

Emily Wedel

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Research Interests

grassland and savanna ecology, plant ecophysiology, woody encroachment, disturbance ecology

Appointments

2025 – Present **NSF Postdoctoral Fellow**, University of Notre Dame
Mentors: Dr. Tyler Coverdale and Dr. Jason McLachlan

2024 – Present **Society of Science Postdoctoral Research Fellow**, University of Notre Dame
Mentor: Dr. Tyler Coverdale

Education

2024 **Ph.D., Biology**, Kansas State University
Advisor: Dr. Jesse Nippert

2019 **M.S., Biology**, Kansas State University
Advisors: Dr. Jesse Nippert and Dr. David Hartnett

2016 **B.A., Biology**, Bethel College, Summa Cum Laude

External Grants

Title	Role	Agency	Duration	Amount
From individuals to landscapes: scaling plant carbon tradeoffs in African savannas	PI	NSF (PRFB)	7/1/2025 – 6/30/2028	\$270,000

Research Fellowships and Awards

2025 NSF Postdoctoral Research Fellowship in Biology (\$270,000)

2024 Society of Science Postdoctoral Fellowship, University of Notre Dame (\$66,000)

2023 KSU Division of Biology Michael Scott Watkins Graduate Student Teaching Award (\$1000)

2021 KSU Division of Biology John C. Frazier Plant Science Award (\$1000)

2018 Sunset Zoo Science Communication Fellowship, Portal to the Public, Manhattan, KS

Peer-Reviewed Publications (7 published; 1 in revision)

* Indicates graduate student co-author

8. O'Connor RC, Wilcox KR, Koerner SE, Komatsu KJ, **Wedel ER**, Avolio ML. In Revision. Cutting, herbicide and fire: a case study for managing woody plants in tallgrass prairie. *Restoration Ecology*.
7. Pau S, *Slapikas R, *Ho CL, Bayliss S, Donnelly R, *Abdullahi A, Helliker B, Nippert J, Riley W, Still C, **Wedel E**, Griffith D. 2025. Hyperspectral leaf reflectance of grasses varies with evolutionary lineage more than site. *Ecosphere*, 16(4), e70257. <https://doi.org/10.1002/ecs2.70257>

6. **Wedel ER**, Ratajczak Z, *Tooley EG, Nippert JB. 2025. Divergent resource-use strategies of encroaching shrubs: Can traits predict encroachment success in tallgrass prairie? *Journal of Ecology*, 113(2), 339-352. <https://doi.org/10.1111/1365-2745.14456>
5. *Donnelly RC, Nippert JB, **Wedel ER**, Ferguson CJ. 2024. Grass leaf structural and stomatal trait responses to climate gradients assessed over the 20th century and across the Great Plains, USA. *AoB Plants*, 16(5), plae055. <https://doi.org/10.1093/aobpla/plae055>
4. **Wedel ER**, Nippert JB, O'Connor RC, Nkuna P, Swemmer A. 2024. Repeated clearing as a mechanism for savanna recovery following bush encroachment. *Journal of Applied Ecology*, 61(7), 1520-1530. <https://doi.org/10.1111/1365-2664.14666>
3. *Donnelly RC, **Wedel ER**, Taylor JH, Nippert JB, Helliker B, Riley W, Still CJ, Griffith DM. 2023. Evolutionary lineage explains trait variation among 75 coexisting grass species. *New Phytologist*, 239(3), 875-887. <https://doi.org/10.1111/nph.18983>
2. **Wedel ER**, Nippert JB, Hartnett DC. 2021. Fire and browsing interact to alter intra-clonal stem dynamics of an encroaching shrub in tallgrass prairie. *Oecologia*, 196(4), 1-10. <https://doi.org/10.1007/s00442-021-04980-1>
1. **Wedel ER**, O'Keefe K, Nippert JB, Hoch B, O'Connor RC. 2021. Spatio-temporal differences in leaf physiology are associated with fire, not drought, in a clonally integrated shrub. *AoB Plants*, 13(4), plab037. <https://doi.org/10.1093/aobpla/plab037>

Book Chapters (1)

1. Nippert JB, Bachle S, Keen RM, **Wedel ER**. Climate change in grassland ecosystems: current impacts and potential actions for a sustainable future. 2022. In: Groskinsky B (ed) *Climate Action: Local Applications and Practical Solutions*.

Research Grants

2024	Notre Dame Linked Experimental Ecosystem Facility Research Grant (\$1,000)
2022	Mary A. Bancroft Memorial Scholarship, Kansas Native Plant Society (\$1,000)
2022	Rachel Snyder Memorial Scholarship, Grassland Heritage Foundation (\$1,000)
2015	Undergraduate Research, Internships, and Creative Activities, Bethel College (\$1,500)
2013	Research, Internships, and Careers in Health and the Environment, Bethel College (\$2,000)

Teaching Experience (7 courses; 12 semesters)

2021, 2023	Co-Instructor , BIOL495 Savanna Ecology, Kansas State University Co-developer and lecturer.
2020 – 2022	Co-Instructor , BIOL501 Plant Physiology Laboratory, Kansas State University Designed and led lab activities, lecture material, and guided independent projects.
2022	Co-Instructor , BIOL495Z Savanna Ecology Field Course, Kansas State University Co-led a two-week field course in South Africa for undergraduate students.
2021	Instructor on record , BIOL632 Ecology Laboratory, Kansas State University Wrote labs and led online and in-person activities, including independent projects.
2020	Co-Instructor , BIOL632 Ecology Laboratory, Kansas State University
2019	Graduate Teaching Assistant , BIOL201 Organismic Biology, Kansas State University
2018	Graduate Teaching Assistant , BIOL551 Taxonomy of Flowering Plants, Kansas State University
2017, 2018	Graduate Teaching Assistant , BIOL198 Principles of Biology, Kansas State University
2014 – 2016	Teaching Assistant , Bethel College Summer Science Institute

Advised 90 high school students at a week-long science intensive in environmental and molecular biology. This institute is designed to increase interest in STEM for 1st generation college students.

Oral Presentations (first author only; 16)

* Indicates invited talk

- 2025 Savanna Science Network Meeting, Kruger National Park, South Africa
“Effects of herbivory and rainfall on intraspecific variation in herbaceous species”
- 2024 *Guest Lecture, General Ecology, University of Notre Dame, Notre Dame, IN
- 2024 *Guest Lecture, St. Mary’s University women in ecology series, South Bend, IN
- 2024 *Guest Lecture, Savanna Ecology class, St. Edward’s University, Austin, TX
- 2023 Ecological Society of America, Portland, OR
“Impacts of the magnitude, timing, and depth of water availability on above and belowground savanna dynamics”
- 2023 Savanna Science Network Meeting, Kruger National Park, South Africa
“Impacts of the magnitude, timing, and depth of water availability on above and belowground savanna dynamics”
- 2023 Biology Graduate Student Research Forum, Manhattan, KS
“Impacts of altered water availability on above and belowground savanna dynamics”
- 2022 *Ecological Society of America, Montreal, Canada, organized oral session
“Clonal shrubs: what traits drive encroachment in tallgrass prairie?”
- 2021 International Grassland and Rangeland Congress (virtual)
“Lowveld savanna bush cutting alters tree-grass interactions”
- 2021 Biology Graduate Student Research Forum, Manhattan, KS
“Repeated tree cutting alters tree-grass dynamics in lowveld savannas”
- 2019 *Manhattan High School
“Konza Prairie: life on the tallgrass prairie”
- 2019 Biology Graduate Student Research Forum, Manhattan, KS
“Demography of an encroaching shrub in response to fire, browsing and grazing in tallgrass prairie”
- 2019 Kansas State University Graduate School Research Forum, Manhattan, KS
“Effects of fire and herbivory on a shrub expanding into tallgrass prairie”
- 2019 Society for Range Management Annual Meeting, Minneapolis, MN
“Demography of an encroaching shrub in response to fire and herbivory in tallgrass prairie.”
- 2019 Kanas Natural Resource Conference, Manhattan, KS
“Effects of fire and herbivory on the demography of *Cornus drummondii* in tallgrass prairie”
- 2016 Undergraduate Research, Internships, and Creative Activities Symposium, North Newton, KS
“Allelopathic effects of eastern red cedar on big bluestem and wheat seedlings”

Poster Presentations (presented by ERW; 4)

- 2023 Konza Prairie LTER Annual Meeting and Site Review, Manhattan, KS
“Physiological traits differentiate encroaching shrubs in tallgrass prairie”
- 2022 Konza Prairie LTER Annual Meeting, Manhattan, KS
“What traits drive encroachment of woody shrubs in tallgrass prairie?”
- 2022 Savanna Science Network Meeting, Kruger National Park, South Africa
“Tree-grass coexistence under altered rainfall regimes”
- 2018 Long Term Ecological Research All Scientists Meeting, Pacific Grove, CA
“Demography of *Cornus drummondii* in tallgrass prairie”

Mentorship Experience

* *Indicates co-authored publication,*

- 2024 – Present **Noah Hanisch**
College of Science Summer Undergraduate Research Fellow, University of Notre Dame
Independent project: Savanna tree defense investment across rainfall and herbivory gradients
- 2024 – Present **Max Scheel**
Ph.D. student, University of Notre Dame
Dissertation topic: Structure-function relationships in restored tallgrass prairies
- 2023 **Taylor Rodriguez-Blash**
NSF Research Experience for Undergraduates student, Kansas State University
Independent Project: Bison impacts on grass physiology
- 2020 – 2022 ****Ryan Donnelly**
Undergraduate and master's student, Kansas State University
Thesis: The amazing diversity of Poaceae: trait variation across space, time, and lineage
- 2020 – 2022 ***Emmett Tooley**
Master's student, Kansas State University
Thesis: The unique canopy structure, leaf morphology, and physiology of *Cornus drummondii*
- 2020 – 2022 **Sarah Shaffer**
Undergraduate laboratory technician, Kansas State University
Field experience and plant physiology equipment

Travel Awards

- 2017 – 2022 Institute for Grassland Studies Travel Scholarship, Kansas State University (\$1435)
College of Arts and Sciences Travel Scholarship, Kansas State University (\$1600)
Biology Graduate Student Travel Grant, Kansas State University (\$1000)
Graduate Student Council Travel Grant, Kansas State University (\$350)

Journal Reviewer

American Journal of Botany, Ecological Applications, Ecology Letters, Flora, Functional Ecology, Global Change Biology, Grass and Forage Science, Journal of Arid Environments, Oecologia, PeerJ, Plant Ecology, Trees

Service and Outreach

- 2024 **Association for Women in Science Mentor**, University of Notre Dame
- 2023 **Co-organizer**, Savanna Science Soils Working Group
Workshop held in Kruger National Park, South Africa
- 2018 – 2023 **Graduate Student Konza Prairie Biological Station Guide**
Led educational tours of Konza Prairie Biological Station to K-12 and adult groups focused on the natural history and ecology of the tallgrass prairie.
Konza Prairie Volunteer, Konza Prairie Biological Station
Assisted with prescribed burns.
- 2019, 2020 **Society for Range Management**, Website Judge
Judge for SRM chapter website information designed by undergraduate students
- 2019 **Science Snapshots Writer and Reviewer**, Kansas State University
Wrote and reviewed blog posts for Science Snapshots, a science communication blog started by biology graduate students at Kansas State University

Science Festival, SciComm Conference, Manhattan, KS

Participant in the Kansas Science Communication Initiative conference. Led a community outreach activity on water transport in plants.

2018

Safari Edventure Day, Sunset Zoo, Manhattan, KS

Designed and led an activity for over 150 4th – 6th grade students on clonal growth in plants.

Girls Researching Our World (GROW) Workshop, Manhattan, KS

Facilitated an activity for over 50 5th-7th grade girls at the summer workshop. GROW is a program focused on encouraging female students interested in science.

Treasurer, Biology Graduate Student Association, Kansas State University