

CURRICULUM VITAE

CHAD R. ZIRBEL

ECOLOGY, EVOLUTION, & BEHAVIOR DEPARTMENT, UNIVERSITY OF MINNESOTA
ECOLOGY BUILDING
1987 UPPER BUFORD CIR, RM 513
ST PAUL, MN 55108
EMAIL: ZIRBE032@UMN.EDU
WEBPAGE: CRZIRBEL.GITHUB.IO

PROFESSIONAL APPOINTMENTS

Postdoctoral Associate University of Minnesota, Cedar Creek ESR 2018-Present
Advisors: Forest Isbell and David Tilman

EDUCATION

Graduate Michigan State University, East Lansing, MI 2012-2018
Plant Biology Ph.D. Program
Ecology, Evolutionary Biology, and Behavior Program
Committee: Lars Brudvig (Chair), Kay Gross,
Jen Lau, Elena Litchman

Undergraduate University of Wisconsin-Madison, Madison, WI 2008-2012
Majors: Conservation Biology;
Honors in Geography; Environmental Studies
Thesis Advisor: Jack Williams

MANUSCRIPTS

Zirbel, C.R. and L.A. Brudvig (2020). Trait-environment interactions affect plant establishment success during restoration. *Ecology*.

Kattge, J., G. Bönsch, S. Díaz, S. Lavorel, I.C. Prentice, P. Leadley, S. Tautenhahn, G. Werner, ... **C. R. Zirbel**,... and C. Wirth (2019). TRY plant trait database - enhanced coverage and open access. *Global Change Biology*. 00:1–70

Lau, J.A., S. Magnoli, **C.R. Zirbel**, and L.A. Brudvig. (2019). The limits to adaptation in restored ecosystems and how management can help overcome them. *Annals of the Missouri Botanical Garden* 104:441-454.

Zirbel, C.R., Grman, E. Bassett, T., Brudvig, L.A. (2019). Landscape context explains ecosystem multifunctionality in restored grasslands better than plant diversity. *Ecology*, 100(4):e02634.

Grman, E., **C.R. Zirbel**, T. Bassett, and L.A. Brudvig. (2018). Ecosystem multifunctionality increases with beta diversity in restored prairies. *Oecologia*, 188: 837–848.

Zirbel, C.R., E. Grman, T. Bassett, and L.A. Brudvig. (2017). Plant functional traits and environmental conditions shape community assembly and ecosystem functioning during restoration. *Journal of Applied Ecology*.

Brudvig, L.A., R.S. Barak, J.T. Bauer, T.T. Caughlin, D.C. Laughlin, L. Larios, J.W. Matthews, K.L. Stuble, N.E. Turley, **C.R. Zirbel**. (2017). Interpreting variation to advance predictive restoration science.

Grman, E., Bassett, T., **Zirbel, C.R.**, Brudvig, L.A. (2015), Dispersal and establishment filters influence the assembly of restored prairie plant communities. *Restoration Ecology*.

- Awarded the 2016 Bradshaw Medal, Society of Ecological Restoration

Larkin, D. J., Steffen, J. F., Gentile, R. M. and **Zirbel, C. R.** (2014), Ecosystem Changes Following Restoration of a Buckthorn-Invaded Woodland. *Restoration Ecology*, 22: 89–97.

Gill, J. L., McLauchlan, K. K., Skibbe, A. M., Goring, S., **Zirbel, C. R.**, Williams, J. W. (2013), Linking abundances of the dung fungus *Sporormiella* to the density of bison: implications for assessing grazing by megaherbivores in palaeorecords. *Journal of Ecology*, 101: 1125–1136.

PUBLISHED DATASETS AND CODE

Zirbel, C.R., Bassett, T., Grman, E. & Brudvig, L.A. (2017). Data from: Plant functional traits and environmental conditions shape community assembly and ecosystem functioning during restoration. Dryad Digital Repository, <https://doi.org/10.5061/dryad.2175q>

Chad Zirbel. (2019, January 8). czirbel/Zirbel_etal_2019_eco: First release of archived code (Version v1.0.0). Ecology. Zenodo. <http://doi.org/10.5281/zenodo.2535844>

Zirbel, Chad; Brudvig, Lars (2019), Data from: Trait–environment interactions affect plant establishment success during restoration, v2, Dryad, Dataset, <https://doi.org/10.5061/dryad.bnzs7h46q>

PRESENTATIONS

Zirbel, C.R. The effect of bison reintroduction on Minnesota oak savanna. *Cedar Creek Nature Talks*. Anoka County Library. 2019.

Zirbel, C.R. One year of bison at Cedar Creek. *Lunch with a scientist*. Cedar Creek ESR. 2019.

Zirbel, C.R., D. Tilman, F. Isbell. Bison grazing increases productivity in Minnesota oak savanna. *ESA Annual Meeting*. 2019.

Zirbel, C.R. and L.A. Brudvig. Trait environment interactions predict seedling establishment. *ESA Annual Meeting*. 2018.

Zirbel, C.R. Interpreting variation in restoration outcomes: functional traits shape community assembly and ecosystem functioning. *Invited seminar* Plant Biology Department, Michigan State University. 2017.

Zirbel, C.R., E. Grman, and L.A. Brudvig. Can trait similarity and environmental conditions predict community invasibility? *ESA Annual Meeting*. 2017.

Zirbel, C.R. Interpreting variation in restoration outcomes: the role of plant functional traits in shaping community assembly and ecosystem functioning. *Invited seminar* USGS Wetland Aquatic research center. 2016.

- Zirbel, C.R.**, E. Grman, T. Bassett, and L.A. Brudvig. In what ways do taxonomic, functional, and phylogenetic diversity predict ecosystem multi-functionality during restoration? *ESA Annual Meeting*. 2016.
- Grman, E., **Zirbel, C.R.**, Bassett, T., Brudvig, L.A. Beta diversity and dominant species each contribute to ecosystem multifunctionality in restored prairies. *ESA Annual Meeting*. 2016.
- Zirbel, C.R.**, E. Grman, T. Bassett, and L.A. Brudvig. Do functional traits predict plant assemblages and ecosystem functioning of restored prairies? *SER MWGL Annual Meeting*. 2016.
- Zirbel, C.R.**, E. Grman, T. Bassett, and L.A. Brudvig. Functional traits as predictors of community assembly and ecosystem function in restored prairies. *Invited presentation. ESA Annual Meeting*. 2015.
- Bassett, T., L.A. Brudvig, E. Grman, and **C.R. Zirbel**. Biomass stability lower in diverse restored grasslands. *ESA Annual Meeting*. 2015
- Zirbel, C.R.** A multi-proxy approach to understanding paleoclimate and its relation to environmental change: Silver Lake, OH, USA. *Senior Honor Thesis presented to the University of Wisconsin-Madison Department of Geography*. 2012.
- Larkin, D.J., J.F. Steffen, R.M. Hesselink, and **C.R. Zirbel**. Restoration of a buckthorn-invaded woodland enhances carbon-storage ecosystem services. Forest Preserve District Science and Research Symposium, Chicago, IL. Apr 19, 2012.
- Zirbel, C.R.**, J.L. Gill, J.W. Williams (2011). Playing in the Mud: Climatic and Ecological Lessons from the Past. *Integrated Biological Science – Summer Research Program Symposium*. Madison, WI.
- Zirbel, C.R.**, J.L. Gill, J.W. Williams (2011). XRD and Stable Isotope Analysis of Sediments from Silver Lake, Ohio, USA: A Paleoclimatic Reconstruction. *Integrated Biological Science – Summer Research Program Symposium*. Madison, WI.
- Zirbel, C.R.**, D. Larkin, & J. Steffen (2010). Effects of *Rhamnus cathartica* (common buckthorn) invasion and restoration on woodland carbon sequestration.
- *Chicago Botanic Garden Undergraduate Research Symposium*, Glencoe, IL. 2010.
 - *University of Wisconsin-Madison Undergraduate Research Symposium*, 2011.
 - *Ecological Society of America Annual Meeting*, Austin, TX, 2011.

OTHER MEDIA

A common currency for connecting the goals of restoration: plant traits can help us understand how plant communities form and help ecosystems function. *The Applied Ecologists Blog*. [Link](#)

Meet the Scientist: Chad Zirbel. Field Notes: Cedar Creek ESR Newsletter. Summer 2018. [Link](#)

Savannas and Bison at Cedar Creek. East Bethel Bulletin. Fall 2018. [Link](#)

Minnesota seeks to protect vital ecosystems with hungry bison. BTN LiveBIG. 2019-20. [Link](#)

Cedar Creek Research Project Is Studying the Impacts of Bison. North Metro TV. 2019. [Link](#)

FUNDING

National Science Foundation Graduate Research Internship Program (2016-2017) \$5,000
National Science Foundation Graduate Research Fellowship (2014-2017) \$138,000
Kellogg Biological Station Summer Research Fellowship (2013-2016) \$10,000
MSU College of Natural Sciences, Dissertation completion fellowship (Spring 2018) \$7,500
MSU Graduate School writing fellowship (2017-2018) \$2,000
Paul Taylor Travel Grant, *Plant Biology, MSU* (2013-2018) \$3,900

AWARDS & ACHIEVEMENTS

Bessey Award for Best Publication, Plant Biology Department, MSU (2018)
Bessey Award, Outstanding Graduate Research, Plant Biology Department, MSU (2017)
Best undergraduate presentation. Ecological Society of America, Student Section (2011)
Highly Commended Presentation, Chicago Botanic Garden Undergraduate Research Symposium (2010)

TEACHING EXPERIENCE

Teaching Assistant, Biological Sciences Department 8/2012-5/2013
Cells and Molecules lecture (BS161) & lab (BS171)
Organisms and Populations lab (BS172)

Zoology Department 8/2013-5/2014
Ecology Lab (ZOL355L)
Fundamental Genetics (ZOL341)

Kellogg Biological Station 5/2014-8/2014 & 5/2016-8/2016
Plant Systematics (PLB418)
Wetland Ecology and Management (FW417)

Plant Biology Department 8/2017-12/2017
Plant Ecology (PLB 441)

Guest lecture
Senior Seminar (PLB499) 2013-2015 “Applying for graduate school”
Ecology Lab (ZOL355L) 2016 “Restoration ecology”
Forest Ecology (FOR406) 2016 “Restoration ecology”
Ecology (ZOL355) 2017 “Ecological selection in community ecology”
Restoration ecology (PLB443) 2017 “Ecosystem function and services”
Conservation planning (FW5121) 2019 “Using R for data manipulation and visualization”
Ecology (EEB3407) 2019 “Community Ecology”

Workshops
Structural equation modeling. Co-lead. KBS LTER ASM 9/7/2017
Coming to a Computing Consensus: Lessons and Tools for Successful 10/2/2018
Collaborations in Broad-Scale Ecology. Co-organizer. LTER ASM.

UNDERGRADUATES MENTORED

Madeleine Cleary, 2014. Using community weighted means to understand compositional changes over time in restored southwest Michigan prairies. KBS URA

Lindsey Kemmerling, 2015. The fight for biodiversity: Using functional traits to predict establishment during restoration. KBS URA

- Featured in MSU's Undergraduate Research Showcase: [Link](#)

Alexandria Walus, 2016. Functional trait differences in prairie seed sources. KBS URA

Jessica Brumbaugh & Emei Thompson, 2018. The Effects of environmental conditions on bison movement in oak savanna. Cedar Creek

PROFESSIONAL AFFILIATIONS, ACTIVITIES & SERVICES

Ecological Society of America

AAAS

Society of Ecological Restoration, MWGL chapter

EEBB program, MSU, Quantitate methods curriculum committee (2016-2018)

Plant Biology Department, MSU, Graduate Lecture Series co-coordinator (2017-2018)

Plant Biology Department, MSU, Graduate Committee (2012-2014)

Plant Biology Department, MSU, Seminar Committee (2014-2016)

Visiting Graduate Student, Kellogg Biological Station, MSU, *KBS Advisor*: Kay Gross

Journal Referee: Global Change Biology, Global Ecology and Biogeography, Restoration Ecology, Journal of Vegetation Science, Ecological Restoration, Folia Geobotanica, Australian Journal of Botany,

Journal of Applied Ecology, Wetlands, Ecology, Conservation Letters

Michigan Botanical Club, Annual Foray field trip leader, Sandcreek Preserve (2016)

Letters to a Pre-scientist, Scientist writer (2016)