

John W. Benning

Curriculum Vitae

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Appointments

- 2020 - 2022 **National Science Foundation Postdoctoral Fellow**
Department of Botany
University of Wyoming
Supporting scientists: Dr. Christopher Weiss-Lehman and Dr. Ruth Hufbauer
- 2019 - 2020 **Postdoctoral Research Associate**
Department of Plant & Microbial Biology
University of Minnesota – Twin Cities
Advisor: Dr. David Moeller

Education

- 2013 - 2019 **University of Minnesota – Twin Cities**
Ph.D., Plant & Microbial Biology
Advisor: Dr. David Moeller
- 2006 - 2010 **University of North Carolina at Chapel Hill**
B.A. with Distinction, Anthropology
Minor in Environmental Studies

Awards

Fellowships

Total: \$189,250

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|------|-------------------------------------------------------------------------------------------------------------------------------|-----------|
| 2020 | Postdoctoral Research Fellowship in Biology
<i>National Science Foundation</i> | \$108,000 |
| 2018 | Phinney Graduate Fellowship in Plant Biology
<i>Dept. of Plant & Microbial Biology, University of Minnesota</i> | \$11,250 |
| 2017 | Charles J. Brand Graduate Fellowship
<i>University of Minnesota</i> | \$25,000 |
| 2013 | Graduate Excellence Fellowship
<i>College of Biological Sciences, University of Minnesota</i> | \$45,000 |

Recognitions

- 2019 **Philip C. Hamm Scholarship in the Plant Sciences**
University of Minnesota
- President's Student Leadership and Service Award**
University of Minnesota

Recognitions (*cont.*)

- 2019 **Best Student Talk Award**
University of Minnesota Plant & Microbial Biology Annual Symposium
- 2016 **Outstanding Performance Award for Teaching Assistants**
University of Minnesota College of Biological Sciences

Research Grants

Total: \$71,641

- 2020 **Postdoctoral Research Fellowship in Biology** \$30,000
National Science Foundation
- 2019 **Mini Grant for Backyard Science** \$2,720
University of Minnesota Institute on the Environment
- 2018 **Rosemary Grant Advanced Award** \$3,010
Society for the Study of Evolution
- 2017 **Doctoral Dissertation Improvement Grant** \$19,921
National Science Foundation
- 2016 **Alexander & Lydia Anderson Grant** \$2,990
University of Minnesota
- James J. Wilkie Fund for Natural History** \$1,500
University of Minnesota Bell Museum
- 2015 **Graduate Student Research Grant** \$1,000
Southern California Botanists
- Thesis Research Travel Grant** \$2,500
University of Minnesota
- 2014 **Carolyn Crosby Grant** \$2,900
University of Minnesota
- Wallace and Mary Lee Dayton Natural History Grant** \$1,300
University of Minnesota Bell Museum
- Rosemary Grant Award** \$2,500
Society for the Study of Evolution
- Doc Burr Grant** \$1,300
California Native Plant Society

Publications

**Undergraduate mentee*

- 7 **Benning, JW** and Moeller, DA. 2021. Plant-soil interactions limit lifetime fitness outside a native plant's geographic range margin. *Ecology*, 102:e03254
- 6 **Benning, JW** and Moeller, DA. 2021. Microbes, mutualism, and range margins: testing the fitness consequences of soil microbial communities across and beyond a native plant's range. *New Phytologist*, 229:2886-2900.

Publications (*cont.*)

- 5 **Benning, JW** and Moeller, DA. 2019. Maladaptation beyond a geographic range limit driven by antagonistic and mutualistic biotic interactions across an abiotic gradient. *Evolution*, 73:2044-2059.
- 4 **Benning, JW**, Eckhart, VM, Geber, MA, and Moeller, DA. 2019. Biotic interactions contribute to the geographic range of an annual plant: herbivory and phenology mediate fitness beyond a range margin. *American Naturalist*, 193:786-797.
- 3 Hargreaves, AL, Suárez, E, Mehlreter, K, Myers-Smith, I, Vanderplank, SE, Slinn, HL, Vargas, Y, Haeussler, S, David, S, Muñoz, J, Almazán-Núñez, RC, Loughnan, D, **Benning, JW**, Moeller, DA, Brodie, JF, Morales, PA. 2019. Seed predation increases from the Arctic to the Equator and from high to low elevations. *Science Advances*, 5:eaau4403.
- 2 Bolin, LG*, **Benning, JW**, and Moeller, DA. 2018. Mycorrhizal interactions do not influence plant-herbivore interactions in populations of *Clarkia xantiana* ssp. *xantiana* spanning from center to margin of the geographic range. *Ecology & Evolution*, 8:10743-10753.
- 1 **Benning, JW**. 2015. Odd for an ericad: nocturnal pollination of *Lyonia lucida* (Ericaceae). *American Midland Naturalist*, 174:204-218.

Manuscripts *in prep*

Benning, JW, Faulkner, A*, and Moeller, DA. Evolutionary responses of a native plant to multi-year drought in Southern California.

Benning, JW, Hufbauer, RA, and Weiss-Lehman, C. Species range limits in temporally variable environments.

Benning, JW[†], Moeller, DA[†], Geber, MA, Morris, WF, Eckhart, VM, Singh, I, Bier, RL, and Tiffin, P. Interannual climate-driven fluctuations in plant-herbivore interactions have eco-evolutionary consequences across a plant's geographic range.

[†] *equal contribution*

Selected Presentations

[‡] *Talk* [†] *Poster*

2021	Indiana Univ. EEB Seminar [‡]	Bloomington, IN, USA
2020	Univ. of Wyoming Botany Department Seminar [‡]	Laramie, WY, USA
2020	American Society of Naturalists [‡]	Asilomar, CA, USA
2018	Ecological Society of America [‡]	New Orleans, LA, USA
2017	Evolution [‡]	Portland, OR, USA
2015	Univ. of Minnesota Plant Biological Sciences Seminar [‡]	Saint Paul, MN, USA
2013	Ecological Society of America [†]	Minneapolis, MN, USA

Outreach & Service

Backyard Science - Principal Investigator (A. Gorton, Co-PI)

citybackyardscience.org

- This recently funded project uses a network of widely distributed “plots” (raised beds) across Minneapolis, MN, USA to increase urban plant diversity, provide resources for native arthropods, and engage community members in science. The beds are located on boulevards near households that assist us with collecting data on plant growth, phenology, and pollinator visitation. As the number of plots increases, we will use them to teach and answer questions about urban plant adaptation, links between plant diversity and insect diversity, and effects of soil microbial inoculation on plant performance.

Wallace Middle School - Science Mentor

- In 2018 I initiated a science outreach program with the Woodrow Wallace Middle School in southern California, where the bulk of my dissertation work occurred. During field work trips, I visit the Environmental Science classroom to introduce them to my research, guide them through laboratory methods, and explore the scientific method. For our first project, we explored leaf microbial endophytes. After an introduction and overview of endophytes, we used actual laboratory methods to culture endophytes from leaves I collected only a few miles from their school. We grew the cultures for a month, and I returned to assay them with the students and subculture them for identification at UMN. My colleagues and I have plans to continue this project as a corollary of our long-term research program in the area.

Market Science - Logistics coordinator; Board Member

marketsci.org

- This science outreach initiative engages the public about topical science issues, promotes diversity in STEM fields, and provides interactive science activities for adults and children. Each Saturday from May through October, Market Science works with volunteer graduate students, post-docs, and faculty to lead “science discovery” sessions at farmers markets, fairs, and other informal public venues around Minnesota. The program covers a range of topics from photosynthesis to geology and reach more than 5,000 visitors each year. I served as the logistics and recruitment coordinator, and am a founding board member.

Reviewer history

- 2021 American Journal of Botany
- 2020 Global Change Biology; Proceedings of the Royal Society B; Ecology & Evolution
- 2018 PLoS Biology; Global Change Biology
- 2017 Journal of Tropical Ecology; Ecology & Evolution
- 2016 Journal of the Torrey Botanical Society
- 2015 Northeastern Naturalist

Teaching

Invited Lectures

- 2021 Species Interactions in a Changing World
University of Minnesota
- 2017 Biotic Interactions and Climate Change
Carleton College, MN

Teaching Assistantships

University of Minnesota

- 2017 Plant, Algal, and Fungal Diversity and Adaptation
- 2016 General Botany
Received UMN Outstanding Performance Award for Teaching Assistants
- 2015 General Botany
- 2014 General Botany

Mentoring

Undergraduates

- *University of Wyoming*
- 2021 Alex Kissonergis Laboratory technician
- 2020 Anna Carpenter Laboratory technician
- *University of Minnesota*
- 2019 Isaac Olson Laboratory technician
- 2019 Labiba Mahmud Laboratory technician
- 2018 Adam Kostanecki Summer field technician
- 2017-2018 Alexai Faulkner Laboratory/field technician
- Conducted independent research via the UMN Undergraduate Research Opportunities Program
 - Helped lead *Clarkia xantiana* resurrection experiment and is co-author on Benning, Faulkner, and Moeller (*in prep*)
- 2015-2017 Lana Bolin Laboratory/field technician
- Conducted independent research published in *Ecology & Evolution* (Bolin, Benning, and Moeller 2018)
 - Received UMN Philip C. Hamm Memorial Undergraduate Scholarship in the Plant Sciences
 - Participated in NSF Research Experience for Undergraduates program
- 2015 Soham Shah Laboratory/field technician
- Conducted independent research for UMN CBS Honors Thesis