CURRICULUM VITAE

CHAD R. ZIRBEL

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PROFESSIONAL APPOINTMENTS

Postdoctoral Associate	University of Wisconsin-Madison-Madison Advisors: John Orrock and Brian Connolly	2021-Present
Postdoctoral Associate	University of Minnesota, Cedar Creek ESR Advisors: Forest Isbell and David Tilman	2018-2021

EDUCATION

Graduate	Michigan State University, East Lansing, MI Plant Biology Ph.D. Program Ecology, Evolutionary Biology, and Behavior Program Committee: Lars Brudvig (Chair), Kay Gross, Jen Lau, Elena Litchman	2012-2018
Undergraduate	University of Wisconsin-Madison, Madison, WI Majors: Conservation Biology; Honors in Geography; Environmental Studies Thesis Advisor: Jack Williams	2008-2012

MANUSCRIPTS

Schoolmaster, D.R. Jr., **C.R. Zirbel**, and J.P. Cronin. (Accepted). A graphical causal model for resolving species identity effects and biodiversity–ecosystem function correlations: Reply. Ecology.

Catano, C.P., Bassett, T.J., Bauer, J.T., Grman, E., Groves, A.M., **Zirbel, C.R.,** & Brudvig, L.A. (In Press). Soil resources mediate the strength of species but not trait convergence across grassland restorations. Journal of Applied Ecology. doi.org/10.1111/1365-2664.13929

Grman, E. **C.R. Zirbel**, J.T. Bauer, A.M. Groves, T. Bassett, L.A. Brudvig. (2020). Super-abundant C_4 grasses are a mixed blessing in restored prairies. Restoration Ecology. doi: 10.1111/rec.13281

Schoolmaster, D.R., **C.R. Zirbel**, J.P. Cronin (2020). A graphical causal model for resolving species identity effects and biodiversity-ecosystem function correlations. Ecology. 00(00):e03070. 10.1002/ecy.3070

Zirbel, C.R. and L.A. Brudvig (2020). Trait-environment interactions affect plant establishment success during restoration. Ecology. 00(00):e02971. 10.1002/ecy.2971

Kattge, J., G. Bönisch, 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.

Ladwig, L.M., **C.R. Zirbel**, Q.M. Sorenson, E.I. Damschen (2020). A taxonomic, phylogenetic, and functional comparison of restoration seed mixes and historical plant communities in Midwestern oak savannas. Forest Ecology and Management.

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. *Journal of Applied Ecology.*

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., Basset, 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). crzirbel/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. *Minnesota Bison Association Annual Meeting*. 2021.

Zirbel, C.R., D. Tilman, F. Isbell. Bison grazing increases oak seedling survival during prescribed fire in savanna ecosystems. *ESA Annual Meeting.* 2020.

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, 2020, and 2021.

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.

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.

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.

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
Bison on the Savanna. PBS. Prairie Sportsman. 2020. 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 Collaborations in Broad-Scale Ecology. Co-organizer. LTER ASM.	10/2/2018

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
Cedar Creek, *UMN*, Justice, Equity, Diversity, and Inclusion committee (2020-2021)
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 Geobontanica, Australian Journal of Botany, Journal of Applied Ecology, Wetlands, Ecology, Conservation Letters, Oikos, Plant and Soil, Functional Ecology, Oecologia
Michigan Botanical Club, Annual Foray field trip leader, Sandcreek Preserve (2016)
Letters to a Pre-scientist, Scientist writer (2016)