

William C. Wetzel

Department of Entomology
Ecology, Evolutionary Biology & Behavior Program
Michigan State University
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APPOINTMENTS

- 2016-present Assistant Professor, Department of Entomology and Ecology, Evolutionary Biology & Behavior Program, Michigan State University
Adjunct Assistant Professor, Kellogg Biological Station, Michigan State University
- 2015-2016 Postdoctoral Fellow, Department of Entomology and Department of Ecology & Evolutionary Biology, Cornell University

EDUCATION

- 2015 Ph.D., Population Biology, Dept. of Evolution & Ecology, University of California, Davis
Committee: Donald Strong (chair), Richard Karban, and Jay Rosenheim
- 2006 B.A. (with Highest Honors), Biology and Environmental Studies, Williams College

PUBLICATIONS († = undergraduate mentee)

- Holyoak*, M., and W.C. Wetzel*. In press (2019). Variance-explicit ecology: a call for holistic study of the consequences of variance at multiple scales. in A.P. Dobson, D. Tilman, and R.D. Holt, editors. *Unsolved Problems in Ecology*. Princeton University Press, Princeton, NJ. (*equal authorship)
- Wetzel, W.C., and M.H. Meek. 2019. Physical defenses and herbivory vary more within plants than among plants in the tropical understory shrub *Piper polytrichum*. *Botany* 97: 113-121.
- Wetzel, W.C., N.C. Aflitto, and J.S. Thaler. 2018. Plant genotypic diversity interacts with predation risk to influence an insect herbivore across its ontogeny. *Ecology*. 99: 2338-2347.
- Wetzel, W.C. and J.S. Thaler. 2018. Host-choice reduces, but does not eliminate, the negative effects of a diverse diet for an herbivorous beetle. *Oecologia* 186: 483-493.
- Wetzel, W.C., H.M. Kharouba, M. Robinson, M. Holyoak, and R. Karban. 2016. Variability in plant nutrients reduces the performance of insect herbivores. *Nature* 539: 425-427. **(Recommended by Faculty of 1000, covered by NPR Capital Public Radio and >10 other media outlets)**
- Karban, R., W.C. Wetzel, K. Shiojiri, E. Pezzola, and J. Blande. 2016. Geographic dialects in volatile communication between sagebrush individuals. *Ecology* 97: 2917-2914.
- LoPresti, E.F., R. Karban, M. Robinson, W.C. Wetzel, and P. Grof-Tisza. 2016. The natural history supplement: furthering natural history amongst ecologists and evolutionary biologists. *Bulletin of the Ecological Society of America* 97: 305-310.
- Wetzel, W.C. and J.S. Thaler. 2016. Does plant diversity reduce the ability of insect herbivores to defend against predators? The plant variability-gut acclimation hypothesis. *Current Opinion in Insect Science* 14: 25-31.

- Wetzel, W.C., R. Screen[†], I. Li[†], J. McKenzie[†], K. Phillips[†], M. Cruz[†], W. Zhang[†], A. Greene[†], E. Lee[†], N. Singh[†], C. Tran[†], and L. Yang. 2016. Ecosystem engineering by a gall-forming wasp indirectly suppresses density and diversity of herbivores on oak trees. *Ecology* 97: 427-438.
- Spawton[†], K.A., and W.C. Wetzel. 2015. Gall-insect community on big sagebrush varies with plant size but not plant age. *Environmental Entomology* 44: 1095-1100.
- Wetzel, W.C. and D.R. Strong. 2015. Host selection by an insect herbivore with spatially variable density-dependence. *Oecologia* 179: 777-784.
- Karban, R., W.C. Wetzel, K. Shiojiri, S. Ishizaki, S. Ramirez, and J. Blande. 2014. Deciphering the language of plant communication: volatile chemotypes of sagebrush. *New Phytologist* 204: 380-385.
- Wetzel, W.C. 2014. Density-dependent recruitment structures a heterogeneous distribution of herbivores among host-plants. *Ecology* 95: 2894-2903. **(Winner of the 2014 Ecological Society of America Student Section Outstanding Student Research Award)**
- Hammock, B. and W.C. Wetzel. 2013. The relative importance of drift causes for stream insect herbivores across a canopy gradient. *Oikos* 122: 1586-1593.
- Karban, R., K. Shiojiri, S. Ishizaki, W.C. Wetzel, and R. Evans. 2013. Kin recognition affects plant communication and defense. *Proceedings of the Royal Society B-Biological Sciences* 280: 20123062.
- Wetzel, W.C., I. Lacher, D. Swezey, S. Moffitt, and D. Manning. 2012. Survey and landscape analysis reveal potential consequences of Williamson Act for rangeland conservation. *California Agriculture* 66:131-136. **(Journal cover story)**
- Meek, M., A. Wintzer, W.C. Wetzel, and B. May. 2012. Climate change likely to facilitate the invasion of the non-native hydroid, *Cordylophora caspia*, in the San Francisco Estuary, CA. *PLOS ONE* 7:e46373.
- Chong, G., W.C. Wetzel, and M. Holloran. 2010. Greater sage-grouse of Grand Teton National Park: Where do they roam? *Park Science* 27: 42-49.

In review

- Wetzel, W.C. and S.R. Whitehead. In review. The many dimensions of phytochemical diversity: linking theory to practice. (Invited for submission by *Ecology Letters* as an Idea and Perspective paper)
- Leach, H., S. Van Timmeren, W.C. Wetzel, and R. Isaacs. In review. Predicting within- and between-year variation in populations of the invasive spotted wing *Drosophila* in a temperate region.
- Wetzel, W.C., H.M. Kharouba, M. Robinson, M. Holyoak, and R. Karban. In review. Effects of plant trait covariance on herbivores: data needed.

FUNDING (total = \$901,555)

Active grants

- 2019-2021 USDA NIFA Postdoctoral Fellowship (\$157,000)
 "Enhancing biological control in tomato plants using odor mixtures: a tomato hornworm case study." PIs: A. Glassmire [postdoc], W. Wetzel [mentor]
- 2018-2022 USDA NIFA AFRI Foundational Program (\$499,855)
 "Evaluation of defense diversity in tomato and its deployment for managing insect pests"
 PI: W. Wetzel
- 2018-2020 USDA NIFA Postdoctoral Fellowship (\$155,000)
 "Effects of domestication selection on plant trait variability: consequences to insect pests and natural enemies in crop systems." PIs: M. Robinson [postdoc], W. Wetzel [mentor]

- 2018-2019 MSU Project GREEN Research Grant (\$40,000)
 "Determining insect and disease impacts on potatoes and developing strategies for sustainable management in the face of extreme weather events" PI: W. Wetzel; co-PIs: Z. Szendrei, J. Willbur, M. Szucs
- 2018-2019 Michigan Potato Industry Commission Research Grant (\$10,000)
 "Determining insect and disease impacts on potatoes and developing strategies for sustainable management in the face of extreme weather events" PI: W. Wetzel; co-PIs: Z. Szendrei, J. Willbur

Previous grants

- 2017-2018 Michigan Potato Industry Commission Research Grant (\$20,000)
 "Building climate variability into models that forecast pest pressure on potato and developing strategies for managing potato pests in the face of extreme weather" PI: W. Wetzel; co-PI: Z. Szendrei
- 2012-2012 Mary DeDecker Botanical Grant, California Native Plant Society (\$1,000)
- 2010-2012 Research Awards (3), Center for Population Biology, UC Davis (\$4,400)
- 2010-2011 Mathias Grants (2), UC Natural Reserve System (\$3,500)
- 2010-2011 Valentine Research Awards (2), UC Natural Reserve System (\$4,000)
- 2003-2005 Research Grants (2), Williams College (\$6,800)

AWARDS, HONORS, AND FELLOWSHIPS

- 2016 USDA NIFA Postdoctoral Fellowship (\$152,000) (declined fellowship to start at MSU)
- 2014 Ecological Society of America Student Section Outstanding Student Research Award
- 2012 Travel Award, Center for Population Biology, UC Davis (\$500)
- 2010 Travel Award, Center for Population Biology, UC Davis (\$800)
- 2008 National Science Foundation IGERT Graduate Fellowship (\$90,000)
- 2006 Highest Honors in Biology, Williams College
- 2006 Sigma Xi

SEMINARS AND PRESENTATIONS

Invited seminars

- 2019 Department of Entomology, Pennsylvania State University (scheduled)
 Kellogg Biological Station, Michigan State University. (scheduled)
- 2018 Department of Ecology & Evolutionary Biology, University of Arizona
 Department of Entomology, University of Illinois, Urbana-Champaign
 Department of Ecology & Evolutionary Biology, University of Michigan
 Department of Plant Biology, Michigan State University
 Department of Biology, Western Michigan University
 Ecology, Evolutionary Biology & Behavior Program, Michigan State University
- 2017 College of Biological Science, University of Guelph
- 2016 Department of Entomology, Michigan State University
- 2015 Department of Entomology, Cornell University
- 2014 Chemical Ecology Group, University of Nevada, Reno

Invited presentations at scientific meetings

- 2019 Milkweed Biology Summit, Oak Spring Garden Foundation, Upperville, VA (scheduled)
- 2018 Symposium on Stressors across Space and Time, Entomological Society of America Meeting, Vancouver, BC, Canada
Organized Oral Session on The Consequences of Plant Trait Diversity, Ecological Society of America Meeting, New Orleans, LA
- 2017 Symposium on New Perspectives on Indirect Plant Defense, Entomological Society of America Meeting, Denver, CO

Contributed presentations at scientific meetings

Ecological Society of America Annual Meeting: 2010, 2012, 2013, 2014, 2015, 2017

International Congress of Entomology: 2016

Plant-Herbivore Interactions Gordon Research Conference: 2017

Co-authored presentations given by Wetzel lab members (*invited) (†undergraduate)

- 2019 Hauri, K., North Central Branch Meeting, Entom. Soc. of America, Cincinnati, OH
Snook, J., North Central Branch Meeting, Entom. Soc. of America, Cincinnati, OH
- 2018 *Glassmire, A., Organized Session on Plant Trait Diversity, Ecological Society of America Meeting, New Orleans, LA
*Zehr, L., Symposium on Trophic Interactions in a Changing Climate, Entomological Society of America, Vancouver, BC, Canada
Glassmire, A., Entomological Society of America, Vancouver, BC, Canada
Hauri, K., Entomological Society of America, Vancouver, BC, Canada
Snook, J., Entomological Society of America, Vancouver, BC, Canada
†Britwum, N., Ecological Society of America, New Orleans, LA (poster)
Elzinga, D., International Symposium on Biomathematics and Ecology Education and Research, Tempe, AZ

TEACHING

Michigan State University

- Statistical Methods for Ecology & Evolution. New required first-year course in the Ecology, Evolutionary Biology, and Behavior Program. 54 graduate students from >8 departments and programs. Spring 2019 (Spent 2018 developing course)
- Ecology & Evolution of Plant-Arthropod Interactions. Department of Entomology and Department of Plant Biology. ~10 graduate students and 10+ postdocs, faculty, and other community members. Spring 2017, Fall 2018, Spring 2019
- Advanced Ecological Statistics. Graduate course, Department of Entomology (Being designed for first offer in Spring 2020)

Cornell University

- The Role of Variability in Ecological Interactions. Department of Ecology & Evolutionary Biology and Department of Entomology. Fall 2015. 10 graduate students.

Cornell Center for Teaching Excellence - Teaching Professional Development

- 2015-2016 Certificate in Course Design
- 2015-2016 Certificate in Teaching Research Skills
- 2015 Workshop in Creating a Teaching Identity

University of California, Davis

- Experimental Ecology & Evolution in the Field. Two-quarter long undergraduate capstone field course. Winter and Spring quarters 2013. 10 undergraduates.
- Teaching Assistant, Introduction to Ecology, Department of Evolution & Ecology. Designed lab and discussion curriculum, including labs in R on ecological modeling and data analysis. Winter 2011, Fall 2011, Winter 2012, Winter 2014. 4 sections of 26-30 undergraduate students.
- Ecological Investigators. A weeklong field ecology course for grades 5-8, Outdoor Science Education Program at Valentine Eastern Sierra Reserve, University of California Natural Reserve System. July 2010, July 2011, July 2012, July 2013. 8-12 middle school students.

MENTORING

Current graduate student mentees

Elizeth Cinto Mejia, PhD

Daniel Turner, PhD

Kayleigh Hauri, MS

Joshua Snook, MS (co-advised with Dr. Zsafia Szendrei)

Current postdoc mentees

Dr. Andrea Glassmire (USDA NIFA Postdoctoral Fellow)

Dr. Moria Robinson (USDA NIFA Postdoctoral Fellow)

Current student committees

Lindsey Kemmerling, PhD, Department of Integrative Biology, MSU

Bruce Martin, PhD, Department of Plant Biology, MSU

Rob Curtiss, PhD, Department of Entomology, MSU

Jason Olsen, PhD, Department of Plant Biology, MSU

Ali Zahorec, PhD, Department of Entomology, MSU

Nicole Wonderlin, PhD, Department of Entomology, MSU

Past student committees

Damian Popovic, Department of Plant Biology, MSU

Aaron Langille, PhD, Dept. of Integrative Biology, University of Guelph (external examiner)

Undergraduate students mentored on independent research

Megan Frick. 2018-2019. Independent project on the effect of plant diversity on insect communities.

Winner of Best Poster Presentation at MSU Undergraduate Research & Arts Forum, Apr 2019.

Anna Jullie. 2018-2019. URA Program at MSU Kellogg Biological Station. Poster presentation at Kellogg Research Symposium. Poster presentation at MSU Undergraduate Research & Arts Forum, Apr 2019.

Beth Ann Hansen. 2018. NSF REU at MSU Kellogg Biological Station. Poster presentation at Kellogg Research Symposium.

Nana Britwum. 2017-2018. NSF REU & ESA SEEDS Fellow at MSU Kellogg Biological Station. Undergraduate thesis. Poster presentation at Kellogg Research Symposium. **Poster presentation at 2018 Ecological Society of America annual meeting (New Orleans, LA).**

Dan Pearlstein. 2015-2016. Cornell University. Undergraduate research experience and honors thesis.

Kayla Spawton. 2011-2013. UC Davis. Undergraduate honors thesis. Oral presentation at UC Davis Undergraduate Research Conference. **Published thesis in Environmental Entomology.**

Sam Krasnobrod. 2010-2013. High school student, Bishop, California

Cassandra Kaplinsky. 2012-2013. UC Davis. Undergraduate research experience.

Ivana Li. 2012. UC Davis. Undergraduate research experience.

Robyn Screen. 2012-2013. UC Davis. Undergraduate research experience.

Melissa Cruz. 2010-2011. UC Davis. Undergraduate research experience. Poster at UC Davis Undergraduate Research Conference.

ACADEMIC SERVICE AND OUTREACH

- Mentor for ESA SEEDS (Ecol. Soc. of America, Strategies for Ecology Education, Diversity, and Sustainability), UC Davis Chapter. 2009-2014. Awarded Chapter of the Year Award 2013-2014
- Currently starting an MSU Chapter of ESA SEEDS, a national outreach program run through the Ecological Society of America aimed at promoting diversity, equity, and inclusion in ecology
- Organized and currently facilitate MSU Plant-Arthropod Interactions Group (2017 - present)
- Organized Oral Session at ESA 2018, New Orleans, LA: "The Consequences of Plant Trait Diversity for Higher Trophic Levels: A Mechanistic Perspective"

Editing and review

- Subject-matter editor (ad hoc) for Ecology (6 manuscripts handled)
- USDA NIFI AFRI Foundational Grant Review Panelist (2018)
- Manuscript review: Nature (2017), Current Biology (2018), Ecology Letters (2015, 2017, 2019), Frontiers in Ecology & the Environment (2018), Ecology (2014, 2015 x2, 2016, 2017), Ecological Monographs (2016), Journal of Animal Ecology (2016), The American Naturalist (2019), Oecologia (2015 x2), Oikos (2012), Functional Ecology (2018, 2019), Annals of Botany (2016), American Journal of Botany (2018), Basic and Applied Ecology (2017), PLOS ONE (2014, 2017), Entomologia Experimentalis et Applicata (2016), Scientific Reports (2017), Ecosphere (2017), Biotropica (2018), BMC Ecology (2018), Journal of Plant Ecology (2018)

Academic committees

- Diversity, Equity, and Inclusion Committee, Dept. of Entomology, MSU (2018 - present)
- Seminar Committee, Ecology, Evolutionary Biology, & Behavior, MSU (2018 - present)
- Seminar Committee, Department of Entomology, MSU (2017 - present)
- Research and Site Use Committee, Kellogg Biological Station, MSU (2017 - present)

Society Memberships

- Ecological Society of America (2010 - present)
- Entomological Society of America (2016 - present)

PRESS COVERAGE (selected from more than 15 pieces)

- Radio interview on NPR Capital Public Radio, 9/2016, <http://www.capradio.org/articles/2016/10/17/mono-culture-leads-to-ideal-conditions-for-crop-eating-pests-uc-davis-study-finds/>
- <http://www.takepart.com/article/2016/10/16/crop-diversity-pesticide/>
- <https://www.sciencedaily.com/releases/2016/10/161012134054.htm>
- https://www.canr.msu.edu/news/new_entomologist_wetzels_research_on_plant_diversity_publication

d_in_nature

- <http://www.kbs.msu.edu/2018/08/wetzel/>
- <https://msutoday.msu.edu/news/2018/researchers-explore-diversity-as-new-weapon-against-crop-pests/>
- Profile in MSU Futures Magazine: <https://www.canr.msu.edu/news/studying-the-impact-of-diversity-in-all-forms>