities Meeting Partners	*River's Bend Ballroom*
4:30 pm – 4:45 pm	Break – Refreshments provided	
4:45 pm – 5:45 pm	Business Meeting & Recognition Awards	*River's Bend Ballroom*
6:00 pm – 9:00 pm	Poster Session & Reception	*Pre-Event Lobby*

Saturday, April 26		
7:00 am – 10:00 am	Registration	
8:00 am – 10:00 am	Concurrent Oral Presentations (Session 1)	
	Sub-Session A: Forest Restoration	*Blackhawk*
	Sub-Session B: Prairie Restoration	*John Deere*
	Sub-Session C: Restoration Methods and Sociological Approaches	*Wheelhouse*
10:00 am – 10:20 am	Break – Refreshments provided	
10:20 am – 11:20 am	Keynote Presentation	*River's Bend Ballroom*
11:30 am – 1:00 pm	Lunch & Student Awards	*River's Bend Ballroom*
1:00 pm – 3:00 pm	Concurrent Symposia	
	Symposia #1: Building a relationship with farmers and the agriculture community near your restoration or conservation project	*John Deere*
	Symposia #2: Native Plant Community Planning Establishment and Monitoring in Agricultural Wetland Bank Restoration Projects	*Blackhawk*
	Symposia #3: Growing Resilient: Nature-Based Solutions for Urban, Rural and Agricultural Communities in a Changing Climate	*Wheelhouse*
	Symposia #4: Agroecology: Working Lands	*Portside*
3:00 pm – 3:20 pm	Break – Refreshments provided	
3:20 pm – 4:40 pm	Concurrent Oral Presentations (Session 2)	
	Sub-Session A: Wetland, Riparian & Stream Restoration	*Blackhawk*
	Sub-Session B: Urban & Public Lands Restoration	*John Deere*
6:00 pm – whenever	No Host Social	

Sunday April 27		
9:00 am – 12:30 PM	Offsite field trips**	

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Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure.

FRIDAY, APRIL 25

CONCURRENT WORKSHOPS

1:00 pm – 3:00 pm

Workshop #1: *Blackhawk*

Quality Control Oversight During Construction and Monitoring in Ecological Restoration

Instructors: Fevold Brick, Tim Lewis, Doran Stegura. General Dynamics Information Technology, Falls Church, Virginia. Email: brick.fevold@gdit.com, timothy.lewis2@gdit.com, doran.stegura@gdit.com

Ecosystem restoration typically involves construction-related activities designed to modify existing system properties (e.g., geophysical, hydrological, biological) in an attempt to mitigate or remediate harmful impacts. In this workshop, instructors will provide guidance on key components of conducting

quality control oversight during the construction, implementation- and effectiveness-monitoring phases of an ecological restoration project. During this course, participants will receive focused instruction on best practices on quality control oversight as compiled in two EPA Great Lakes National Program Office (GLNPO) publications: 1) *Guidance for Planning Quality Oversight During the Ecological Restoration Construction and Implementation Phases* (in-review), and 2) *Application of Quality Assurance and Quality Control Principles to Ecological Restoration Project Monitoring, EPA-905-K-19-001* (https://nepis.epa.gov/exe/zypurl.cgi?dockey=p100xc2e.txt). Both publications draw upon standards and guidelines recommended by EPA, U.S. Army Corps of Engineers, U.S. Geological Survey, U.S. Department of Agriculture, and the American National Standards Institute (ANSI) among other organizations that promote quality standards in science. Instruction will include collaborative learning through participatory activities relevant to project planning and quality oversight applicable to a variety of ecological restoration projects (e.g., freshwater streams, riparian areas, coastal and interior wetlands, forests, and prairies). The primary audience for this course includes individuals responsible for (or that provide support to) the planning, implementation and effective monitoring of ecological restoration projects funded by the Great Lakes Restoration Initiative (GLRI). The instructors of this course are co-authors of these publications and provide support to GLNPO and the Interagency Ecological Restoration Quality Committee. This workshop is funded under an EPA contract in support of GLRI.

Brick Fevold is a Wildlife Ecologist with experience in temperate and subtropical ecosystems, planning and implementing agency-led and citizen-science-based research and ecological restoration projects. Brick serves as a Scientist Advisor for General Dynamics Information Technology (GDIT) providing expert review and technical writing support to the U.S. EPA and the Great Lakes Restoration Initiative program. Brick also leads development and delivery of professional training courses on quality assurance and quality control, adaptive management, data management, and resilience and adaptation planning. He received his B.S. (1995) and M.S. (2003) degrees in Wildlife Ecology, and a Graduate Certificate in GIS (2002) from the University of Wisconsin-Madison.

Tim Lewis is a Senior Ecologist with GDIT involved in applying QA/QC principles to Great Lakes restoration projects managed by the U.S. EPA-GLNPO. Tim co-leads in the development and delivery of training courses on quality assurance. He has served as an ecologist on various national monitoring programs conducted by the U.S. EPA, BLM, and USACE. He served as associate editor of the premier journal Ecological Indicators during its startup. He is editor and author of two CRC Press books, Environmental Chemistry and Toxicology of Aluminum and Tree Rings as Indicators of Ecosystem Health. He holds a Ph.D. in Environmental Science (1984) and an M.S. degree in Plant Pathology (1980) from Rutgers University, and a B.A. in Biology (1977) from West Chester University.

Doran Stegura has nearly 30 years of experience providing analytical, managerial, and technical writing support for various U.S. EPA offices. For EPA's Great Lakes National Program Office (GLNPO) she currently provides technical writing, editorial and logistical support for the development of data management plans, quality assurance project plans, quality management plans, technical and administrative standard operating procedures, technical or annual reports, ecological restoration guidance and other documentation. She also provides communications and logistical support for outreach efforts, including the Interagency Ecological Restoration Quality Committee (IERQC) monthly webinar series. She holds a B.A. (1990) in Economics and Environmental Studies from St. Lawrence University, an M.S.P.H (1993) in Environmental Management & Policy from UNC-Chapel Hill, and an M.B.A. (2017) from Eastern Mennonite University.

Workshop #2: *John Deere*
Basics of Native Seed Mix Design

Instructors: Jason Fritz. Stantec Native Plant Nursery. Walkerton, IN 46574.
Email: jason.fritz@stantec.com

When formulating native habitat restoration plans, seed mix design is a component that poses significant challenges. If comprehensive analysis and selection of species is not performed it can result in the introduction of aggressive species or failed establishment in remnant sites. Using incorrect rates can create an unbalanced plant community that may not be sustainable. In addition to the selection of a diverse species mix suitable to site conditions, one must consider the current and future site conditions, such as hydrology, soil types, erosion potential, vegetation (onsite and introduction from offsite), and climate change. To address these and other considerations, this workshop will go beyond species selection and discuss seed mix formulation, sourcing, and installation strategies that can address common issues and uncertainties. After the introduction of the concepts and techniques for determining application rates, the participants will work to create a seed mix for a hypothetical restoration scenario.

Jason Fritz is an Associate and the Nursery Business Development Manager at Stantec Native Plant Nursery. With over 20 years of experience in the native plant nursery industry, he specializes in native plant sourcing and seed specifications for restoration and native habitat creations. Jason is passionate about enhancing sustainability and resilience in public and private lands. He graduated from Indiana University South Bend with a degree in Sales and Marketing.

Workshop #3: *Wheelhouse*
Painting with Soil

Instructor: Adriana McBride. Illinois Native Plant Society, Davenport, IA. Email: Anaecologist@gmail.com.

This workshop explores “soil painting” as an innovative, hands-on approach to understanding and communicating the pivotal role of soils in ecological restoration. By merging art with science, participants will engage with diverse soil samples—using natural pigments and textures—to create visual narratives that reveal soil composition, health, and ecological function. The workshop begins with an introduction to soil science fundamentals, emphasizing how soil quality underpins ecosystem resilience, water filtration, carbon sequestration, and habitat restoration. Through interactive demonstrations and creative exercises, attendees will learn practical soil painting techniques and interpretive methods that transform scientific data into compelling art. This creative process not only enhances scientific literacy but also fosters community engagement by presenting ecological restoration challenges and successes in an accessible, visually stimulating format. Specific topics include an overview of soil properties, hands-on pigment extraction from native soils, guided artistic sessions, and discussions on incorporating soil art into educational and restoration outreach programs. The workshop aims to empower participants to bridge the gap between complex ecological data and public understanding, reinforcing the importance of soil conservation and restoration in the broader context of environmental sustainability and biodiversity recovery.

Note: This hands-on experience deepens understanding of soil health's critical role in ecological restoration while inspiring community-driven stewardship and lasting interdisciplinary collaboration.

Adriana McBride is a self-taught artist, home-grown ecologist, and independent citizen scientist whose work merges art, ecology, and sustainability. She developed her expertise through hands-on ecological restoration and extensive self-guided mentorship with local and global experts. Her independent studies explore fungi-based bioremediation, waste transformation, and sustainable materials. With a background in conservation education, policy-driven environmental advocacy, and environmental law, she works at the intersection of ecological restoration and creative problem-solving.

Bridging science and art, Adriana translates ecological concepts into visual narratives. Inspired by cave paintings, she collects natural pigments during her travels to create soil-based paints and artworks that reintroduce the natural world into otherwise sterile spaces. She leads art + ecology workshops and educational programs, using artistic practice as a tool for fostering environmental awareness and community engagement to keep conservation conversations going.

PRESENTATION & ROUND TABLE DISCUSSION

3:00 PM – 4:30 PM

River's Bend Ballroom

Restoration and Conservation in the Quad Cities Region

The Quad Cities has assembled a cast of conservation professionals to share their stories and works. This presentation will feature introductory vignettes spotlighting each practitioner and conclude with a panel discussion and Q+A. Join us to learn about the ongoing successes, challenges, and perspectives of conservation in the Quad Cities.

Dale Maxson, The Nature Conservancy; **Brian Burkholder,** IRVM Scott County Secondary Roads; **Erin Allen,** Bettendorf Public Schools; **Jim Alwill,** Prairie Earth Nursery; **Ragan Baker,** Clean River Advisory Council; **Olivia Dorothy,** Clean River Advisory Council.

Moderated by: Nina Struss, River Health and Resiliency Organizer, Prairie Rivers Network.

POSTER SESSION

6:00 PM – 9:00 PM

Pre-Event Lobby

**Denotes student presenter*

Poster #	Presenters	Title
1	***Carleton**	Effect of Seed Mix Design and Planting Time on Early-summer Floral Resources
2	***DeLaFuente**	Effects of Prescribed Fire and Tree Girdling Treatments on Ground Layer Vegetation Recruitment and Ecosystem Structure in a Degraded Oak Savanna Ecosystem
3	***Homuth**	Student led stewardship: A path to ecological restoration through volunteer workdays with the student chapter of the Society for Ecological Restoration at UWSP
4	***Nguyen**	Got Prairie?: Comparing Soil Health Indicators in Three Chicago Parks Under Turfgrass and Prairie Treatments
5	**Owens**	Remote Control Cows: Comparing and Contrasting Two Virtual Fence Technologies
6	***Pierskalla**	Optimizing mycorrhizal inoculation timing for eastern white pine (*Pinus strobus)* seedlings to enhance reforestation efforts
7	**Schiafo**	Creating a regional native seed network for the Midwest. Chicago Botanic Garden and Northwestern University
8	**Schrotenboer**	Student Place Meanings and Conservation Perceptions
9	**Stegura**	A Monthly Webinar Series to Assist with Collaboration and Connections between Ecological Restoration Projects in the Laurentian Great Lakes Region
10	**Thompson**	*Rubus parvifolius* (Small Leaf Bramble), Early Detection and Rapid Response
11	**McBride**	Conservation Research and Biodiversity Surveys at Milan Bottoms: Development Threats and Ecological Impact
12	**Kibria**	Identification of stakeholders of wetland restoration/mitigation in the face of climate change in Midwest.

POSTER PRESENTATION ABSTRACTS

(ALPHABETICAL ORDER)

**Denotes student presenter*

Best Student Poster Presentation Candidate

***Madison Carleton**. (Tentative) Rachel Lursen. Effect of Seed Mix Design and Planting Time on Early-summer Floral Resources. University of Northern Iowa, Cedar Falls, IA 50613. Email: carletom@uni.edu, lursenr@uni.edu.

Intensified land use has led to the decline of tallgrass prairie, resulting in habitat loss and reduced ecosystem services. The Conservation Reserve Program (CRP) aims to restore cultivated land to its natural state. This study explores various methods to enhance the environmental benefits of CRP initiatives. Research was conducted from May 30th, 2024, to June 7th, 2024, at the Tallgrass Prairie Center using a 3x2 factorial design: three seed mixes, two planting dates, six replications. All blooming inflorescences were recorded in five 0.125-meter squared quadrats along a randomly positioned transect. Additionally, 5-minute perimeter walks were performed for each plot to measure species' richness. Means and standard errors were calculated for all treatment combinations. Floral resources were least abundant in the Economy mix and most abundant in the Pollinator mix. Dormant planting yielded more floral resources than spring planting, producing more floral resources in the Diversity and Pollinator mixes, but not the Economy mix. Flowering species richness was lowest in the Economy mix and highest in the Pollinator mix. Dormant season plantings showed correlation to increased flowering species in the Pollinator mix, but not in the Diversity or Economy mixes. Seed mix and planting time significantly affect the production of early-summer floral resources. While floral resource quantity and richness vary, the overall results are consistent. Data for both sown and unsown floral resources fluctuate, but combined data for all species shows an approximately equal distribution between sown and unsown.

Best Student Poster Presentation Candidate

***Anna DeLaFuente**, Dr. Priscilla Nyamai. Effects of Prescribed Fire and Tree Girdling Treatments on Ground Layer Vegetation Recruitment and Ecosystem Structure in a Degraded Oak Savanna Ecosystem. Grand Valley State University, Allendale MI. Email: delafuan@mail.gvsu.edu, nyamaip@gvsu.edu.

Oak savannas are critically imperiled, fire-dependent ecosystems. These biodiversity-rich and structurally unique habitats provide critical functions and services, such as providing habitat for native pollinators. Land use changes and fire suppression have resulted in widespread loss and degradation of these communities. These communities have transitioned to closed-canopy forests, creating microclimatic conditions that continually favor the recruitment and dominance of shade-tolerant species and the deterioration of shade-intolerant savanna species. As a result, oak savannas are some of the most imperiled ecosystems in the Midwest and Great Lakes region. In restoring these ecosystems, land managers have often implemented prescribed burning with traditional canopy thinning techniques. Few studies have explored the combination of prescribed burning and girdling: a thinning technique where trees are killed but left standing as snags, potentially providing wildlife habitat. We are conducting a study that examines ecosystem responses to a combination of prescribed burning and tree girdling treatments to increase native vegetation recruitment in the ground layer. We are collecting data on ground layer vegetation, ground surface conditions, soil characteristics, and canopy cover in areas that have experienced treatments and those that have not. We hope our findings will help land managers assess the effectiveness of these treatments and inform further restoration decisions.

***Tessa Homuth**, Student led stewardship: A path to ecological restoration through volunteer workdays with the student chapter of the Society for Ecological Restoration at UWSP. University of Wisconsin – Stevens Point SER, Stevens Point WI. Email: thomu487@uwsp.edu.

The Stevens Point student chapter of the Society for Ecological Restoration (SER) teaches members about stewardship and safety protocols to follow during volunteer workdays through a newly developed stewardship training. In 2019 the officers of the club developed a weekend stewardship training class, and a textbook based on the official Society for Ecological Restoration standards. This training allows them to safely lead workdays and put into practice many techniques used in the restoration field. This training is paired with a larger workday called the Restoration Celebration which focuses on a specific work site and allows new stewards to practice their leadership skills. SER has workday sites within Schmeeckle Reserve and around the Portage County area. These sites are in a variety of habitats, including wetlands. On these workdays, volunteers perform activities such as collecting native seeds, planting native plants, removing invasive species, assisting with prescribed burns, and more. This presentation will focus on the training of volunteer stewards and the work that follows at their chosen sites.

Best Student Poster Presentation Candidate

***Jenny Nguyen**. Got Prairie? Comparing Soil Health Indicators in Three Chicago Parks Under Turfgrass and Prairie Treatments. DePaul University- Department of Environmental Science and Studies, Chicago, IL. Email: jnguye54@depaul.edu.

Landscape restoration in cities is often discussed in the context of its role in ecological services. Ecological services like water retention and nutrient cycling are important services in urban soils, however not much research has been conducted directly comparing soil health indicators of prairie and turfgrass landscapes in densely urbanized areas. This study compares soil health indicators under two landscape treatments, prairie and turfgrass, in Chicago public parks to assess the impact of prairie restoration on various soil quality indicators. Soil samples were collected at Winnemac, Marquette, and Jackson Parks from three paired plots of prairie and turf, totaling eighteen samples. The samples were measured for a suite of biological, chemical, and physical soil health indicators. Generalized linear models were created to test for correlations with treatment. Among the three parks, compaction was statistically significantly correlated with treatment, where turf landscape was 149% more compacted. Microbial activity was more than double that in prairies compared to turf at all three parks. Aggregate stability was greater in prairies at Winnemac and Marquette, but higher in turf at Jackson. Soil organic matter was greater in prairie compared to turf at Jackson and Winnemac, but not Marquette. Turfgrass soil at Marquette had significantly higher total lead (Pb) content than prairie, but this trend was not observed at the other parks. These results suggest that there are some ecosystem services that are greater in restored urban prairies compared to turfgrass, but that these are not consistent among the three parks. The restored prairies vary from two to twenty years old and turfgrass areas are assumed to be older. Variability in treatment impacts could be due to time since restoration or differing local conditions instead of landscape type alone. Future studies could explore the effect of prairie restoration age on soil quality indicators.

Elizabeth Owens[1] and Amy Crouch. Remote Control Cows: Comparing and Contrasting Two Virtual Fence Technologies. [1]The Nature Conservancy, Letts, Iowa. [2]The Nature Conservancy, Remsen, Iowa. Email: elizabeth.owens@tnc.org

The Nature Conservancy (TNC) is conducting a pilot program testing virtual livestock fencing as a sustainable grazing strategy at the Land of the Swamp White Oak Preserve (LOTSWO) in southeast Iowa. This innovative approach uses GPS-collars controlled via both a desktop interface and a mobile app to manage livestock, offering advantages over traditional fencing, particularly in rugged or frequently flooded

terrains. Partnering with local cattle producers, TNC utilizes grazing as an ecological management tool to control invasive vegetation and enhance biodiversity on conservation lands. Sensitive wetlands and riparian areas are a challenge to exclude with traditional fence and permanent fence in the floodplain is often hard to maintain. Virtual fencing provides customizable and responsive herd management, reducing long-term costs, labor, and maintenance. This pilot, one of the first in the U.S., could revolutionize sustainable grazing practices, benefiting diverse applications across Iowa and beyond. Goals include determining the economic viability of virtual fencing, the reliability of equipment and software, increasing biodiversity, and overcoming barriers to sustainable grazing. Success will be measured through system performance, ecological impact, and stakeholder engagement. Grazing is a tool for land management and ecological restoration. Virtual fence has the potential to sharpen that tool and make it more effective but also make grazing treatments more flexible and adaptable.

Best Student Poster Presentation Candidate

***Jakob Pierskalla**. Optimizing mycorrhizal inoculation timing for eastern white pine (Pinus strobus) seedlings to enhance reforestation efforts. University of Minnesota Duluth, Duluth MN. Email: piers360@d.umn.edu

Reforestation is a critical tool in mitigating the effects of climate change, with projects such as Minnesota Million aiming to restore one million acres of unforested land in Minnesota. Successful reforestation depends on the survival and growth of robust tree seedlings, which may be potentially enhanced by using symbiotic relationships between trees and mycorrhizal fungi. Mycorrhizal fungi improve plant fitness by facilitating nutrient and water uptake in exchange for plant-derived sugars. However, timing of inoculation during seedling development may influence these benefits, shifting the relationship from mutualistic to parasitic in young seedlings. This study investigates the effect of inoculation timing on eastern white pine (Pinus strobus) seedling growth, a species vital to Minnesota's reforestation goals. Seedlings were subjected to three inoculation timings (at 0, 4, and 8 weeks after up-potting) and a control with no inoculation. Stem diameter, needle length, and plant height were measured over 16 weeks to evaluate above-ground growth. Root tip colonization was assessed microscopically, then root and shoot biomass were recorded. All data were statistically analyzed to determine treatment effects. Preliminary results indicate limited statistically significant differences in above-ground growth traits across treatments. However, significant effects were revealed in root traits, with increased root colonization and mass amongst the different inoculation timings. These findings suggest that while inoculation timing may not notably influence above ground traits during early growth, it could aid below-ground development critical for long-term seedling establishment. This research provides insights into optimizing nursery practices to support large-scale reforestation projects. Further analysis and research would refine recommendations for inoculation timing, ensuring seedlings are primed for survival and growth when planted in the field.

Rory Schiafo, Diana Digges, Kay Havens, Meredith Holm, Andrea Kramer, Chris Woolridge. Creating a regional native seed network for the Midwest. Chicago Botanic Garden and Northwestern University, Glencoe IL. U.S. Fish and Wildlife Service, East Lansing, MI., Chicago Botanic Garden, U.S. Fish and Wildlife Service, Chicago Botanic Garden, Chicago Botanic Garden.
Email: rschiafo@u.northwestern.edu, diana_digges@fws.gov, khavens@chicagobotanic.org, meredith_holm@fws.gov, akramer@chicagobotanic.org, CWoolridge@chicagobotanic.org.

According to a 2023 report from the National Academies of Sciences, an insufficient supply of seeds from native plants is a major barrier to ecological restoration and other revegetation projects across the United States. To combat this, the report calls for concerted action to build a more robust native seed supply and industry. To this end, there is a need for regional seed networks that address a variety of issues related to the development and distribution of native seeds. For example, regional native seed networks can contribute to developing target species lists by ecoregion; sharing standard protocols, practices, and data management; building infrastructure for seed cleaning, seed banking and warehousing; sharing research needs; and supporting engagement efforts. Ideally, these hubs incorporate members from federal, state, and local government, botanic gardens, seed banks, non-profits, and the seed/nursery industry. While the Midwest is still in the early stages of developing an infrastructure for coordinated work on native seed production at the regional level, we are fortunate to have many agencies and organizations doing excellent work individually and at smaller scale partnerships to produce the native seeds needed to support restoration efforts. This poster will highlight our efforts to collaboratively build a meaningful Midwestern Native Seed Network that connects existing efforts, shares best practices, and helps advance the availability of diverse and appropriate native seeds across the region.

Abbie Schrotenboer. Student Place Meanings and Conservation Perceptions. Trinity Christian College, Palos Heights, IL. Email: abbie.schrotenboer@trnty.edu.

When students enter college, they come from a variety of backgrounds and a range of experiences of the place that is now their college home. Research into sense of place and place meanings can provide insights into how students are viewing and interacting with their local place. For example, some studies have linked place attachment to pro-environmental behaviors. I am surveying college students from two classes (one targeted mainly to biology majors and one targeted mainly to non-science majors) to evaluate their perceptions of place and how they see the importance of environmental protection and conservation. Survey questions focused on Chicago-area nature and asked students to consider a variety of descriptors of local nature including those related to faith-based views, as our school is a Christian institution in the Chicago suburbs. Fifty percent of survey participants had lived in the Chicago area for 16 years or more, which likely contributed to a good number of students indicating that they agreed (29%) or strongly agreed (10%) with being knowledgeable about local plants, animals and environment. Over 90% of students agreed or strongly agreed with the statement “I feel it is important to protect and conserve Chicago-area nature.” When given several descriptors of Chicago-area nature, those that had the highest agreement were those that had a faith-based aspect (such as “part of God’s creation” and “evidence of God’s creativity”) and the description of “important to preserve.” Further research will evaluate how or if their perceptions change over the course of the semester, with the goal of further understanding of how students view local nature, how those views shape their ideas about conservation, and how environmentally focused courses may interact with those views.

Doran Stegura, Timothy Lewis, Craig Palmer, Molly Middlebrook, Louis Blume[1]. A Monthly Webinar Series to Assist with Collaboration and Connections between Ecological Restoration Projects in the Laurentian Great Lakes Region. General Dynamics Information Technology, Falls Church, VA., U.S. Environmental Protection Agency[1]. Email: Stegura@gdit.com, Timothy.Lewis2@gdit.com, Craig.J.Palmer@gdit.com, Molly.Middlebrook@gdit.com, blume.louis@epa.gov.

The Interagency Ecological Restoration Quality Committee (IERQC) launched a monthly webinar series in 2012 to enhance collaboration and knowledge-sharing among ecological restoration practitioners in the Great Lakes region. Each year, the series features presentations on restoration projects and programs spanning diverse ecosystem types, along with discussions on the latest advancements in restoration techniques. Recordings of past and current webinars are available online. The IERQC announces and provides information prior to each webinar through three primary methods: 1) the Great Lakes Information Network (GLIN)-Announce email subscription group, 2) a posting on the Society for Ecological Restoration (SER) event calendar webpage, and 3) the IERQC webinar email distribution list. All webinar email announcements include the webinar title along with a brief abstract and presenter bio. The IERQC webinar email distribution list is updated regularly. Individuals may subscribe by contacting an IERQC Co-chair and once added, will receive monthly webinar announcements as well as a link to the recording after each webinar.

The Society for Ecological Restoration (SER) has pre-approved the IERQC webinar series for Continuing Education Credits (CECs) as part of their Certified Ecological Restoration Practitioner (CERP) and Certified Ecological Restoration Practitioner-in-Training (CERPIT) programs. Webinar attendees may earn one CEC per webinar by requesting an IERQC Certificate of Completion from an IERQC Co-chair and subsequently submitting that certificate to SER for credit. Note that SER posts a link to all IERQC webinar recordings on their webpage for CERP Pre-approved IERQC webinars and interested individuals may view these webinar recordings and obtain credit upon request.

Elissa Thompson and Tara Kelly. *Rubus parvifolius* (Small Leaf Bramble), Early Detection and Rapid Response. Washington Conservation District, Oakdale, MN. Email: ethompson@mnwcd.org.

Small-leaf bramble (SLB) is an emerging, non-native species in Minnesota with limited documented distribution. SLB was 1st documented in 2019 along the Brown's Creek and Silver Creek corridors (Stillwater) within Washington County. More recently, SLB has been documented in Oakdale, Hugo, Afton and Marine on St. Croix in Washington County, and in Western Minnesota at Orwell WMA. Where documented, SLB aggressively takes over spaces, outcompeting native vegetation in prairies, savannas, and woodlands. With funding from the Minnesota Department of Agriculture, Washington County, and Minnesota Board of Water and Soil Resources; the Washington Conservation District conducted a 2-year study that tested three different control methods to evaluate the efficacy of each treatment and to determine which of these is the most effective and efficient option for controlling SLB. WCD staff laid out 5 randomized blocks (each 10m x 10m) across two sites located along the Silver Creek corridor. Each of the 10m x 10m treatment blocks was divided into quadrants and randomly assigned a treatment ("mow," "mow + spray," "spray," and "control"). The blocks were then

divided into rows and columns of ten to create 1m x 1m sample plots within each quadrant. All vegetation surveys were conducted using a modified Daubenmire Method. Overall, the treatment methods of mowing, spraying and mowing with spraying reduced the percent cover of SLB significantly. It does not appear that the combination of mowing + spraying adds any additional control; however, it was noted that the sites were much easier to apply herbicide if the mowing had been completed. This could be an important factor to consider for larger sites or sites with higher SLB stem density, particularly for safety and accessibility. Observationally, the plots that were mown showed the least reduction in percent cover of "other" species. The retention of other species may play an important role in the long-term recovery of the plots by providing competition and soil retention. When site conditions allow, mowing followed by spraying is the recommended treatment method to reduce cover of SLB and retain on site species diversity.

Adriana McBride. Conservation research and biodiversity surveys at Milan Bottoms: development threats and ecological impacts. Iowa Native Plant Society, Davenport, Iowa. Email: Anaecologist@gmail.com

Freshwater mussels are vital components of aquatic ecosystems, serving as bioindicators of water quality and playing a key role in nutrient cycling. Despite its ecological richness and management by multiple conservation agencies, the Milan Bottoms region of the Mississippi River in Rock Island County, Illinois, had not previously been surveyed for mussel fauna. This study aimed to establish a baseline assessment of freshwater mussel diversity and distribution along a 4-mile stretch of the river near the Milan Bottoms. The research utilized hand-sampling and limited brailing methods across six wadeable shoreline sites in August and September 2003, focusing on depths up to three feet. Researchers documented 30 mussel species, with 20 found alive, including the federally endangered *Lampsilis higginsii* (Higgins eye) and the state-threatened *Ligumia recta* (black sandshell). Two invasive species—*Dreissena polymorpha* (zebra mussel) and *Corbicula fluminea* (Asian clam)—were also detected, though in low numbers. Abundant native species included *Amblema plicata* (threeridge), *Obliquaria reflexa* (threehorn wartyback), and *Fusconaia flava* (Wabash pigtoe). These findings demonstrate the ecological importance of the Milan Bottoms and underscore the need for proactive conservation. The data provide a critical reference point for ecological restoration, supporting science-based decisions around habitat protection, invasive species control, and long-term biodiversity planning. As land use pressures increase, this baseline will help advocate for the preservation and restoration of this biologically rich bottomland habitat.

Kibria, A.S.M.G.1, K. Hall2, A.K. Burrow1, B. Wessel1, and J. Owen1. Identification of stakeholders of wetland restoration/mitigation in the face of climate change in Midwest. 1Michigan State University, East Lansing, Michigan. 2The Nature Conservancy, Lansing, Michigan. Email: kibriaab@msu.edu

Restoring wetlands in the Midwest requires a collaborative, stakeholder-driven approach to ensure ecosystem resilience in the face of climate change. There is limited knowledge about the stakeholders, which is crucial for the successful implementation of any climate adaptation or mitigation program. Our goal is to compile a comprehensive list of stakeholders with input from attendees of the SER-MWGL 2025 Annual Meeting. Traditional top-down research often leads to mismatch between proposed solutions and real-world conditions, resulting in low adoption of management models and tools by the landowners and rights holders. To address these challenges, we will utilize a bottom-up approach where stakeholders (e.g., farmers, state government, federal agency, tribal government, local communities, and rights holders) identify the key gaps, after which a transdisciplinary working group collaborates with stake and

rights-holders to co-develop solutions. Therefore, it is crucial to identify the stakeholders and collaboratively work with them to develop innovative solutions for wetland restoration and mitigation activities. By doing so, we can create research driven solutions that effectively address the local complexities of climate adaptation and mitigation program implementation in the Midwest wetlands.

SATURDAY, APRIL 26

CONCURRENT ORAL PRESENTATION SESSION #1

**Denotes student presenter*

Sub-Session A: 8:00 – 10:00 AM (Blackhawk) FOREST RESTORATION		
8:00 – 8:20	**Nina Struss**	Creating Climate Resiliency One Tree at a Time
8:20 – 8:40	**Caleb Redick,** Dr. Douglass Jacobs	Site and management factors determining the fate of hardwood trees planted on reclaimed coal mines in the Illinois Basin, USA
8:40 – 9:00	***Mikayla Haynes**, Dr. Julie Etterson	The value of native vs. commercial sources of mycorrhizae for nursery-grown restoration tree seedlings in Minnesota's mixed boreal forests
9:00 – 9:20	***Rebekah Jones**	Does mycorrhizal inoculation improve establishment of trees in habitats undergoing restoration?
9:20 – 9:40	***Rory Schiafo**, Jacob Zeldin, Edward Price, David Zaya, Gabriela C. Nunez-Mir, Lindsay Darling, Natalie Love, Andrea Kramer	Understanding the role of a changing canopy structure, initial site conditions, and management practices on the temporal trajectories of plant communities in Illinois forest
9:40 – 10:00	**Jasmine Dwyer**	Naturalized Trees of The Morton Arboretum: an Assessment to Guide Ecosystem Management

Sub-Session B: 8:00 – 10:00 AM (John Deere) PRAIRIE RESTORATION		
8:00 – 8:20	**Daniel Tix,** Ashley Petel	Using sheep grazing as a management tool in reconstructed prairies to benefit ecosystems and people
8:20 – 8:40	***Samantha Rosa**	Community-Driven Restoration Research: Empowering K-8 school communities to enhance native seed research, restoration, and conservation
8:40 – 9:00	**Bill Sluis,** Katharine Kucera, Gary Sullivan	Tallgrass prairie restoration species planting lists: importance of composition and richness
9:00 – 9:20	**Jonathan T. Bauer,** Grace L. Brock, Emily Grman	How does mycorrhizal fungi diversity affect plant growth?
9:20 – 9:40	***Luke Auge,** Dr. Amy Blair	Synthetic Chemical and Natural Herbicide Trials for Effective Management of Smooth Brome in Prairie Restoration
9:40 – 10:00	***Michelle Homann**	Microclimate conditions and seedling establishment differ with spring and fall prescribed burn timing in a tallgrass prairie restoration

Sub-Session C: 8:00 – 10:00 AM (Wheelhouse) RESTORATION METHODS AND SOCIOLOGICAL APPROACHES		
8:00 – 8:20	**Karen Tekverk**	Is Practitioner Certification Right for You?
8:20 – 8:40	**Kurt Hansen**	How and Why Restoration Technicians Should Target Renewable Development
8:40 – 9:00	**Timothy Lewis,** Brick Fevold	The Two Types of Monitoring Required for Restoration Quality Outcomes
9:00 – 9:20	**Bheemaiah, A.K.**	Digital Plant Assets and On-Chain Ecological Restoration: Exploring Genomics, Tokenization, and Digital Twins
9:20 – 9:40	***Michael Back**	Assessing nutrient removal function of constructed wetlands after a decade without management

ORAL PRESENTATION ABSTRACTS SESSION #1

(ALPHABETICAL ORDER)

**Denotes student presenter*

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Luke Auge**, Dr. Amy Blair. Synthetic Chemical and Natural Herbicide Trials for Effective Management of Smooth Brome in Prairie Restoration. St. Ambrose University, Davenport, IA. Email: augeluket@sau.edu, blairamyc@sau.edu.

Smooth Brome (Bromus inermis) is a Eurasian grass species currently invading Midwest prairies. Current management relies heavily on chemical herbicides like glyphosate and trifluralin, which have significant ecological drawbacks, including soil contamination, impacts on non-target species, and potential harm to human health. This study evaluates the effectiveness of two natural herbicides, corn gluten meal (CGM) and 15% acetic acid, as sustainable alternatives for controlling Smooth Brome, while supporting native prairie restoration. This experiment compares the pre-emergent efficacy of CGM versus trifluralin and the post-emergent impact of 15% acetic acid against glyphosate on Smooth Brome seedling mortality and growth. Subsequently, germination rates of four native prairie species will be assessed in treated soils. We hypothesized comparable Smooth Brome control using natural and synthetic herbicides and superior native plant germination in CGM- and acetic acid-treated soils versus synthetic herbicides. Early data show comparable efficacy of pre-emergent treatments and reduced efficacy with acetic acid compared to glyphosate. Results from the post-emergent treatments and the native seedling germination rates will be presented.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Michael Back**. Assessing nutrient removal function of constructed wetlands after a decade without management. Kent State University. Kent OH. Email: mback@kent.edu.

Wetland restoration with the goal of nutrient removal is becoming increasingly popular in the Great Lakes region to curb the proliferation of harmful algal blooms. Wetlands slow the flow of water, allowing particulates to settle and dissolved phosphorus to be processed in the water and sediment. The effectiveness of restored wetlands at removing phosphorus can vary and often depends on management actions. We aimed to determine the phosphorus removal function of 10 constructed wetlands after a decade without management. The Herrick Aquatic Ecology Research Facility at Kent State University has

10 mesocosm wetlands (10-meters wide by 20-meters long by 2-meters deep). The wetlands were constructed in 2001 with inflow and outflow water control structures allowing for the active management of water level within each mesocosm. Since 2013, no work had been done at the facility, and water control structures remained at a consistent setting. The lack of management created substantial variability in hydrologic regime over the last decade. After fixing the structures, we set each wetland to a similar water level and monitored nutrient concentration, flow, vegetation, and sediment conditions from April-October 2024. Flow conditions in 2024 were generally low and varied across the 10 wetlands, presumably due to the drought and occasional blockages in water control structures. Surface water dissolved phosphorus was typically below detection limit likely due to the majority of the drainage area being urban landscape, however bioavailable P in the sediment ranged from 3.2-34.4 g P/kg. Sediment accumulation varied across the wetlands (range=23.5-88.25cm) and was on average 14.4 cm deeper near the inflows than the outflows. The mesocosm wetlands have stored phosphorus via sediment accumulation since construction, but without periodic maintenance on the inflows to allow water to enter the systems, the wetlands can become isolated and limited in nutrient removal functionality.

Jonathan T. Bauer, Grace L. Brock, Emily Grman. How does mycorrhizal fungi diversity affect plant growth? Miami University, Oxford OH. Eastern Michigan University. Email: bauerjt@miamioh.edu.

Biodiversity is typically linked to increases in ecosystem function, so it is reasonable to expect that diverse mycorrhizal communities are likely to be better at promoting plant growth. One potential mechanism that could cause this is that different mycorrhizal species may be better adapted to different environmental conditions. To test these ideas, we isolated two mycorrhizal fungi species from sand prairies and two from prairies with clayey soils. We then inoculated Big Bluestem (Andropogon gerardii) seedlings with each fungi species individually, all possible pairs, and all four species together. This experiment was repeated in soil with high sand, mixed sand and clay, and high clay soils. We expected the most diverse mix of fungi to provide the most benefits to plants, and we expected that the most beneficial fungus would change in different soil environments. However, we were surprised to find that the diverse mixture was no better than the most beneficial fungus inoculated on its own. Further, the most beneficial fungus was consistently the most beneficial across different soil textures. The implication of these results for restoration or plant nursery operations is that it may not be necessary to culture high fungal diversity. We also note that diverse mixtures were no less productive than the best single fungus, which indicates that poorer mutualists do not interfere with the benefits of better mutualists. So, if the quality of different fungal strains cannot be assessed in depth, then diverse mixes may still provide the most benefits to plants.

Bheemaiah, A.K. Digital Plant Assets and On-Chain Ecological Restoration: Exploring Genomics, Tokenization, and Digital Twins. Mother Divine, Seattle. Seattle Washington. Email: bheemaiah@uwalumni.com

Digital plant assets represent virtual representations of biological organisms, encoded with genetic, ecological, and spatial metadata. These assets are fundamental components of digital twins—high-fidelity, dynamic models that mirror real-world ecosystems. By integrating genomic data, ecological attributes, and geospatial information, digital twins enable precise ecological monitoring, predictive modeling, and restoration planning. Tokenomics refers to the economic system governing digital assets, leveraging blockchain-based tokens to facilitate value exchange, ownership verification, and incentive mechanisms. In ecological restoration, tokenized digital plant assets allow for novel funding models,

decentralized conservation efforts, and transparent tracking of restoration progress. While traditional genomic studies require physical specimens, digitized plant assets encode genetic information as metadata in structured formats such as JSON, YAML, or GeoJSON. This structured data allows for computational analysis, pattern recognition, and integration with AI-driven biodiversity assessments. On-chain storage of digital twins ensures immutable, transparent, and decentralized access to ecological data. By leveraging blockchain technology, restoration projects can enhance accountability, enable secure data sharing, and establish a verifiable record of ecosystem changes over time. Tokenizing digital plant assets and land involves creating cryptographic representations of ecological elements, enabling fractional ownership, conservation incentives, and smart contract-based ecosystem services. These innovations offer scalable solutions for funding, monitoring, and managing ecological restoration projects.

Jasmine Dwyer. Naturalized Trees of The Morton Arboretum: an Assessment to Guide Ecosystem Management. The Morton Arboretum, Lisle, IL. Email: jasminedwyer@mortonarb.org.

The Morton Arboretum, a 1,700-acre public garden and outdoor tree museum located in Lisle, Illinois, was originally founded in 1922. With over a century of experience planting trees from around the world, the Arboretum's wooded natural areas provide a unique opportunity to study naturalization of tree species. The integration of historical and current data offers unique insights about their populations that other organizations are not positioned to share. Understanding these patterns is essential for developing effective conservation strategies and guiding long-term management efforts. This synthesis of surveys, herbarium records, and field observations uncovers trends in species persistence, identifies regeneration challenges, and evaluates the stability of native populations at risk of extirpation. By focusing on both long-term and contemporary perspectives, this assessment addresses regeneration challenges, mitigates invasive species, and unifies conservation practices across the institution's natural areas. To address these challenges, the 67 tree species found naturalizing at the Arboretum were categorized into four groups, leading to the development of three management strategies: control, support, and facilitate. Two specific tactics were created: the first focuses on natural regeneration of key taxa by 2035 within a 250-acre area of the East Woods through canopy thinning to promote oak seedling establishment. The second involves establishing refugia for fire-sensitive species in areas where they can thrive without adverse effects from prescribed burning. Incorporating historical management approaches, this assessment lays the groundwork for adaptive conservation strategies that enhance ecosystem resilience and long-term biodiversity while prioritizing ecologically significant or vulnerable species.

Kurt Hansen. How and Why Restoration Technicians Should Target Renewable Development. Environmental Consulting and Technology, Inc., Lombard, IL., Email: khansen@ectinc.com.

Environmental Consulting and Technology, Inc. (ECT) supported a large-scale solar (LSS) developer with a Project in Indiana that voluntarily restored woodlands and wetlands within the Project footprint. This talk will explore why a LSS developer would voluntarily restore habitat, and the angles restoration technicians should take to get involved in the process. The federal government, in coordination with states, has supported the Conservation Reserve Program (CRP) since the late 1980s[1], and CRP offshoots like the Conservation Reserve Enhancement Program (CREP) in the State of Illinois starting in 1998[2] to increase soil health, reduce erosion, protect water quality, and create habitat in agricultural environments. Hopefully, many of the SER 2025 Annual Meeting attendees have been able to assist local private

landowners access CRP and CREP funds and establishment of appropriate cover. LSS developers work with local farmers and landowners to acquire land for potential LSS projects via purchase or lease. As LSS becomes more relevant around the Country and in the Midwest local authorities having jurisdiction (AHJs) in agricultural communities are scrambling to get pro- or anti-renewable ordinances in play. While some ordinances focus on noise and visual screening requirements, others propose low-disturbance native seed mixes and/or continued agricultural uses of parcels utilized in LSS developments. Local restoration experts can play a critical role consulting on proposed ordinances, seed mixes, vegetation management plans, and tree/shrub plantings to create requirements that are both ecologically beneficial and functionally practicable. In public meetings LSS objectors often state that the development attacks their "rural values." LSS development must avoid shading but often can be designed to avoid impacts to waterways, woodlands, established grasslands, and wildlife corridors. By illustrating the permitting pathways, and sharing the know-how to conserve, enhance, and communicate the benefits LSS projects can provide restoration technicians can be part of the development conversation.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Mikayla Haynes**, Dr. Julie Etterson. The value of native vs. commercial sources of mycorrhizae for nursery-grown restoration tree seedlings in Minnesota's mixed boreal forests. University of Minnesota Duluth, Swenson College of Science and Engineering, Integrated Biosciences Program, University of Minnesota Duluth, Department of Biology, Distinguished McKnight University Professor. Duluth MN. Email: hayne160@d.umn.edu, jetterso@d.umn.edu.

Mycorrhizal fungal inoculants have the potential to enhance tree seedling resiliency for reforestation efforts. Inoculation of nursery-grown tree seedlings may increase restoration success because mycorrhizae allows plants to explore 50% more soil volume than is possible by their roots alone. Although there have been recent studies to explore the efficacy of commercial and native mycorrhizal inoculants on tree seedlings, none have been done with species from Minnesota's mixed boreal forest. Here, I describe studies that compare the value to seedlings of commercial versus different sources of native inoculum. I will report on two studies: the effect of inoculant type (commercial, native, control), and differences in soil and seed source on growth. In the first study, I found mixed effects on seedling growth that differed between species. In yellow birch (Betula alleghaniensis), the commercial mycorrhizae treatment had a significantly positive effect ($p<0.0001$) on growth, whereas in northern red oak (Quercus rubra), treatment had no significant effect on growth. In the second study, I test whether local native inoculum is superior to inoculum from more distant locations. We hypothesize that seedlings inoculated with local mycorrhizae will have increased growth and survival compared to seedlings grown from more distant

mycorrhizal sources. The experiments described here are part of a larger project known as Minnesota Million, with a goal of reforesting one million acres as a natural climate solution by 2045. The results will inform growing protocols for the Minnesota Million project.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Michelle Homann**. Microclimate conditions and seedling establishment differ with spring and fall prescribed burn timing in a tallgrass prairie restoration. University of Wisconsin – Madison, Madison, WI. Email: mhomann@wisc.edu.

During plant community restoration, interseeding is often necessary to increase recruitment of desired species. In tallgrass prairies, pairing seed additions with burning can increase species recruitment by reducing competition and creating suitable microsites for establishing seedlings. Microclimate dynamics can differ depending on the timing of fire, which is typically prescribed in either late fall or early spring. We know that, when compared to fall burns, spring burns leave insulative litter cover intact through winter, maintaining warmer and more stable temperatures into early spring. We predicted that burning in spring would also maintain wetter soil conditions, but seeds and emerging seedlings would be damaged by spring prescribed burns. To understand microclimate drivers of seedling survival, we collected soil temperature and moisture data from December 2023 through August 2024. To examine germination and establishment responses to fire timing, we sewed 100 seeds of six tallgrass prairie species into 20 × 20 cm subplots in December. Subplots were burned in fall (November) or spring (April), and we collected germination and survival data weekly from March through August. Average midday soil temperature was the same or lower in fall burn treatments compared to spring burn treatments depending on the month, and March soil moisture was significantly lower in fall burn treatments compared to spring burn treatments. Warmer and wetter conditions supported more seedlings in spring burn plots prior to the spring burn. Conversely, more seedlings survived to the end of the growing season in fall burn treatments when compared to spring burn treatments, likely due to fire-caused mortality in the latter. Although we would not advise burning in the spring following a winter seed addition, burning in the spring prior to a seed addition, rather than in the fall, could support seedling establishment by providing cover and increasing temperature and moisture in early spring.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Jones, Rebekah**. Does mycorrhizal inoculation improve establishment of trees in habitats undergoing restoration? Kent State University, Kent OH. Email: rjone123@kent.edu.

Restoration often seeks to improve tree establishment on degraded land where trees would otherwise fail to establish naturally. Soil nutrient deficiencies may cause both natural and planted trees to struggle to grow and survive at highly disturbed locations, perhaps due to a deficit of preexisting symbiotic fungi found in most healthy soils. Therefore, it may be beneficial to inoculate tree plantings with native mycorrhizal fungi to improve their chances of survival. In Cuyahoga Valley National Park between Cleveland and Akron, OH, five surface gravel mines were compacted after removal of the top layers of natural forest soil, depleting most of the native mycorrhizal species from the top layers of substrate. Native trees have struggled to colonize these sites and tree plantings have had low success, even after soil ripping was completed to lower compaction. Nursery saplings of Pin Oak and Black Walnut were used to test if soil inoculation would improve mycorrhizal colonization and survivorship of saplings used in restoration. Soil

from the mine site, from the forest under the same tree species, and from the forest under trees of the same mycorrhizal type were used to inoculate the trees by mixing with the nursery potting soil. Root samples were checked for percent mycorrhizal colonization before and after soil inoculation while plants were still in nursery pots, and 9 months after planting and tree survivorship was recorded. Results indicate that certain soil inoculants had some positive benefits while others did not, suggesting this technique may be context dependent.

Lewis, Timothy, Brick Fevold. The Two Types of Monitoring Required for Restoration Quality Outcomes. General Dynamics Information Technology. Falls Church VA. Email: timothy.lewis2@gdit.com, Brick.Fevold@gdit.com.

In ecological restoration projects, monitoring is essential to assess progress and ensure desired outcomes. However, two distinct types of monitoring are typically employed: implementation monitoring and effectiveness monitoring. Implementation monitoring focuses on the processes and activities involved in the restoration, ensuring that tasks are carried out according to the established plan, timeline, and specifications. It primarily tracks inputs, activities, and outputs, such as planting, soil treatment, or habitat construction. On the other hand, effectiveness monitoring evaluates whether the restoration efforts are achieving the intended ecological goals, such as biodiversity recovery, improved ecosystem functions, or habitat suitability. It measures the outcomes and long-term success of the project, often using indicators like species abundance, vegetation cover, or water quality.

The quality assurance (QA) and quality control (QC) measures differ significantly between these two types of monitoring. Implementation monitoring emphasizes quality control to ensure compliance with protocols, focusing on the accurate execution of tasks. In contrast, effectiveness monitoring requires robust quality assurance to guarantee that the data collected is valid, reliable, and representative of the ecological outcomes. The precision of field methods, statistical analysis, and long-term data consistency are central to effectiveness monitoring, ensuring that the restoration's success is accurately assessed. This presentation will explore these differences and highlight how both types of monitoring contribute to the overall success of ecological restoration projects. This workshop is funded under EPA contract in support of the Great Lakes Restoration Initiative.

Caleb Redick, Dr. Douglass Jacobs. Site and management factors determining the fate of hardwood trees planted on reclaimed coal mines in the Illinois Basin, USA. former researcher at Purdue University Department of Forestry and Natural Resources, Purdue University. Shelby WI.
Email: calebredick@gmail.com, djacobs@purdue.edu.

Despite decades of research and practice restoring forests on surface coal mines, success is still variable, and failures often occur. To better understand how variation in site factors and management affect success of restoration of coal mines, we conducted a survey of tree performance for mine sites in the Illinois Basin across Indiana, USA reclaimed between 2008 and 2018. We explored the impacts of climate and soil conditions on the survival and growth of planted trees, as well as the cover of associated vegetation. Organic matter had one of the most consistent and largest effects on most oak species, with highest performance between 3-5%. Soil phosphorus (P) content was the most important factor determining whether a planting totally failed and affected growth of Quercus alba (white oak) and swamp Quercus bicolor (swamp white oak), though its effect on white oak was nonlinear. Rainfall in the year of

planting had large positive effects on survival and growth of Diospyros virginiana (persimmon), and Juglans nigra (black walnut) and temperature in the year of planting had large positive effects on growth of Quercus macrocarpa (bur oak) and persimmon. Planting a diverse mix of species is the best option both for approximating natural conditions, and for avoiding problems from failure of individual species. While conditions vary, successful forest restoration on former coal mines can occur; this study reveals some of the most important factors affecting such success.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Samantha Rosa**. Community-Driven Restoration Research: Empowering K-8 school communities to enhance native seed research, restoration, and conservation. Chicago Botanic Garden, Glencoe IL. Email: sturner-rosa@chicagobotanic.org.

To restore native habitats at a rate that will meet mounting restoration targets, there is a need to enhance our ability to cultivate and care for a diversity of native seeds. Participatory practices like community-based contributions to native seed supply have been a major advancement for more inclusive approaches to ecological restoration. The Chicago Botanic Garden's Dixon Prairie and National Tallgrass Prairie Seed Bank are optimal spaces for empowering K-8 school communities to lead and enhance native seed stewardship. The Dixon National Tallgrass Prairie Seed Bank and the restored native habitats of the Chicago Botanic Garden presents a unique opportunity to shift the dynamic of both native seed science and science education through the development of education programs that establish community-driven native seed research, restoration, and conservation. This presentation will illustrate a pilot project that is establishing a student-led native seed lab at a K-8 school community in Chicago where students and educators will be, (i) conducting germination experiments on native prairie species selected for restoration using native seeds collected from the Dixon Prairie and seed bank, (ii) leading prairie restoration activities using plants they germinated and cared for, (iii) serving as native seed stewards for the National Tallgrass Prairie Seed Bank. Through the support of SER-MWGL's Student Implementation Award, this project will craft a model for K-8 led native seed stewardship that advances both science education equity and the consistency of native-seed germination efforts. Methods and best practices for fostering native seed-based collaborations that are reciprocal across research, education, land management, and restoration practitioners will be discussed.

BEST STUDENT ORAL PRESENTATION CANDIDATE

***Rory Schiafo**[1,2], Jacob Zeldin[3], Edward Price[4], David Zaya[5], Gabriela C. Nunez-Mir[6], Lindsay Darling[7], Natalie Love[8], Andrea Kramer[9]. Understanding the role of a changing canopy structure, initial site conditions, and management practices on the temporal trajectories of plant communities in Illinois forest. Plant Biology and Conservation Program, Chicago Botanic Garden[1,3,8,9], Northwestern University[2], Negaunee Institute for Plant Conservation Science and Action[3,8,9], Illinois Natural History Survey[4,5], University of Illinois Urbana-Champaign[4,5], University of Illinois at Chicago[6].
Email: rschiafo@u.northwestern.edu, jzeldin@chicagobotanic.org, epprice2@illinois.edu, dzaya1@illinois.edu, gnm@uic.edu, ldarling@mortonarb.org, nlove@chicagobotanic.org, akramer@chicagobotanic.org.

Both widespread tree mortality and canopy closure, hereafter canopy disturbances, have ecological consequences for forest plant communities across the Midwest. As the prevalence of canopy

disturbances increases, it is important to understand how changes in canopy structure can influence the diversity and composition of species in the midstory and understory. Further, factors such as initial diversity and structure, as well as different management actions may mediate the trajectories of community change following canopy disturbances. Here, we asked, how do understory and midstory plant communities respond to changes in overstory basal area (a metric of canopy disturbance)? We also assessed whether changes in response to basal area change are influenced by initial plant community conditions. Finally, we addressed how different management practices may alter plant community responses to basal area change. We leveraged data from the Critical Trends Assessment Program, a data set spanning thirty years, with 120 upland and floodplain forest sites across Illinois. We integrated metrics of initial diversity and structure and components of management practices into models that predict temporal changes in diversity and composition in forests undergoing canopy disturbances. We found that upland forest sites that experience high losses in basal area also experienced increases in species richness in the understory. In floodplain forests, however, the initial density of nonnative shrubs mediated the relationship between changes in basal area and species richness. In both uplands and floodplains, management practices interacted with changes in basal area to influence community diversity and composition. This work can help predict how forest plant communities across the region may respond to losses and gains in the forest overstory. Further, we help to identify the initial conditions and management practices that may mitigate the negative effects of canopy disturbances.

Bill Sluis, Katherine Kucera, Gary Sullivan. Tallgrass prairie restoration species planting lists: importance of composition and richness. The Wetlands Initiative, Angola IN. Email: wsluis2@yahoo.com, kkucera@wetlands-initiative.org, gsullivan@wetlands-initiative.org.

Common objectives for many restoration projects are to achieve high plant biodiversity and establish a plant community composition that is similar to that of local old-growth remnant ecosystems. Most grassland restorations involve planting seeds, and seed density and richness have been widely studied. However, consequences of differing seed mix composition but similar richness are largely unstudied. To examine richness and composition of seed mixes, we tested three species-rich (84 species) and one low-richness (42 species) seed mixes for different emergent properties, comparing results to actual remnant grasslands. One seed mix simulated old-growth mesic grasslands in the region. We compared establishment and persistence, richness, diversity, dominance and visual obstruction, plant density, size, and growth forms in fifteen 10 x 10m plots. We hypothesized that the planting using the old-growth mix would have more properties found in old-growth grasslands than the other seed mixes. Our hypothesis was supported by most metrics. Both seed mix composition and richness had impacts on properties of old-growth grasslands, with the remnant seed mix being closest to actual remnants, but still significantly different. Remnant composition at plot scales can replicate some remnant properties, but remnant properties at quadrat scales are less developed and may develop more as interactions influence species patterns with time.

Nina Struss, Avery Pearl, Thurgood Brooks, S. Bobbi Bussan. Creating Climate Resiliency One Tree at a Time. Prairie Rivers Network, River Health and Resiliency Organizer, Martin Luther King Center, West End Revitalization, OSB, St. Mary Monastery. Rock Island IL. Email: nstruss@prairierivers.org, pearl.avery@rigov.org, brooks.thurgood@rigov.org, rbussan@smmsisters.org.

Enhancing ecological restoration in historically underinvested areas, the West End Revitalization Energy Efficiency & Environmental Justice Pilot in Rock Island, Illinois, demonstrates the power of community-driven solutions. Faced with low tree equity scores (32–55) and the associated urban heat island effect, flooding, and air pollution challenges, the project brought together diverse partners, including the Martin Luther King Jr. Community Center, St. Mary Monastery, Prairie Rivers Network, and the City of Rock Island. The initiative aimed to address environmental justice issues by increasing tree canopy cover to address a multitude of environmental and public health challenges. Using GIS mapping to identify vulnerable areas, the team strategically planted 56 trees in public spaces, focusing on underserved neighborhoods. Initial outcomes reveal tangible benefits, including reduced urban heat, improved air quality, and enhanced flood management. This collaborative model underscores the importance of integrating nature-based solutions with community engagement, offering a replicable framework for addressing environmental disparities and promoting resilience in urban ecosystems.

Karen Tekverk. Is Practitioner Certification Right for You? Society for Ecological Restoration, Evanston IL. Email: karen.tekverk@ser.org.

Are you looking to apply to become a Certified Ecological Restoration Practitioner (CERP) or CERP-in-Training? Have you investigated applying for CERP previously, but didn't finish the application process? Do you wish someone could help you figure out what you need to complete to become a CERP? If so, this session is for you! Join SER Certification Program Manager Karen Tekverk to learn about the requirements for becoming a CERP or CERPIT, see the application steps, and answer questions about your own application. Ecological restoration practitioners who are still deciding whether CERP makes sense for them, or those who have begun an application but have specific questions, are also encouraged to attend.

SER's Certified Ecological Restoration Practitioner (CERP) program encourages a high professional standard for those who are designing, implementing, overseeing, and monitoring ecological restoration projects throughout the world. The program guarantees that practitioners meet a set of minimum requirements for restoration and ecological knowledge, on-the-ground practical experience, and an understanding of restoration principles and standards. The CERP program also offers a CERP-In-Training certification for those who do not quite meet all of the requirements of a full CERP certification, and it is ideal for new graduates of restoration programs and professionals who are newer to the field of ecological restoration.

Daniel Tix, Ashley Petel. Using sheep grazing as a management tool in reconstructed prairies to benefit ecosystems and people. MNL, Inc. Email: dan.tix@mnlcorp.com, Ashley.Petel@mnlcorp.com.

The state of Minnesota encourages solar developers to manage pollinator-friendly vegetation on their solar facilities to generate low carbon solar energy while improving soil and enhancing pollinator habitat. Solar site managers use mowing and sheep grazing to limit the height of the vegetation to keep it below the panels and allow access. We are working on a study to investigate how mowing and managed grazing can differentially affect reconstructed prairie vegetation and soils. Our study includes detailed vegetation analysis at six (6) solar generation facilities in Minnesota. At each facility we are studying vegetation changes for the two treatments (mowing and grazing) in three different locations on the solar facility: in the shade under the panels, in the sun between the panels, and outside the arrays in full sun. At each site we

also collect data for an untreated control (no mowing or grazing) located outside the arrays. Our study began in 2020 looking at changes in vegetation outside the arrays and was expanded in 2024 to review vegetation within the arrays. We are analyzing the differences among the treatments on the vegetation and our partners at Temple University have analyzed soil properties, including soil carbon and microbiology. We will discuss our preliminary results from this study and how the findings may impact solar site vegetation management, seeding, and soil carbon calculations.

KEYNOTE

River's Bend Ballroom

Dr. Laura Jackson

A Lost Cause? Bringing Prairie Back to the Cornbelt

Dr. Jackson will draw on her experience working alongside farmers and the agricultural community to develop tools and strategies to make farm-based restoration projects accessible and successful. Positioned at the intersection of science, practice, and outreach, she and the staff at the Tallgrass Prairie Center have worked on multiple projects with landowners, farm operators, county roadside managers, and partner organizations to implement restoration based on the best available science and experience

Laura Jackson is Director of the Tallgrass Prairie Center and Professor of Biology at the University of Northern Iowa. She received her BA in Biology from Grinnell College, and a Ph.D. in Ecology (minor in Agronomy) from Cornell University. She has taught courses in ecology, conservation biology, restoration ecology and environmental studies. Her research focuses on the restoration of biological diversity in agriculture landscapes, and the dynamics of seedling establishment in prairie reconstructions. She and her mother Dana Jackson are co-editors of The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems (Island Press, 2002).

CONCURRENT SYMPOSIA

1:00 PM – 3:00 PM

Symposium #1: *John Deere*

Jean McGuire, Jill Kostel. Building a relationship with farmers and the agriculture community near your restoration or conservation project. The Wetlands Initiative, Chicago IL. Email: jmcguire@wetlands-initiative.org.

Since Europeans settled in the central U.S., agriculture has become a primary land use. Today, farmers often push back against any effort to restore farmed land to its original natural state. In these situations, ecological professionals will need to interact with farmers and agricultural professionals. The differing views of natural resources (e.g., water, soil, wildlife, etc.) between farmers and conservation professionals make it challenging for the two groups to communicate with each other and work side-by-side. Building a trusted relationship offers a way to work cohesively. This symposium will offer research, knowledge, and lessons learned from conservation and restoration professionals who have built trust with farmers. There will be time for questions after each presentation and group discussions after each part, so participants are encouraged to bring their questions and share their experiences. First, USDA data and university

research about the population characteristics of Midwest farmers, how they view natural resources, and their farming philosophy. Second, three farmers will share how their values, beliefs, and attitudes impact their farming styles and adoption of conservation practices. Third, two organizations, Shirley Heinze Land Trust (tentative) and the Wetlands Initiative, will share how they work with farmers and rural communities when installing water quality improvement and other conservation practices.

Symposia #2: *Blackhawk*

Josh Richardson, Native Plant Community Planning Establishment and Monitoring in Agricultural Wetland Bank Restoration Projects. Prairie Restorations, Inc. Princeton, MN 55371. Email: jrichardson@prairieresto.com.

Minnesota has a robust private wetland banking program, offering opportunities for farmers to restore wetlands, creating credits that are sold to those requiring mitigation of wetland impacts. This program features credit releases based on restoration of hydrology and vegetation. Establishment of a diverse native plant community is required. In the permitting phase, a vegetation plan, performance standards and a monitoring plan is created. In the construction phase, site preparation and installation of native seed mixes is conducted by a restoration contractor. Work is coordinated with construction, conducted and documented. In the establishment phase, monitoring of vegetation establishment illustrates progress and identifies invasive species issues. Monitoring is implemented, results are measured against performance standards to determine appropriate credit releases. Josh Richardson is Lead Restoration Ecologist for Prairie Restorations, Inc. with years of experience, working with landowners, wetland specialists and regulators to create vegetation plans, manage installation, monitor vegetation and report results, allowing all parties to reach consensus on the successes and concerns faced in wetland bank projects. Josh will share project examples illustrating the entire process, beginning with the permitting phase and ending with final regulator approval. He will discuss vegetation plans, restoration processes, vegetation management, and developing monitoring approaches.

Symposium #3: *Wheelhouse*

Nina Struss[1], Mahtaab Bagherzadeh[2], Arsum Pathak, Ph.D[2], Rob Liva[3], Adam Reimer, Ph.D[2], Haley Diem, MEEd[4]. Growing Resilient: Nature-Based Solutions for Urban, Rural and Agricultural Communities in a Changing Climate. Prairie Rivers Network[1], Rock Island, IL., National Wildlife Federation[2], Bi-State Conservation Action Network (Bi-CAN)[3], Sand County Foundation[4]. Email: nstruss@prairierivers.org, BagherzadehM@nwf.org, PathakA@nwf.org, robert@hibiscusecologicalservices.com, reimera@nwf.org, hdiem@sandcountyfoundation.org.

As climate change accelerates, urban, rural and agricultural communities face challenges from flooding, extreme heat, and shifting precipitation patterns. The Quad Cities' watersheds, blending urban centers with agricultural landscapes, present an opportunity to strengthen bi-state efforts and develop urban-rural partnerships around ecological restoration strategies. This symposium explores ecosystem restoration using nature-based solutions, combining community outreach and climate modeling to inform decisions. Attendees will be introduced to the 2024 Quad Cities Climate Risk Report and learn how this report is shaping conversations around nature-based solutions and climate resiliency. National Wildlife

Federation, Prairie Rivers Network, and the Discovery Partners Institute have partnered with the Bi-State Conservation Action Network to build upon an existing ecological corridor map. Using the watershed approach, this updated map will consider HUC10 watersheds upstream of the metropolitan Quad Cities, encompassing agricultural and rural drainages and requires further landowner engagement. NWF and Sand County Foundation will present a case study exploring barriers and leverage points to expanding use of nature-based solutions with farmers and landowners. Participants will work interactively to identify culturally relevant strategies for engaging farmers and rural landowners in nature-based solutions to address climate, water quality, and flooding concerns.

Symposium #4: *Portside*

Stephen Thomforde. Agroecology: Working Lands. Stantec, Minneapolis, MN. Email: Stephen.Thomforde@Stantec.com.

This symposium actively engages participants in discussions on agroecology's role in restoring native landscapes. The symposium is divided into 4 sessions. Session 1 develops a 1491 model that introduces traditional ecological knowledge (TEK) and how humans used fire to manage landscapes to increase food - fiber production and maintained diverse native landscapes: bluestem, acorns, bison, and elk. The model identifies historic keystone species and processes that reinforced ecological integrity and are critical to restore or substitute in ecological restoration. Session 2 unifies TEK with western science to develop a framework that improves restoration design. Scientific concepts include keystone species, disturbance, adaptive cycles, succession, regime shifts, and resilience. Synthesis of TEK and restoration ecology reveals biomass harvest, by herbivores and fire, as critical to proper ecosystem function. Session 3 unifies TEK, restoration ecology, and agriculture to design restoration projects with herbivores that enhance nutrient cycles to the benefit of native diversity, soil health, and water quality. This includes the role of indigenous fire and traditional haying as a biomass harvest substitute. Session 4 develops a vision of working lands as dominant landscape features with humans as restoration agents reinforcing native ecosystem cohesion on private and public lands. The symposium concludes by discussing policies, programs, and infrastructure to achieve this vision.

CONCURRENT ORAL PRESENTATION SESSION #2

3:20 PM – 4:40 PM

Sub-Session A: 3:20 – 4:40 PM (Blackhawk) WETLAND, RIPARIAN & STREAM RESTORATION		
3:20 – 3:40	**Mary C Damm**	Voice from the Land: Hedgerow Restoration for Shrub-nesting Birds on an Iowa Farm
3:40 – 4:00	**Jason Pettit**	Restoring Wetlands and Prairies at the Midewin National Tallgrass Prairie
4:00 – 4:20	**Julie Bingham,** Jennifer Clark	State endangered brook trout recover following restoration of a coldwater stream in northeast Ohio

4:20 – 4:40	**Peter C. Smiley Jr.**[1], Darren J. Shoemaker[2], Robert B. Gillespie[3]	Relationships of fish communities with climatic variables in agricultural headwater streams in the Midwestern United States

Sub-Session B: 3:20 – 4:40 PM (John Deere) URBAN & PUBLIC LANDS RESTORATION		
3:20 – 3:40	**Anthony Randazzo**	Campus Greening: Bringing Natural Processes Back for Water, Habitat and Education
3:40 – 4:00	**Mark Fuka**	Urbanization may modify granivorous rodent activity, leading to areas of greater seed loss during direct seeding operations
4:00 – 4:20	**Brad Herrick,** David Drake, and Danielle Tanzer	Spatial and temporal dispersal dynamics of non-native invasive jumping worms across an urban-rural gradient
4:20 – 4:40	**Elle Buckvold-Beirne**	Walking Potatoes & Wilder-beasts: An Examination of the Socio-Ecological Relationship between Humans & Mammals in Urban Agriculture

ORAL PRESENTATION ABSTRACTS SESSION #2

(ALPHABETICAL ORDER)

Julie Bingham, Jennifer Clark. State endangered brook trout recovers following restoration of a coldwater stream in northeast Ohio. EnviroScience, Inc., Stow Ohio. Email: jbingham@enviroscienceinc.com, jeclark@enviroscienceinc.com.

Native brook trout are state endangered in Ohio, with Spring Brook (Geauga County) supporting one of the last remaining genetic populations in the state. The population suffered a steady 10-year decline from stream instability and reached alarmingly low numbers prompting restoration action. In 2021, a Priority 1 restoration approach was completed that stabilized the streambed, improved in-stream habitat, and reconnected the floodplain, setting the stage for trout recovery. The design-build project implemented strategies to install extensive woody revetments and create undercut banks, gravel spawning areas, and mid-riffle pool habitats for young of year fish. Habitat and macroinvertebrate and fish communities were monitored to evaluate changes in post-restoration. Habitat evaluation scores improved from 'Good' to 'Excellent' narrative ratings in just one year following restoration. Macroinvertebrates also improved with increases in Ephemeroptera, Plecoptera, and Trichoptera taxa from 1- to 3-years post-restoration. Adult trout abundance increased by more than 300% in year 1, suggesting quick recovery of brook trout. Year 3 fish sampling showed an increase in the number of juvenile and

adults comparatively to pre-restoration numbers. This case study is a successful example of collaboration between restoration practitioners and park staff to restore and protect an important population of this state endangered species.

Buckvold-Beirne, Elle. Walking Potatoes & Wilder-beasts: An Examination of the Socio-Ecological Relationship between Humans & Mammals in Urban Agriculture. York University of Environmental & Urban Change, Minneapolis, Minnesota. Email: ellebuckvoldbeirne@gmail.com

Most urban landscapes are a patchwork of built environments, ranging from high rises to river valleys, from highways to wildlife corridors. As these cityscapes continue to expand, they will attract both more humans and animals, which will in turn facilitate more interactions, positive and negative. Recent research has called for an increased focus in several areas: human-wildlife shared-use infrastructure, and urban agriculture as hotspots of biodiversity and small mammal conservation. Human-wildlife interactions and relationships are critical to ecological restoration, as it can impact funding, decision-making, and project or research outcomes. Researching interactions and understanding the relationships between people and animals is critical to developing strategies for engaging stakeholders and affected populations with species that may not always be cute, and are often sources of conflict, (coyotes, wolves, etc.). This project explores the positive and negative interactions and conflicts that arise between the people and wildlife that work, visit, and live in urban farms and community gardens. This involved an anonymous survey of people that work and grow in the research sites, and the use of trail cameras to capture the mammals that visited the sites. The study examined two urban agricultural sites from August to November 2022, in Toronto, Ontario. One urban farm and one community garden, both with proximity to urban wildlife habitat. The research displayed the complicated, nuanced relationship that growers had with the various species living in and benefitting from these miniature agricultural landscapes. The trail cameras at both sites captured numerous species, as well as several individuals who repeated their visits to the site. Conflicts at both sites generally arose from the eating and spoiling of crops by wildlife. However, some participants felt positively about their interactions with some species. This project's examination of socioecological relationships demonstrates the centrality of these relationships to ecological restoration, as stakeholders' mixed reactions show there is space for both conflict and acceptance in urban agriculture and ecological restoration projects. Future work to develop potential mitigation strategies to those conflicts, while promoting positive interactions is needed. Finding ways to create urban agricultural landscapes that are beneficial and welcoming for urban residents and wildlife is critical to creating a sustainable future.

Mary C Damm. Voice from the Land: Hedgerow Restoration for Shrub-nesting Birds on an Iowa Farm. Prairie Quest Farm, McGregor, IA. Emails: marydamm@gmail.com.

Iowa is one of the most ecologically altered states in the country and has the third least percentage of public land. Habitat restoration on private land, including farmland, is important for maintaining wildlife populations. Prairie Quest Farm is located in the Driftless Region of Northeast Iowa, near the bluffs of the upper Mississippi River and within the Effigy Mounds-Yellow River Forest Globally Important Bird Area. Seventy species of birds have been documented on the bird-friendly 120-acre farm. The majority of the farm is planted in cool-season pasture that is rotationally grazed by cattle and is nesting habitat for obligate grassland birds - Bobolink, Dickcissel, Eastern Meadowlark. Surrounding the pastures are hedgerows that vary in composition (herbaceous, shrub, tree, and vine) and density of vegetation. Denser

areas with native and non-native woody species provide habitat for shrub-nesting birds, including Gray Catbird, Brown Thrasher, Song Sparrow, and Northern Cardinal. Hedgerows were common features on Iowa farms in the past, but have been almost entirely removed for additional row-crop acres; however, in the United Kingdom, approximately 240,000 miles of hedgerows still exist and provide habitat for wildlife. I began restoring hedgerow habitat on Prairie Quest Farm in 2017 by planting native shrub and small tree seedlings and dormant hardwood cuttings of Chokeberry, Chokecherry, Downy Serviceberry, Elderberry, Gray Dogwood, Hazelnut, Nannyberry, Ninebark, Southern Arrowwood, and Wild Plum. The species selected have naturally occurring populations in the county or adjacent to the county of the farm and have preferred fruit and morphological features (branching patterns) for nests. As part of the restoration, non-native honeysuckle has been removed incrementally as the seedlings and cuttings grow to replace the honeysuckle nesting sites and food source. I will describe the progress of the restoration.

Mark Fuka. Urbanization may modify granivorous rodent activity, leading to areas of greater seed loss during direct seeding operations. University of Wisconsin-Madison, Madison, WI. Email: fuka@wisc.edu.

The activity of granivorous rodents can be linked to the magnitude of native tree seed consumption of important canopy species that provide both wildlife habitat and ecosystem services. While the practice of direct seeding native tree seeds can be an efficient and cost-effective restoration strategy to promote seedling recruitment, seed consumption by granivorous rodents is often a barrier to successful forest conservation. Moreover, expanding levels of urbanization and the subsequent spread of invasive species may lead to shifts in granivore activity across both space and time, further hindering successful management of critical ecosystems. Therefore, the ability to understand when and where rodent activity may be most altered by differences in local environmental conditions can provide insights into the viability of direct seeding implementation in a future shaped by global change. We used a large-scale manipulation of invasive shrubs (*Rhamnus cathartica*, *Lonicera maackii*) at 15 sites across a rural-to-urban forest gradient spanning Southern Wisconsin in summer and autumn to examine the effects that urbanization, invasion, and seasonality had on modifying rodent activity and granivory. We used two, 14-day deployment sessions to sample both rodent activity and seed loss of commonly occurring canopy species. Our findings reveal that eastern grey squirrels (Sciurus carolinensis) were most active in highly urban sites and were most associated with the loss of Quercus acorns, potentially hindering direct seeding success using acorns in urban centers. Also, our results demonstrated that seed mass was the key contributor to rodent seed preference and subsequent consumption, indicating a greater need for protection when using large seeds for direct seeding. This work outlines how the activity of seed-eating rodents may be dependent on forest landscape context, thereby revealing differences between urban and rural levels of seed loss following direct seeding.

Herrick, Brad, David Drake, and Danielle Tanzer. Spatial and temporal dispersal dynamics of non-native invasive jumping worms across an urban-rural gradient. University of Wisconsin-Madison, Madison, WI. Emails: bradley.herrick@wisc.edu

Pheretimoid earthworms of the family Megascolecidae are invading forests, gardens, and horticultural landscapes in North America. Three species, *Amynthas agrestis*, *A. tokioensis*, and *Metaphire hilgendorfi* (hereafter “jumping worms”) are leading the invasion and often co-occur. Through their feeding and burrowing behaviors, jumping worms modify soil structure and nutrient dynamics, reduce leaf litter, and affect plant health. These impacts can limit the success of habitat management and restoration efforts.

Anecdotal information suggests that jumping worms are most common in urban areas where they are moved with common gardening and landscape materials such as compost, mulch, and potted plants. However, no information exists on their presence and abundance in different land covers across an urban to rural gradient. In 2017 we surveyed for jumping worms in forests, grasslands, open spaces (turf grass parks), and paired residential gardens and lawns in Madison, WI. In 2022 we resampled the same sites and added rural sites of the same land covers. In both years, jumping worms were found in urban forests, open spaces, lawns, and gardens. They were not found in grasslands in either year. From 2017 to 2022, the abundance of jumping worms decreased across all urban land cover types (except grasslands). In rural areas in 2022, jumping worms were present in only two forests and one garden. In both years regardless of land cover type, the presence of jumping worms was strongly negatively correlated with the presence of non-native European earthworms (Lumbricidae). Additionally, the 2022 decrease in abundance of jumping worms was likely due to drought conditions during our survey. This study demonstrates that after 5 years, jumping worm populations in urban Madison, Wisconsin are relatively stable. Additionally, the fact that jumping worms were not present at most of the same land cover types in rural areas suggests that they simply have not been introduced to those sites, rather than not being suitable habitats. Preventing the introduction of jumping worms in rural habitats should be the priority. In invaded urban habitats, land managers may need to adjust restoration targets such as selecting plant species that are resilient to changes in soil structure and nutrients levels.

Jason Pettit. Restoring Wetlands and Prairies at the Midewin National Tallgrass Prairie. The Wetlands Initiative, Chicago, IL. Email: jpettit@wetlands-initiative.org.

The Midewin National Tallgrass Prairie is the second largest parcel of public open space in Illinois. Midewin was created in 1996 when the Joliet Army Arsenal was dissolved and the US Forest Service took ownership of the majority of the site. Land management efforts at Midewin include removing man-made infrastructure, incorporating agricultural land uses, and restoring native plant and animal communities. The Wetlands Initiative has been partnering with the Forest Service and many other organizations since 1998 to restore and manage nearly 5000 acres. This presentation will highlight these efforts, focusing mainly on the recently completed 2000 acre Glacial Prairie Plain project. Glacial Prairie Plains was complex and included many simultaneous moving activities. These included demolition of Army Arsenal era infrastructure, restoring topography and hydrology, utilizing row crops and cattle grazing, tree removal, invasive species control and introduction of native wetland and prairie plant communities.

Anthony Randazzo. Campus Greening: Bringing Natural Processes Back for Water, Habitat and Education. South Washington Watershed District, Woodbury, MN. Email: tony.randazzo@swwdmn.gov

Watershed Districts and Conservation Organizations are always looking for areas to make a meaningful difference in expansion of habitat and natural cover but often look past opportunities right at our feet. The Campus Greening Program is an ongoing collaboration between the South Washington School District and the South Washington Watershed District using an ecosystem based approach to address water quality by restoring and enhancing large open spaces on campuses in lieu of installing more conventional treatment practices like ponds and infiltration basins. The Districts have restored more than 50 acres of prairie, wetland and savanna on school campuses. Where possible, the Districts are involving students and staff, as well as city and state agencies to help expand natural areas on campuses and connect these to larger regional landscapes. Native plants and their natural communities develop deep roots, build

healthy soils and infiltrate stormwater where the rain falls. They also provide sources of food and habitat for a broad range of animal species. The program has been an incubator for education activities, attracting community members and organizations, students, teachers, and professional staff in engaging in hands-on habitat restoration in the field. In-classroom educational programs spurred by the program are reaching all students as they move through the middle schools located within the Watershed District.

Peter C. Smiley Jr.[1], Darren J. Shoemaker[2], Robert B. Gillespie[3]. Relationships of fish communities with climatic variables in agricultural headwater streams in the Midwestern United States. USDA Agricultural Research Service[1], Columbus, OH., Mississippi State University[2], Starkville, MS., Purdue University Fort Wayne[3], Fort Wayne, IN. Email: rocky.smiley@ars.usda.gov, ds2951@msstate.edu, rbgilles23@gmail.com.

Climatic variables of air temperature and precipitation have been identified as important determinants of the distribution and abundance of fish species in streams within the Midwestern United States. However, the influence of climatic variables on fish communities in channelized agricultural headwater streams has not been documented. Channelized agricultural headwater streams are common throughout the region. Understanding the relationships of fish communities in these small streams with climatic variables will provide information on the types of restoration practices that will be most beneficial to fishes. Our research questions were: 1) what is the relationship of fish community structure with climatic variables in channelized agricultural headwater streams in northeast Indiana and central Ohio? and 2) is fish community structure in these streams better predicted by climatic variables or stream variables? We sampled fishes, compiled climatic data, and measured water temperature and hydrologic variables from 10 channelized agricultural headwater streams in northeast Indiana and central Ohio for 14 years. Mixed effects modeling indicated that fish diversity, abundance, and relative abundance of coolwater fishes, intermediate tolerant fishes, Percidae, Cyprinidae, planktivores, carnivores, brood hiders, and headwater fishes increased ($p < 0.05$) with increasing precipitation. Fish evenness and the relative abundance of insectivores, guarder-substrate choosers, and headwater fishes decreased ($p > 0.05$) with increasing air temperature. Additionally, hydrologic variables were better predictors of fish community structure than climatic variables. Our results indicate that fish community structure in channelized agricultural headwater streams in the Midwestern United States is influenced by climatic and hydrologic variables. Thus, the adoption of restoration practices that can moderate water temperatures and reduce the frequency of stream drying will benefit fish communities in these streams.

OFF-SITE FIELD TRIPS

Grant Fessler. Fire on the Bluff: Exploring a Fire-maintained Oak Woodland at Black Hawk State Historic Site. Quad Cities Chapter of the Illinois Native Plant Society; Chicago Botanic Garden, Rock Island, IL. Email: fesslergrant@gmail.com. **Meeting Time: 10:00 AM**

Field participants should meet at the lower Rock River parking lot located just southwest of the intersection of 24th St and Black Hawk Road (41.464288, -90.566461). Please wear sturdy footwear and expect 300ft of elevation gain/loss.

Join us in exploring a fire-maintained, rocky oak woodland at Black Hawk State Historic Site in Rock Island, IL. Local botanist and stewardship organizer, Grant Fessler, will guide attendees on a moderate 1-mile loop hike over the bluff that overlooks Rock River. The hike will focus on the history of the site, its unique flora, and on-going stewardship activities (prescribed fire, invasive control, canopy thinning).

Come explore a rocky, fire-maintained oak woodland at Black Hawk State Historic Site in Rock Island, IL. Local botanist and stewardship organizer, Grant Fessler, will guide attendees on an interpretive hike focused on history of the site, its unique flora, and on-going stewardship activities.

Stephen Hager, Rob Liva. Collinson Ecological Preserve, Milan, IL. Augustana College, Rock Island, IL. Hibiscus Ecological Services[1]. Email: stevehager@augustana.edu. **Meeting Time: 9:00 AM**

Field participants should meet at the Collinson Ecological Preserve at 2313 83rd Ave, Milan IL (41.437378, -90.552420). Please wear sturdy footwear.

Collinson Ecological Preserve (Milan, IL; 75 acres) is owned by Augustana College and consists predominantly of upland hardwood forest on top of relatively steep undulating ravines and includes two globally imperiled high quality native loess hill prairie openings. The hill prairies along with a geologically significant limestone cliff form the Josua Lindahl Hill Prairies Nature Preserve (20 acres), which is a dedicated state nature preserve to assist Augustana in protecting the hill prairies and geology as well as endangered and threatened species in perpetuity and is part of the Illinois Nature Preserves System. Management at Collinson includes invasive species control, prescribed burns, vegetation monitoring, woodland savanna restoration, seed collection and focused broadcast/dispersal, and inventories of fungi, plants, pollinators, and vertebrates, and is completed by Augustana faculty and students, experienced contractors, agency/government biologists, and numerous dedicated volunteers. Mill Creek runs along the western edge of the preserve (adjacent to the hill prairies); several species of native mussels were observed within Mill Creek and Little Creek, which is spring fed and south to north through the middle of the site. Participants will hike through the site with experienced trip leaders on well-established trails to observe areas, including the hill prairies, where management is currently happening; leaders will also identify and highlight plant and animal species of interest.

Collinson Ecological Preserve (Milan, IL; 75 acres) is made up of upland hardwood forest and two high quality native hill prairie openings. Management at Collinson seeks to maintain health and functioning of all habitats. Participants will hike though management sites and will have opportunities to observe plant and animal species.

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Dale Maxson. Land of the Swamp White Oak - fire, cattle and floods. The Nature Conservancy, Letts, IA. Email: dmaxson@tnc.org. **Meeting Time: 10:00 AM**

Field participants should meet at Swamp White Oak Preserve at 1335 231st St, Letts, IA 52754. Participants should pack their own lunch and be prepared to hike in a semi-wild environment. Closed-toe shoes, long pants, water bottles and anything else folks need to stay comfortable. Stinging insects, thorns and poison ivy are common.

Land of the Swamp White Oak is a nature preserve owned and managed by The Nature Conservancy in Iowa. With nearly 5000 acres protected along the banks of the Cedar River, this growing project features lowland oak savanna, channel fen, sand prairie and numerous other habitat types. Located approximately 10 miles west of Muscatine, this preserve also sits in the heart of the Amphibian and Reptile Conservation Area and is one of the richest landscapes in the state of Iowa. Prescribed fire, conservation grazing and invasive species management are the main restoration tools being used on this landscape scale project.

Join us for a hike at Land of the Swamp White Oak where we will discuss prescribed fire, conservation grazing using virtual fence technology and invasive species management in a species-rich environment.

Brian Ritter, Amy Loving. Nahant Marsh- 25 Years of Restoring an Urban Wetland Oasis. Nahant Marsh Education Center, Davenport, IA. Emails: brian@nahantmarsh.org, amy@nahantmarsh.org. **Meeting Time: 9:00 AM**

Field participants should meet at the Nahant March Education Center located at 4220 Wapello Ave, Davenport, IA 52802. Please wear sturdy footwear. Nahant is very accessible. There are boardwalks, hiking trails, a bird blind, and an education center.

Founded in 2000, following an EPA Superfund Clean-up, Nahant Marsh is a story of a resilient ecological restoration. Nahant is the largest urban wetland on the Upper Mississippi River and is home to over 1,100 documented species of plants and animals. Nahant Marsh has marshland, sedge meadows, mesic and sand prairies, and bottomland forests. We will explore a recent wetland restoration project that is part of a mitigation bank.

The trip will highlight Nahant's recent wetland and stream mitigation banks and some of the rare species that call the marsh home.

Rich Stewart. Copperas Creek Restoration and BMP Installation. Rock Island Soil and Water Conservation District, Milan, IL. Email: rstewart@rockislandswcd.org. **Meeting Time: 9:00 AM**

Field participants should meet at 41.3738, -90.9656. Please wear sturdy footwear.

Review stream restoration and other Best Management Practice projects in the Copperas Creek watershed in Rock Island County. The RISWCD developed a resource plan for Copperas Creek in 2013. From that plan, funding was obtained from the IL EPA office for BMPs in Copperas Creek under their 319 Grant program. Two cycles of funding were used to install structural practices such as streambank stabilization, dry dams, water and sediment control basins, filter strips, and grassed waterways.

On site review of several BMP practices installed in Copperas Creek watershed to address resource concerns including gully and rill erosion, streambank stabilization, and view no-till and cover crop practices in the field.

Joel Vanderbush, Bri Opyd. Niabi Zoo Habitat Restoration Tour. Niabi Zoo, Coal Valley, IL. Emails: jvanderbush@niabizoo.com, education@niabizoo.com. **Meeting Time: 9:00 AM**

Field participants should meet at the Niabi Zoo at 13010 Niabi Zoo Rd, Coal Valley, IL 61240. Participants will go to the Administration Building door located to the right of the Zoo Admission Gates. In addition to walking through the Zoo, there will be hiking on forest trails to see restoration areas.

Niabi Zoo is a 40 acre conservation park situated in a 287 acre Rock Island County Forest Preserve with over 600 animals representing more than 160 species. Niabi Zoo cares for 24 species threatened with extinction. It was also the first site in Rock Island County to rediscover Rusty Patched Bumble Bees in 2018. Within this forested site is nearly 20 acres of restored prairie and pollinator gardens. Niabi Zoo has worked diligently since 2016 to attract pollinators and provide for their long-term well being.

Tour Niabi Zoo's forested grounds to discover conservation on a local and global level. Explore acres of restored prairie and pollinator habitat both on-grounds and within the surround forest preserve. Niabi Zoo has worked diligently to attract pollinators and provide for their long-term well-being.

Participants will go to the Administration Building door located to the right of the Zoo Admission Gates.

Darin Voss. Ringneck Marsh Wildlife Area Wetland Restoration Tour. Natural Resource Technician, Clinton County Conservation, Grand Mound, IA. Email: DVoss@clintoncounty-ia.gov. **Meeting Time: 10:00 AM**

Field participants should meet at 2000-2148 150th Avenue, Wheatland, IA 52777 (41.880022, -90.801123), approximately 3 miles northwest of Calamus. Please wear sturdy footwear.

The Ringneck Marsh Wildlife Area complex lies adjacent to the Wapsipinicon River in rural Clinton County, Iowa, and is managed by the Clinton County Conservation Board (CCCB). This complex is 330 acres and has approximately 70 acres of restored/constructed oxbow and meander wetlands. The complex is made up of three tracts that were in row-crop agriculture prior to being restored to wetlands/prairie. The three areas were acquired and restored in different years - under different conditions and with different seeding plans. The original Yegge tract is 160 acres and acquired in 2009. The Mangelsen addition is 90 acres and acquired in 2012, while the Hoffmann addition is the most recently acquired piece in 2017 and is 80 acres. The Yegge and Mangelsen tracts were enrolled into the Wetland Reserve Program (WRP) before being acquired by the CCCB. The excavation work and seeding plans were developed and contracted out through the Natural Resources Conservation Service (NRCS). The CCCB was subcontracted to do the seeding and establishment maintenance of the Mangelsen addition. The restoration work of the Hoffmann addition was completed entirely after acquisition. The NRCS assisted with the wetland restoration plans. Funding was provided by North American Wetland Conservation Act (NAWCA) for the shallow wetland excavations, and the seed was provided by a Monarch Butterfly Flyways Grant through the Iowa Natural Heritage Foundation. The Yegge restoration took place in 2007/08, the Mangelsen in 2011/12 and Hoffmann in 2019/20. If interest warrants, a smaller wetland restoration completed in 2015 on the Mockridge Preserve 0.5 miles east of Ringneck Marsh may also be visited.

The Ringneck Marsh Wildlife Area complex lies adjacent to the Wapsipinicon River in rural Clinton County, Iowa. This complex is 330 acres with approximately 70 acres of restored/constructed oxbow and meander wetlands. The complex consists of three tracts that were in row-crop agriculture prior to restoration to wetlands/prairie.

Ringneck Marsh/ Mockridge Wetlands

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Greg Wahl. Hahnaman Sand Prairie and Keefe Prairie. Greg and Beth Wahl Foundation, Sterling, IL. Email: gregwahl@me.com.

Field participants should meet at the field entrance at 41.6139, -89.6521. Please wear sturdy footwear. Contact Greg at (563) 613-3609 for any questions.

373 acre Hahnaman Sand Prairie and the nearby 10.6 acre Keefe Prairie lie in southeastern Whiteside County, Illinois. The restoration goal is pre-settlement biodiversity. These properties contain outstanding remnants and extensive in-process and restored shortgrass prairie and sand dunes. A number of rare sand-related species are present. These properties are protected by a private nonprofit foundation. A number of restoration practices employed, and the challenges faced by the property owner will be explained onsite. You should see plenty of violets and other spring sand prairie flowers blooming leading the continuous progression from April until October. If you're lucky, you'll see some threatened and endangered species on this tour.

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ABOUT THE SER MIDWEST-GREAT LAKES CHAPTER

We are a non-profit organization that was recognized by SER as a regional chapter in March 2008. The Chapter serves a seven-state region of Ohio, Indiana, Michigan, Illinois, Wisconsin, Minnesota, and Iowa.

Mission*:* To promote the science and practice of ecological restoration to assist with the recovery and management of degraded ecosystems within the Midwestern and Great Lakes regions.

Membership Benefits

- *Opportunity to network with colleagues and showcase your work at annual chapter meetings and state level events held throughout the year*.
- *Reduced chapter meeting registration rates*
- *Chapter communications consist of the Restoration News Midwest blog and other social media streams that highlight regional ecological restoration issues, news, projects, and practitioners*.
- *Opportunities to promote ecological restoration-related events and discuss ecological restoration-related issues though the chapter social media*.
- *Webinars on relevant restoration topics in the region*
- *Student members eligible to apply for research and practice grants through our Student Grant Program*
- *Membership within our international parent society*

Interested in becoming a member? See *http://chapter.ser.org/midwestgreatlakes/*