

MATTHEW A. MCCARY

Rice University
 Department of BioSciences
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EDUCATION

2016 Ph.D., University of Illinois at Chicago, Biological Sciences
 2010 B.A., North Central College, Biology

RESEARCH AND PROFESSIONAL EXPERIENCE

2021-present Assistant Professor, Department of BioSciences, Rice University
 2020 Ford Foundation Postdoctoral Research Fellow, Yale University
 2017-2019 NSF Postdoctoral Research Fellow, University of Wisconsin at Madison

AWARDS, HONORS, AND FELLOWSHIPS

2022-2026 Early Career Fellow, Ecological Society of America
 2022-present Sigma Xi International Scientific Research Honor Society
 2021 Diversity, Inclusion, Equity, and Belonging Award (\$750), Department of Ecology and Evolution, Rutgers University
 2020 Ford Foundation Postdoctoral Research Fellowship (\$50,000), Forestry and Environmental Science, Yale University
 2017-2019 NSF Postdoctoral Research Fellowship in Biology (\$207,000), Department of Entomology, UW
 2016 Dean's Scholar Graduate Fellowship (\$22,000), Graduate College, UIC

PUBLICATIONS (*Undergraduate mentee, # Graduate student, † Co-first author, + Corresponding author, ¶ Senior author)**2024**

Moyano, J., R.D. Dimarco, J. Paritsis, T. Peterson, D.A. Peltzer, K. Crawford, **M.A. McCary**, K.T Davis, A. Pauchard, and M.A. Nuñez. *In press*. Unintended consequences of planting native and non-native trees in treeless ecosystems to mitigate climate change. *Journal of Ecology*.
 Boldorini, G., **M.A. McCary**, G. Romero, K. Mills, N. Sanders, P. Reich, R. Michalko, and T. Gonçalves-Souza. *In press*. Predators control pests and increase yield across crop types and climates. *Proceedings of the Royal Society B* 291: 20232522.
 Potapov, A.M., E. Chen [et al., including **M.A. McCary**]. 2024. Global fine-resolution data on springtail abundance and community structure. *Scientific Data* 11: 22.

2023

Bertellotti, F.*, N. Sommer, O.J. Schmitz, and **M.A. McCary**^{¶+}. 2023. Impacts of habitat connectivity on grassland arthropod metacommunity structure: a field-based experimental test of theory. *Ecology and Evolution* 13: e10686.

- Wise, D.H., R.M. Mores, J.M. Pajda-De La O, and **M.A. McCary**[¶]. 2023. Temporal constancy in the structure of a spider-focused food web with high rates of intraguild predation. *PLoS ONE* 18: e0293176.
- Sponberg, A., **M.A. McCary**, C. O'Riordan, P. Padilla, and R.L. Wallace. 2023. Rethinking scholarly communication. *Frontiers in Ecology and the Environment* 21:307.
- Yitbarek, Y., K. Chen, M. Celestin[#], and **M.A. McCary**[¶]. 2023. Urban mosquito distributions are modulated by socioeconomic status and environmental traits in the USA. *Ecological Applications* 33: e2869.
- Potapov, A.M., C.A. Guerra [et al., including **M.A. McCary**]. 2023. Globally invariant metabolism but density-diversity mismatch in springtails. *Nature Communications* 14: 674.
- Cheng, S.J., K.M. Gaynor, A.C. Moore, K. Darragh, C.O. Estien, J.W. Hammond, K.L. Mills, C. Lawrence, M.D. Baiz, L. Khadempour, **M.A. McCary**, D. Ignace, M.M. Rice, S.J. Tumber-Dávila, and J.A. Smith. 2023. Championing inclusive terminology in ecology and evolution. *Trends in Ecology and Evolution* 38: 381-384.

2022

- Ferraro, K., O.J. Schmitz, and **M.A. McCary**[¶]. 2022. Effects of ungulate density and sociality on landscape heterogeneity: a mechanistic modeling approach. *Ecography* e06039.
- Kuebbing, S.^{*}, **M.A. McCary**^{*}, D. Lieurance, M.A. Nuñez, M.C. Chiuffo, B. Zhang, H. Seebens, D. Simberloff, and L.A. Myerson. 2022. A self-study of editorial board diversity at *Biological Invasions*. *Biological Invasions* 24: 321-332. [‡] co-first authors
- Nuñez, M.A., M.C. Chiuffo, H. Seebens, S. Kuebbing, **M.A. McCary**, D. Lieurance, B. Zhang, D. Simberloff, and L.A. Meyerson. 2022. Two decades of data reveal that *Biological Invasions* needs to increase participation beyond North America, Europe, and Australasia. *Biological Invasions* 24: 333-340.
- Lieurance, D., S. Kuebbing, **M.A. McCary**, and Martin A. Nuñez. 2022. Words matter: How to increase gender and LGBTQIA+ inclusivity at *Biological Invasions*. *Biological Invasions* 24: 341-344.

2021

- Yitbarek, S., K. Bailey, S. Tyler, J. Strickland, **M.A. McCary**, and N. Harris. 2021. Inclusive sustainability approaches in common-pool resources from the perspective of blackologists. *Bioscience* 71: 741-749.
- McCary, M.A.**⁺, M.D. Kasprzak, J.C. Botsch, D. Hoekman, R.D. Jackson, and C. Gratton. 2021. Aquatic insect subsidies influence microbial composition and processing of detritus in near-shore subarctic heathland. *Oikos* 130: 1523-1534.
- McCary, M.A.**⁺, and O.J. Schmitz. 2021. Invertebrate functional traits and terrestrial nutrient cycling: insights from a global meta-analysis. *Journal of Animal Ecology* 90: 1714-1726.
- McCary, M.A.**⁺, R.D. Jackson, and C. Gratton. 2021. Vegetation structure modulates ecosystem and community responses to spatial subsidies. *Ecosphere* 12: e03483.
- McCary, M.A.**^{‡*}, J.S. Phillips^{*}, T. Ramiadantsoa, L.A. Nell, A.R. McCormick, and J.C. Botsch. 2021. Transient top-down and bottom-up effects of resources pulsed to multiple trophic levels. *Ecology* 102: e02593. [‡] co-first authors

Before 2020

- McCary, M.A.**⁺, and D.H. Wise. 2019. Plant invader alters soil food web via changes to fungal resources. *Oecologia* 191: 587-599.
- Hoekman, D., **McCary, M.A.**⁺, J. Dryer, and C. Gratton. 2019. Reducing allochthonous resources in a subarctic grassland alters arthropod food webs via predator diet and density. *Ecosphere* 10: e02593.
- McCary, M.A.**⁺, M. Zellner, and D.H. Wise. 2019. The role of plant-mycorrhizal mutualisms in deterring plant invasions: insights from an individual-based model. *Ecology and Evolution* 9: 2018-2030.
- McCary, M.A.**⁺, E. Minor, and D.H. Wise. 2018. Covariation between local and landscape factors influences the structure of ground-active arthropod communities in fragmented metropolitan woodlands. *Landscape Ecology* 33: 225-239.
- McCary, M.A.**⁺, R. Mores, M. Farfan, and D.H. Wise. 2016. Invasive plants have different effects on trophic structure of green and brown food webs in terrestrial ecosystems: a meta-analysis. *Ecology Letters* 19: 328-335.
- McCary, M.A.**⁺, J.C. Martinez, L. Umek, L. Heneghan, and D.H. Wise. 2015. Effects of woodland restoration and management on the community of surface-active arthropods in the metropolitan Chicago region. *Biological Conservation* 190: 154-166.

In revision

- Y. Cheng, B. Deng, P. Scotland, L. Eddy, A. Hassan*, B. Wang, B. Li, K. M. Wyss, M.G. Ucak-Astarlioglu, J. Chen, T. Si, S. Xu, X. Gao, D. Jana, M.A. Torres, M.S. Wong, B.I. Yakobson, C. Griggs, **M.A. McCary**, Y. Zhao, and J.M. Tour. Electrothermal mineralization of per- and polyfluoroalkyl substances (PFAS) for soil remediation. *Nature Communications*.

In review

- Nunez-Mir, G.C.*, and **M.A. McCary***. Invasive plants and their root traits lead to homogenization of soil microbial communities across the United States. In review at *Proceedings of the National Academy of Sciences*.

RESEARCH FUNDING AND EXTRAMURAL SUPPORT

Awarded

- 2022-2024 NSF (Biodiversity on a Changing Planet, \$517,312). Functional divergence between females and males: consequences of climate-induced shifts in composition of dioecious plant populations. T. X. Miller, A. Keiser, **M.A. McCary**, K. Crawford, J. H. Leebens-Mack.
- 2022-2024 Rice University's Creative Ventures Fund (\$50,000). Sustainable futures in a biodiversity hotspot: Assessing conservation values of traditional use forests in Madagascar. A. Dunham, C. Masiello, **M.A. McCary**, J. Blackburn, A. Pinn.
- 2022-2023 Texas Ecological Laboratory (\$5,421). Collateral damage: understanding how shrub encroachment into grasslands affects tick-borne disease dynamics. M. Celestin[#] and **M.A. McCary**. [#] Graduate student
- 2015-2016 Graduate Research Grant (\$10,000). Department of the Institute for Environmental Science and Policy. University of Illinois at Chicago. **M.A. McCary**.

Pending

- 2023 HHMI (Freeman Hrabowski Scholars Program, \$160,000). Belowground Invasibility Across Environmental Contexts: Testing How Soil Resources and Disturbance Affect Plant Invasion Dynamics. **M.A. McCary**, A. Campbell#. # Graduate student

INVITED PROFESSIONAL PRESENTATIONS**Invited research seminars:**

- 2024 Ecology, Evolution, and Behavior Department, University of Minnesota, Minneapolis, MN.
- 2024 Ecology and Evolutionary Biology Program, University of Wyoming, Laramie, WY.
- 2023 Division of Biological Sciences. University of Missouri, Columbia, MO.
- 2023 Department of Earth and Environmental Sciences. Rutgers University at Newark, Newark, NJ.
- 2023 Department of Ecology and Evolutionary Biology. University of Michigan, Ann Arbor, MI.
- 2022 Department of Biology. Southwest University, Georgetown, TX.
- 2022 Department of Biology. University of North Carolina, Chapel Hill, NC.
- 2022 Goldschmidt Lecture Series. Sigma Xi, Houston, TX Chapter.
- 2022 Department of Ecology, Evolution, and Organismal Biology. Ohio State University, Columbus, OH.
- 2022 Department of Biology. North Central College, Naperville, IL.
- 2021 Department of Biology. Indiana University, Bloomington, IN.
- 2021 Department of Biological Sciences. University of Illinois, Chicago, IL.
- 2021 Department of Biology. Stanford University, Stanford, CA.
- 2021 Natural Sciences Seminar series. Washington State University at Vancouver, Vancouver, WA.
- 2021 Biological and Environmental Science Colloquium. University of Rhode Island, Kingston, RI.
- 2021 Department of Ecology and Evolution. Rutgers University, New Brunswick, NJ.
- 2021 Department of Ecology, Evolution, and Organismal Biology, Kennesaw State University, Marietta, GA.
- 2021 Department of Biology and Biochemistry, University of Houston, Houston, TX.
- 2020 Department of Ecology, Evolution, and Marine Biology, University of California, Santa Barbara, CA.
- 2020 Department of Entomology, Kansas State University, Manhattan, KS.
- 2020 School of the Environment, Yale University, New Haven, CT.
- 2019 Department of BioSciences, Rice University, Houston, TX.
- 2019 Department of Botany, University of Wisconsin, Madison, WI.
- 2019 Department of Biology, Pittsburgh University, Pittsburgh, PA.
- 2019 Department of Biology, Lawrence University, Appleton, WI.
- 2019 Center for Limnology, University of Wisconsin, Madison, WI.
- 2018 Department of Entomology, Purdue University, West Lafayette, IN.
- 2018 Department of Natural and Applied Sciences, University of Wisconsin, Green Bay, WI.
- 2018 Department of Entomology, University of Wisconsin, Madison, WI.

2015 Elmer Hadley Research Fund. University of Illinois, Chicago, IL.

Invited symposium presentations

- 2023 Making ecology more diverse, inclusive, and equitable through the efforts of Black ecologists within ESA. Ecological Society of America Meeting, Portland, Oregon.
- 2023 Using individual-based modeling to understand the causes and consequences of plant invasions, Ecological Society of America Meeting, Portland, OR.
- 2022 Do resource subsidies alter energy flows through soil food webs? Implications for C and N cycling in subarctic Iceland. The Next “Black Box”: The Role of Soil Invertebrates in Plant-Soil Interactions, Ecological Society of America Meeting, Montreal, Canada.
- 2019 Aquatic insects alter terrestrial ecosystems: lessons from subarctic Iceland. Recent Approaches to Studying Invertebrate Responses to Rapid Environmental Change, Entomological Society of America Meeting, St. Louis, MO.
- 2018 Emergent aquatic insects alter plant composition and litter decomposition: lessons from subarctic Iceland. Wisconsin Ecology Fall Symposium, University of Wisconsin, Madison, WI.
- 2017 A mechanistic model to explain how plant-mycorrhizal disruptions can lead to invasion success: implications for biodiversity conservation and management. Linking Management, Biodiversity, and Ecosystem Services Via Mechanistic Models, Ecological Society of America Meeting, Portland, OR.
2016. Consequences of invasion: evaluating how invasive alien plants alter the structure of food webs in woodland ecosystems. Invaders in Food Webs: Using Trophic Structure to Predict Invasibility and Invader Impact, Ecological Society of America Meeting, Fort Lauderdale, FL.
- 2015 The cascading effects of invasive alien plants on the structure of belowground food webs in woodland ecosystems. Invasive Plant Symposium: Biotic Interactions with Invasive Species, Annual North Weed Science Society, Indianapolis, IN.

ORGANIZED SYMPOSIUM, SPECIAL SESSIONS, AND WORKSHOPS

- 2023 **Field trip host**, SEEDS (Strategies for Ecology Education, Diversity, and Sustainability) National Field Trip for underrepresented minority undergraduates, Rice University, Houston, TX. **M.A. McCary**, F. Abbott, K. Bailey, C. Nilon.
- 2023 **Symposium co-organizer**, “Yes Ecologists Can: Models and Field Studies for 21st Century Problems.” Ecological Society of America Meeting, Portland, OR. S. Railsback, **M.A. McCary**.
- 2022 **Symposium organizer**, “Applied ecology for 21st-century environmental solutions requires the need for diverse perspectives.” Ecological Society of America Meeting (ESA), Montreal, Canada

TEACHING EXPERIENCE

- 2023-present **Instructor**, Insect Biology (BIOS 326), Department of Biosciences, Rice University
- 2022 **Instructor**, Topics in Ecology (BIOS 563), Department of Biosciences, Rice University
- 2018 **Co-Instructor**, Basic and Applied Insect Ecology Lab (ENTO 451), Department of Entomology, University of Wisconsin at Madison

- 2014-2016 **Teaching Assistantship**, General Ecology Lab (BIOS 331), Department of Biological Sciences, University of Illinois at Chicago
- 2012-2013 **Teaching Assistantship**, Biology of Populations and Communities (BIOS 101), Department of Biological Sciences, University of Illinois at Chicago
- 2010-2011 **Teaching Assistantship**, Biology of Cells and Organisms (BIOS 100), Department of Biological Sciences, University of Illinois at Chicago

LAB PERSONNEL

Graduate students

- 2023-present Ruddy Alexandra Bradley Jiménez-Martin (Co-Advised with Dr. Tom Miller)
- 2021-present Modeline Celestin, PhD student (2022 Ford Foundation Predoctoral Fellow)
- 2021-present Amoi Campbell, PhD student

Technicians and post-baccalaureate students

- 2023-present Reginald Johnson, Research technician
- 2023-present Da'Janae Pearson, Post-baccalaureate student (Co-Advised with Dr. Tom Miller)
- 2023-present Christopher Oxley, Research technician (Co-Advised with Dr. Tom Miller)
- 2023 Jeremy Pustilnik, Research technician

Undergraduate students

- 2023-present Caroline Leung, Senior Thesis student
- 2023-present Nicole Imming, BIOS 310 student
- 2022-present Lily Burdett, Undergraduate research assistant
- 2023-present Alondra Franco, Undergraduate research assistant
- 2023 Arman Hassan, Summer research assistant
- 2023 Nicholas Arrendodo, Summer Undergraduate Research Fellow
- 2023 Brendan Oloughlin, Summer research assistant
- 2023 Annie Huddleston, REU student (Co-Advised with Dr. Jocelyn Holt)
- 2022-2023 Ling DeBellis, Senior Thesis student
- 2021-2022 Ashley Fitzpatrick, BIOS 310 student

GRADUATE THESIS COMMITTEES

- 2023-present Tess Peterson, University of Houston (Advisor: Dr. Martin A. Nuñez)
- 2023-present Julieanne Montaquila, Rice University (Advisor: Dr. Amy Dunham)
- 2023-present Annie Finneran, Rice University (Advisor: Dr. Lydia Beaudrot)
- 2022-present Clark Hamor, Rice University (Advisor: Dr. Yizhi Jane Gao)
- 2022-present Sean Trainor, Rice University (Advisor: Dr. Kory Evans)
- 2022-present Joyah Watkins, Rice University (Advisor: Dr. Kory Evans)
- 2022-present Eric Wuesthoff, Rice University (Advisor: Dr. Amy Dunham)
- 2022-present Camille Carey, Texas A&M University (Advisor: Dr. Doug Tolleson)
- 2021-present Ali Campbell, Rice University (Advisor: Dr. Tom Miller)

Completed

- 2023 Sydney Allen, Doctor of Philosophy, Rice University (Advisor: Dr. Cin-ty Lee)
- 2023 Kristin Brandon, Master's degree, Rice University (Advisor: Amy Dunham)
- 2022 Sang-Ho Yoo, Master's degree, University of New Brunswick (Advisor: Dr. Jeff Houlan)

PROFESSIONAL SERVICE

Societal service

- 2023-present **Member**, ESA's Mercer Award Committee to determine best research paper by early career researcher
- 2023-present **Associate Editor**, *Journal of Animal Ecology*
- 2021-present **Chair**, Black Ecologist Section of the Ecological Society of America
- 2020-present **Associate Editor**, *Biological Invasions*

University Service

- 2022-present **Member**, Environmental Initiative Advisory Committee
- 2022-present **Faculty Advisor**, Black Graduate Student Association, Rice University

Departmental Service

- 2023-2024 **Member**, Committee for BioSciences Faculty Search
- 2021-2022 **Member**, Committee for EEB Faculty Search
- 2021-present **Member**, Committee for EEB Graduate Recruitment and Evaluation