

William C. Wetzel

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APPOINTMENTS & EDUCATION

Assistant Professor	Michigan State University Department of Integrative Biology Plant Resilience Institute Department of Entomology Ecology, Evolution, & Behavior Program Kellogg Biological Station (adjunct)	2017–present 2020– 2020– 2017– 2017– 2017–
Postdoctoral Fellow	Cornell University Department of Entomology Department of Ecology & Evolutionary Biology	2015–2016
PhD	University of California, Davis Population Biology Graduate Group Department of Evolution & Ecology Committee: Donald Strong (chair), Richard Karban, Jay Rosenheim	2008–2015
BA (Highest Honors)	Williams College Biology Environmental Studies	2002–2006

PUBLICATIONS (Wetzel Lab members underlined, † = undergraduate mentee)

35. †Randall, B., E. Cinto Mejía, K.C. Hauri, and W.C. Wetzel. *In review*. Suboptimal macronutrient ratios promote cannibalism in a generalist herbivore (*Trichoplusia ni*).
34. Glassmire, A.E., K.C. Hauri, D.B. Turner, L.N. Zehr, K. Sugimoto, G. Howe, and W.C. Wetzel. *In review*. The frequency and chemical phenotype of neighboring plants determines the effects of intraspecific plant diversity.
33. Cope, O.C., L.N. Zehr, A.A. Agrawal, and W.C. Wetzel. *In review*. The timing of heat waves has multiyear effects on milkweed and its insect community.
32. Cinto Mejía, E., and W.C. Wetzel. *In review*. The ecological consequences of the timing of extreme climate events.
31. Valdivinos, F.S., K.R.S. Hale, S. Dritz, P.R. Glaum, K.S. McCann, S.M. Simon, E. Thébault, W.C. Wetzel, K.L. Wootton, and J.D. Yeakel. *In revision*. A bioenergetic framework for aboveground terrestrial food webs. *Trends in Ecology and Evolution*.
30. Harvey, J.A., K. Tougeron, R. Gols, R. Heinen, M. Abarca, P.K. Abram, Y. Basset, M. Berg, C. Boggs, J. Brodeur, P. Cardoso, J.G. de Boer, G. De Snoo, C. Deacon, J.E. Dell, N. Desneux, M.E. Dillon, G.A. Duffey, L.A. Dyer, J. Ellers, A. Espíndola, J. Fordyce, M. Forister, C. Fukushima, M.J.G. Gage, C. García-Robledo, C. Gely, M. Gobbi, C. Hallmann, T. Hance, J. Harte, A. Hochkirch, C. Hof, A.

- Hoffmann, J. Kingsolver, G. Lamarre, W. Lurance, B. Lavandero, C. Le Lann, S. Leather, P. Lehmann, M.M. López-Uribe, C.-S. Ma, G. Ma, J. Moiroux, L. Monticelli, C. Nice, P.J. Ode, S. Pincebourde, W.J. Ripple, M. Rowe, M. Samways, A. Sentis, A.A. Shah, N. Stork, J.S. Terblanche, M.P. Thakur, M. Thomas, J.M. Tylianakis, J. Van Baaren, M. Van de Pol, W.H. Van der Putten, H. Van Dyck, W.C.E.P. Verberk, D. Wagner, W. Weisser, W.C. Wetzel, H.A. Woods, K.A.G. Wyckhuys, and S.L. Chown. *In press*. Scientists' warning on climate change and insects. *Ecological Monographs*.
29. Cope, O.C., L.A. Burkle, J.R. Croy, K.A. Mooney, L.H. Yang, and W.C. Wetzel. 2022. The role of timing in intraspecific trait ecology. *Trends in Ecology and Evolution*. doi: 10.1016/j.tree.2022.07.003
 28. Hauri, K.C., A.E. Glassmire, B. Randall†, L. Zehr, and W.C. Wetzel. 2022. Plant chemical diversity and its frequency have distinct but complementary effects on insect foraging. *Journal of Applied Ecology* 59: 1362-1371.
 27. Robinson, M., A.L. Schillmiller, and W.C. Wetzel. 2022. A domestic plant differs from its wild relative along multiple axes of within-plant trait variability and diversity. *Ecology and Evolution* 12: e8545.
 26. Wetzel, W.C. 2021. Plants as epigenetic mosaics: harnessing variability to thrive in a variable world. *New Phytologist* 231: 1667-1669.
 25. Wetzel, W.C. 2021. Evolutionary Ecology of Plant-Herbivore Interaction edited by Juan Núñez-Farfán and Pedro Luis Valverde. *Quarterly Review of Biology* 96:138. (book review)
 24. Hauri, K.C., A.E. Glassmire, and W.C. Wetzel. 2021. Plant chemical diversity rather than cultivar diversity predicts pest suppression by natural enemies on tomato. *Ecological Applications* 31: e2289.
 23. Glassmire, A.E., L. Zehr, and W.C. Wetzel. 2020. Disentangling the dimensions of plant chemical diversity: alpha and beta diversity have distinct effects on an insect herbivore. *Ecology* 101: e03158.
 22. Holyoak*, M., and W.C. Wetzel*. 2020. Variance-explicit ecology: A call for holistic study of the consequences of variability at multiple scales. In A. Dobson, R. D. Holt, and D. Tilman (eds.), *Unsolved Problems in Ecology*. (pp. 25-42). Princeton University Press, Princeton, NJ. (*equal authorship)
 21. Pearse, I., E. LoPresti, R.N. Schaeffer, W.C. Wetzel, K.A. Mooney, J.G. Ali, P.J. Ode, M.D. Eubanks, J.L. Bronstein, and M.G. Weber. 2020. Generalizing indirect defense and resistance of plants. *Ecology Letters* 23: 1137-1152.
 20. Wetzel, W.C. and S.R. Whitehead. 2020. The many dimensions of phytochemical diversity: linking theory to practice. *Ecology Letters* 23: 16-32. **(Recommended as "Exceptional" by the Faculty of 1000)**
 19. Leach, H., S. Van Timmeren, W.C. Wetzel, and R. Isaacs. 2019. Predicting within- and between-year variation in activity of the invasive spotted wing Drosophila (Diptera: Drosophilidae) in a temperate region. *Environmental Entomology* 48: 1223-1233.
 18. Wetzel, W.C., H.M. Kharouba, M. Robinson, M. Holyoak, and R. Karban. 2019. Plant trait covariance and nonlinear averaging: a reply to Koussoroplis et al. *Rethinking Ecology* 4: 115-118.
 17. 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. **(Highlighted in Botany's Editor's Choice)**

16. 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.
15. 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.
14. 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 the Faculty of 1000, covered by NPR Capital Public Radio and >10 other media outlets)**
13. 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.
12. LoPresti, E.F., R. Karban, M. Robinson, P. Grof-Tisza, and W.C. Wetzel. 2016. The natural history supplement: furthering natural history amongst ecologists and evolutionary biologists. *Bulletin of the Ecological Society of America* 97: 305-310.
11. 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.
10. 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.
9. 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.
8. Wetzel, W.C. and D.R. Strong. 2015. Host selection by an insect herbivore with spatially variable density-dependence. *Oecologia* 179: 777-784.
7. 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.
6. 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)**
5. 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.
4. 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.
3. 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)**
2. 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.
1. Chong, G., W.C. Wetzel, and M. Holloran. 2011. Greater sage-grouse of Grand Teton National Park: Where do they roam? *Park Science* 27: 42-49.

FUNDING (total = \$2,313,318)

Active grants

- 2022-2026 NSF Research Coordination Networks (\$555,281)
"RCN: The Herbivory Variability Network: Expanding beyond the mean to embrace higher moments in the ecology and evolution of species interactions"
PI: W. Wetzel; co-PIs: B. Inouye, P. Hahn, N. Underwood, S. Whitehead
- 2021-2024 Plant Resilience Institute Collaborative Project Initiative (\$396,483)
"The timing of plant and phytobiome resilience in milkweed species across a climate gradient" PI: W. Wetzel; co-PI: G. Howe
- 2020-2024 USDA NIFA AFRI Foundational Program (\$455,999)
"Extreme weather events and the sustainable management of pests on potato"
PI: W. Wetzel; co-PI: Z. Szendrei
- 2018-2023 USDA NIFA AFRI Foundational Program (\$499,855)
"Evaluation of defense diversity in tomato and its deployment for managing insect pests"
PI: W. Wetzel

Previous grants

- 2021 MSU Ecology, Evolution, and Behavior Seed Grant (\$5,000)
"The Herbivory Variability Network: Expanding beyond the mean to embrace higher moments in the ecology and evolution of species interactions"
- 2019-2021 USDA NIFA Postdoctoral Fellowship (\$157,000)
"Enhancing biological control in tomato plants using odor mixtures: a tomato hornworm case study." PIs: Andrea Glassmire [postdoc], W. Wetzel [mentor]
- 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: Moria 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
- 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
- 2010-2012 Research Awards (3), Center for Population Biology, UC Davis (\$4,400)
- 2010-2011 Mildred Mathias Research Grants (2), Univ. of California Natural Reserve System (\$3,500)
- 2010-2011 Valentine Research Awards (2), Univ. of California Natural Reserve System (\$4,000)
- 2003-2005 Research Grants (2), Williams College (\$6,800)

AWARDS, HONORS, AND FELLOWSHIPS

Fulbright Fellowship , Fulbright Specialist Program, U.S. Department of State Project title: "Plant-insect interactions in a variable and changing world" Host institution: Misión Biológica de Galicia, Spanish National Research Council (CSIC) Spain's oldest national institute for agriculture and forestry research	2022
Outstanding Supervisor Award , Michigan State University	2019
USDA NIFA Postdoctoral Fellowship (\$152,000) (declined fellowship to start at MSU)	2016
Outstanding Student Research Award , Ecological Society of America Student Section	2014
Mary DeDecker Botanical Award , California Native Plant Society (\$1,000)	2012
Travel Award , Center for Population Biology, UC Davis (\$500)	2012
Travel Award , Center for Population Biology, UC Davis (\$800)	2010
NSF IGERT Graduate Fellowship , National Science Foundation (\$90,000)	2008
Highest Honors in Biology , Williams College	2006

SEMINARS & PRESENTATIONS (Wetzel Lab members underlined, † = undergrad mentee)

Invited seminars

16. Wetzel, W.C. 2021. Plant-insect interactions in a variable and changing world. Department of Entomology, Texas A&M University.
15. Wetzel, W.C. 2020. Studying plant-insect interactions in a variable and changing world: An update from the Wetzel Lab. Department of Entomology, Michigan State University.
14. Wetzel, W.C. 2020. Plant-insect interactions in a variable and changing world. Department of Entomology, Texas A&M University. (cancelled due to COVID-19)
13. Wetzel, W.C. 2020. Plant-insect interactions in a variable and changing world. Department of Biology, Utah State University.
12. Wetzel, W.C. 2019. Plant diversity and the ecology of plant-insect interactions. Department of Entomology, Pennsylvania State University.
11. Wetzel, W.C. 2019. Plant diversity and the ecology of plant-insect interactions. Kellogg Biological Station, Michigan State University .
10. Wetzel, W.C. 2018. Plant diversity and the ecology of plant-insect interactions. Department of Ecology & Evolutionary Biology, University of Arizona.
9. Wetzel, W.C. 2018. Plant variability and the ecology of plant-insect interactions. Department of Entomology, University of Illinois, Urbana-Champaign.
8. Wetzel, W.C. 2018. Plant variability and the ecology of plant-insect interactions. Department of Ecology & Evolutionary Biology, University of Michigan.
7. Wetzel, W.C. 2018. Plant variability and the ecology of plant-insect interactions. Department of Plant Biology, Michigan State University.
6. Wetzel, W.C. 2018. Plant variability and the ecology of plant-insect interactions. Department of Biology, Western Michigan University.
5. Wetzel, W.C. 2018. Plant variability and the ecology of plant-insect interactions. Ecology, Evolution, and Behavior Program, Michigan State University.

4. Wetzel, W.C. 2017. Plant variability and the performance and population dynamics of insect herbivores. College of Biological Science, University of Guelph.
3. Wetzel, W.C. 2016. Insect population and community dynamics in a variable world. Department of Entomology, Michigan State University.
2. Wetzel, W.C. 2015. Insect herbivores in a variable world. Department of Entomology, Cornell University.
1. Wetzel, W.C. 2014. Spatial heterogeneity in herbivory: The *Eutreta diana* story. Chemical Ecology Group, University of Nevada, Reno.

Invited presentations at scientific meetings

11. Wetzel, W.C., K. Abbott, E. Bruna, N.I. Cacho, L.A. Dyer, P.G. Hahn, B. Inouye, M.L. Robinson, N. Underwood, S. Whitehead, L.N. Zehr, and the members of the Herbivory Variability Network. 2021. Macroevolutionary and global patterns of intraspecific variability in herbivory: Data from the HerbVar Network. Invited in Symposium: "Herbivory Through the Ages: Understanding Patterns of Insect Damage Through Space and Time." Annual Meeting of the Entomological Society of America, Denver, CO.
10. Robinson, M.L., K. Abbott, E. Bruna, N.I. Cacho, L.A. Dyer, P.G. Hahn, B. Inouye, N. Underwood, S. Whitehead, L.N. Zehr, the members of the Herbivory Variability Network, and W.C. Wetzel. 2021. Plant apparency shapes the distribution of herbivory within and among plant individuals: Data from the HerbVar Network. Invited in Symposium: "Herbivory Through the Ages: Understanding Patterns of Insect Damage Through Space and Time." Annual Meeting of the Entomological Society of America, Denver, CO.
9. Whitehead, S., K. Abbott, E. Bruna, N.I. Cacho, L.A. Dyer, P.G. Hahn, B. Inouye, M.L. Robinson, N. Underwood, L.N. Zehr, the members of the Herbivory Variability Network, and W.C. Wetzel. 2021. Multi-scale spatial variation in herbivore damage to plant reproductive organs: Data from the HerbVar Network. Invited in Symposium: "Herbivory Through the Ages: Understanding Patterns of Insect Damage Through Space and Time." Annual Meeting of the Entomological Society of America, Denver, CO.
8. Wetzel, W.C., M.L. Robinson, L.A. Dyer, P.G. Hahn, B.D. Inouye, N. Underwood, S.R. Whitehead, L.N. Zehr, and the members of the Herbivory Variability Network. 2020. Variability is a pervasive feature of plant-herbivore interactions: Data from The Herbivory Variability Network. Invited in Organized Oral Session: "Plants as Mosaics: How Trait Variability Within Plant Individuals Shapes the Ecology and Evolution of Plant-Animal Interactions." Annual Meeting of the Ecological Society of America, digital meeting.
7. Robinson, M.L., and W.C. Wetzel. 2020. Domestication selection shifts leaf trait variability at the within-plant scale. Invited in Organized Oral Session: "Plants as Mosaics: How Trait Variability Within Plant Individuals Shapes the Ecology and Evolution of Plant-Animal Interactions." Annual Meeting of the Ecological Society of America, digital meeting.
6. Wetzel, W.C. 2019. Extreme climate events and the ecology of insects on common milkweed. Milkweed Biology Summit, organized by Anurag Agrawal at the Oak Spring Garden Foundation, Upperville, VA.
5. Zehr, Luke, and W.C. Wetzel. 2018. The ecological consequences of brief events: Heat waves alter trophic interactions on common milkweed. Invited in Symposium: "Multitrophic Interactions in a

Changing World." Annual Meeting of the Entomological Society of America, Vancouver, BC, Canada.

4. Wetzel, W.C. 2018. The seasonal timing of extreme events influences the ecology of plant-insect interactions. Invited in Symposium: "Stressors Across Space and Time: Energy Sources, Enemies, and Environmental Influences." Annual Meeting of the Entomological Society of America, Vancouver, BC, Canada.
3. Glassmire, Andrea E., and W.C. Wetzel. 2018. Phytochemical diversity of tomato plants influences oviposition preference of a specialist moth, *Manduca sexta*. Invited in Organized Oral Session: "The Consequences of Plant Trait Diversity for Higher Trophic Levels: A Mechanistic Perspective." Annual Meeting of the Ecological Society of America, New Orleans, LA.
2. Wetzel, W.C., and Susan Whitehead. 2018. Dimensions of phytochemical diversity: A multi-scale framework for studying the ecology and evolution of plant defense. Invited in Organized Oral Session: "The Consequences of Plant Trait Diversity for Higher Trophic Levels: A Mechanistic Perspective." Annual Meeting of the Ecological Society of America, New Orleans, LA.
1. Wetzel, W.C. 2017. Heat waves, indirect defenses, and the dynamics of tri-trophic interactions. Invited in Symposium: "New Directions in Indirect Defense: A Continuum of Plant Control over Tri-Trophic Interactions." Annual Meeting of the Entomological Society of America, Denver, CO.

Contributed presentations at scientific meetings

40. Pan, V., and W.C. Wetzel. 2022. A neutral model of herbivory: fundamental constraints on patterns and variation. Annual Meeting of the Ecological Society of America, Montreal, Canada.
39. †Kalwajtys, M., L.N. Zehr, O. Jeris, Z. Szendrei, and W.C. Wetzel. 2022. Heat waves have a stronger effect on early larval instars of pests. North Central Branch Meeting of the Entomological Society of America. **First place in section** (poster)
38. Zehr, Luke, O. Jeris, M. Kalwajtys, Z. Szendrei, and W.C. Wetzel. 2021. Colorado potato beetle control using a resistant potato variety and predators faced with heat waves. Great Lakes Farmers Expo, Grand Rapids, MI. (poster)
37. Zehr, Luke, Z. Szendrei, and W.C. Wetzel. 2021. Pests and extreme weather events: How heat wave timing, potato variety, and predator presence influence Colorado potato beetle suppression. Annual Meeting of the Entomological Society of America, Denver, CO.
36. Cope, Olivia L., Laura Burkle, Jordan R. Croy, Kailen Mooney, Louie H. Yang, and W.C. Wetzel. 2021. The role of timing in the ecology of intraspecific trait variation in plants. Annual Meeting of the Ecological Society of America, digital meeting.
35. Turner, Daniel B., and W.C. Wetzel. 2021. Quantifying the temporal ecology of plant-antagonist interactions using hierarchical regression models. Annual Meeting of the Ecological Society of America, digital meeting.
34. Cinto Mejia, Elizeth, and W.C. Wetzel. 2021. Climate change and the importance of timing for the ecological consequences of extreme weather. Annual Meeting of the Ecological Society of America, digital meeting.
33. Wetzel, W.C., Moria L. Robinson, Lee A. Dyer, Philip G. Hahn, Brian D. Inouye, Nora Underwood, Susan R. Whitehead, Luke Zehr, and the members of The Herbivory Variability Network. 2021. Macroevolutionary and Global Patterns of Intraspecific Variability in Herbivory: Data from the

Herbivory Variability Network. Annual Meeting of the American Society of Naturalists, digital meeting.

32. Robinson, Moria L., Tony Schillmiller, and W.C. Wetzel. 2021. Domestication has altered within-plant trait variability and diversity in alfalfa. Annual Meeting of the American Society of Naturalists, digital meeting.
31. Glassmire, Andrea E., Luke Zehr, and W.C. Wetzel. 2020. Chemical diversity in plant neighborhoods drives insect community assemblage. Annual Meeting of the Entomological Society of America, digital meeting.
30. Zehr, Luke, and W.C. Wetzel. 2020. Brief events with lasting consequences: Four-day heat waves change the ecology of insects on plants for multiple years. Annual Meeting of the Entomological Society of America, digital meeting.
29. [†]Dole, Haley, Luke Zehr, Moria L. Robinson, and W.C. Wetzel. 2020. Evaluating herbivory estimates: Changes in the proportion of insect damage with leaf expansion. Annual Meeting of the Entomological Society of America, digital meeting.
28. Turner, Daniel, and W.C. Wetzel. 2020. Comparing insect herbivore community structure across plants' native and novel ranges: A meta-analysis. Annual Meeting of the American Society of Naturalists, Asilomar, CA.
27. [†]Randall, Brendan, Kayleigh Hauri, Elizeth Cinto-Mejia, [†]Grace Avalos, and W.C. Wetzel. 2019. Vegans turned flesh eaters: Altered macronutrient ratios promote cannibalistic behavior in a generalist herbivore (*Trichoplusia ni*). Annual Meeting of the Entomological Society of America, St. Louis, MO. **Second Place in Plant-Insect Poster Competition** (poster)
26. Glassmire, Andrea E., and W.C. Wetzel. 2019. Associational effects of chemical traits among tomato plant neighbors shapes the arthropod community. Annual Meeting of the Entomological Society of America, St. Louis, MO.
25. Snook, Joshua, Zsafia Szendrei, and W.C. Wetzel. 2019. Experimental heat waves have negative effects on Colorado potato beetle (*Leptinotarsa decemlineata*) and potato (*Solanum tuberosum*). Annual Meeting of the Entomological Society of America, St. Louis, MO.
24. Hauri, Kayleigh, and W.C. Wetzel. 2019. Spatial arrangement of intraspecific plant diversity influences insect movement behavior through a field. Annual Meeting of the Entomological Society of America, St. Louis, MO.
23. Hauri, Kayleigh, and W.C. Wetzel. 2019. Crop defense diversity influences the predator-prey interaction between an insect pest and a biocontrol predator. North Central Branch Meeting of the Entomological Society of America, Cincinnati, OH.
22. Snook, Joshua, Zsafia Szendrei, and W.C. Wetzel. 2019. Experimental heat waves have negative effects on Colorado potato beetle (*Leptinotarsa decemlineata*) and potato (*Solanum tuberosum*). North Central Branch Meeting of the Entomological Society of America, Cincinnati, OH.
21. [†]Frick, Megan, Luke Zehr, Andrea Glassmire, and W.C. Wetzel. 2019. Associational effects of chemical traits among tomato plant neighbors shapes the arthropod community. MSU Undergraduate Research & Arts Forum, East Lansing, MI. **First place in biology section** (poster)
20. [†]Jullie, Anna, Andrea Glassmire, and W.C. Wetzel. 2019. Manipulating chemical defense trait diversity in tomato plants as a sustainable pest management strategy. MSU Undergraduate Research & Arts Forum, East Lansing, MI. (poster)

19. †[Doud, Kelsey](#), [Daniel Turner](#), and [W.C. Wetzel](#). 2019. Priority effects on species interactions in the *Solidago altissima*-herbivore system. Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
18. †[Randall, Brendan](#), [Kayleigh Hauri](#), [Elizeth Cinto-Mejia](#), †[Grace Avalos](#), and [W.C. Wetzel](#). 2019. Vegans turned flesh eaters: Altered macronutrient ratios promote cannibalistic behavior in a generalist herbivore (*Trichoplusia ni*). Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
17. †[Avalos, Grace](#), [Elizeth Cinto Mejia](#), and [W.C. Wetzel](#). 2019. Is it hot here or is it just you? The effects of heat waves on tritrophic interactions. Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
16. [Glassmire, Andrea](#), and [W.C. Wetzel](#). 2018. Phytochemical diversity of tomato plants influence oviposition preference of a specialist moth, *Manduca sexta*. Annual Meeting of the Entomological Society of America, Vancouver, BC, Canada.
15. [Hauri, Kayleigh](#), and [W.C. Wetzel](#). 2018. Crop defense diversity influences the predator-prey interaction between an insect pest and a biocontrol predator. Annual Meeting of the Entomological Society of America, Vancouver, BC, Canada.
14. [Snook, Joshua](#), Zsofia Szendrei, and [W.C. Wetzel](#). 2018. Heat waves have persistent adverse effects on Colorado potato beetle (*Leptinotarsa decemlineata*) and potato (*Solanum tuberosum*). Annual Meeting of the Entomological Society of America, Vancouver, BC, Canada.
13. †[Hansen, Beth Ann](#), [Andrea Glassmire](#), and [W.C. Wetzel](#). 2018. Oviposition preference of *Manduca sexta* moths on chemically defended tomato plants. Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
12. †[Jullie, Anna](#), [Andrea Glassmire](#), and [W.C. Wetzel](#). 2018. Manipulating chemical defense trait diversity in tomato plants as a sustainable pest management strategy. Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
11. †[Britwum, Nana](#), and [W.C. Wetzel](#). 2018. The consequences of intraspecific diversity in defense traits on the host preference of an important agricultural pest, *Trichoplusia ni*. Annual Meeting of the Ecological Society of America, New Orleans, LA.
10. [Elzinga, David C.](#), Christopher Klausmeier, and [W.C. Wetzel](#). 2018. Extreme climate events and the ecological dynamics of plant-herbivore interactions. International Symposium on Biomathematics & Ecology Education & Research.
9. [Wetzel, W.C.](#), and Louie H. Yang. 2017. Heat waves and the dynamics of plant-herbivore interactions. Annual Meeting of the Ecological Society of America, Portland, OR.
8. †[Britwum, Nana](#), and [W.C. Wetzel](#). 2017. The consequences of intraspecific diversity in defense traits on the host preference of an important agricultural pest, *Trichoplusia ni*. Kellogg Biological Station annual Undergraduate Summer Symposium, Hickory Corners, MI. (oral presentation and poster)
7. [Wetzel, W.C.](#) 2017. How do heat waves alter plant-herbivore interactions with induced resistance? Plant-Herbivore Interaction Gordon Research Conference, Ventura, CA. (poster)
6. [Wetzel, W.C.](#), Heather M. Kharouba, Moria Robinson, Marcel Holyoak, and Rick Karban. 2016. Plant trait variability and the performance of phytophagous insects: A meta-analysis. XXV International Congress of Entomology, Orlando, FL.

5. Wetzel, W.C., †Robyn M. Screen, †Ivana Li, †Jennifer McKenzie, †Kyle A. Phillips, †Melissa Cruz, †Wenbo Zhang, †Austin Greene, †Esther Lee, †Nuray Singh, †Carolyn Tran, and Louie H. Yang. 2014. Negative indirect effects of an ecosystem engineer on seasonal assembly in non-engineered community. Annual Meeting of the Ecological Society of America, Sacramento, CA.
4. Karban, Rick, W.C. Wetzel, Kaori Shiojiri, Satomi Ishizaki, Santiago Ramirez, and James Blande. 2014. Deciphering the language of plant communication: Volatile chemotypes of sagebrush. Annual Meeting of the Ecological Society of America, Sacramento, CA.
3. Wetzel, W.C., and Donald R. Strong. 2013. Population-level patterns and host-plant scale processes in a gall-making insect herbivore: density-dependent reproduction, host-plant preferences, and plant chemistry. Annual Meeting of the Ecological Society of America, Minneapolis, MN.
2. Wetzel, W.C., and Donald R. Strong. 2012. Spatial heterogeneity and host-plant preferences influence the abundances of an insect herbivore. Annual Meeting of the Ecological Society of America, Portland, OR.
1. Wetzel, W.C. 2010. Spatial distribution of a gall-making fly and its parasitoids. Annual Meeting of the Ecological Society of America, Pittsburgh, PA.

TEACHING

Michigan State University

Statistical Methods for Ecology & Evolution, 3 credits (ENT/IBIO 831)

Spring 2022, 43 graduate students from 9 departments

Spring 2021, 44 graduate students from 13 departments

Spring 2020, 37 graduate students from 11 departments

Spring 2019, 51 graduate students from 11 departments

Ecology & Evolution of Plant-Arthropod Interactions, 1 credit (ENT 812-001)

Spring 2022, 7 graduate students and 3 undergraduates from 5 departments and majors

Fall 2020, 1 graduate student and 2 undergraduates from 3 depts and majors (low enrollment because of covid-19), plus multiple student and postdoc auditors

Spring 2020, 5 graduate students and 2 undergraduates from 4 depts and majors, plus multiple student and postdoc auditors

Fall 2019, 9 graduate students and 2 undergraduates from 4 depts and majors, plus multiple student and postdoc auditors

Spring 2019, 7 graduate students and 2 undergraduates from 2 depts and majors, plus multiple student and postdoc auditors

Fall 2018, 10 graduate students from 2 depts, plus multiple student and postdoc auditors

Statistical Methods in Temporal Ecology, 1 credit (ENT 812-004)

Spring 2020, 8 graduate students from 3 departments, plus 1 auditor

Hot Topics in Plant-Insect Interactions, 1 credit (ENT 812-003)

Spring 2017, 6 graduate students from 2 depts, plus multiple student and postdoc auditors

Cornell University

The Role of Variability in Ecology, 1 credit

Fall 2015, 10 graduate students

Cornell University Center for Teaching Innovation - Teaching Professional Development

Certificate in Course Design (2016)

Certificate in Teaching Research Skills (2016)

Workshop in Creating a Teaching Identity (2015)

University of California, Davis

Experimental Ecology & Evolution in the Field, lecturing teaching assistant, 4 credits (EVE/ENT 180)

Winter quarter 2013, 10 undergraduate students

Spring quarter 2013, 10 undergraduate students

Introduction to Ecology, teaching assistant, designed lab and discussion curriculum, including labs on ecological modeling in R

Winter 2011, 4 sections of 26-30 undergraduate students

Fall 2011, 4 sections of 26-30 undergraduate students

Winter 2012, 4 sections of 26-30 undergraduate students

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. 8-12 middle school students. July 2010, July 2011, July 2012, July 2013

MENTORING

Graduate students

Vincent Pan, PhD (NSF Graduate Research Fellowship)	2021-present
Elizeth Cinto Mejia, PhD	2018-present
Daniel Turner, PhD	2018-present
Kayleigh Hauri, MS	2018-2020
Joshua Snook, MS (co-advised with Dr. Zsofia Szendrei)	2018-2020

Postdocs

Dr. Xosé López Goldar	2022-present
Dr. Nayeli Carvajal	2022-present
Dr. Daniel Anstett (co-advised with Drs. David Lowry and Marjorie Weber)	2021-present
Dr. Olivia Cope (NSF Postdoctoral Fellow)	2020-2021
Dr. Moria Robinson (USDA NIFA Postdoctoral Fellow)	2018-2021
Dr. Andrea Glassmire (USDA NIFA Postdoctoral Fellow)	2017-2021

Student committees

Sylvie Martin-Eberhardt, PhD, Plant Biology, MSU	2022-present
Carolyn Graham, PhD, Ecology & Evolutionary Biology, University of Michigan	2021-present
Kevin Postma, PhD, Entomology, MSU	2021-present
Kara Dobson, PhD, Integrative Biology, MSU	2021-present
Keri Greig, PhD, Integrative Biology, University of Texas, Austin	2020-present
Alice Puchalsky, PhD, Integrative Biology, MSU	2020-present

Lindsey Kemmerling, PhD, Integrative Biology, MSU	2019–present
Bruce Martin, PhD, Plant Biology, MSU	2019–present
Jason Olsen, PhD, Plant Biology, MSU	2018–present
Ali Zahorec, PhD, Entomology, MSU	2018–present
Nicole Wonderlin, PhD, Entomology, MSU	2017–present
Jenna Walters, PhD, Entomology, MSU	2019–2022
Rob Curtiss, PhD, Entomology, MSU	2018–2021
Damian Popovic, MS, Plant Biology, MSU	2017–2018
Aaron Langille, PhD, Integrative Biology, Univ. of Guelph (external examiner)	2017

Undergraduate students mentored on independent research (14 total)

- Michael Kalwajts. 2020–2022. **First place poster in section** at 2022 North Central Branch meeting of the Entomological Society of America.
- Brendan Randall. 2019–2021. **Second place in Plant-Insect Ecosystems Poster Competition at 2019 Entomological Society of America annual meeting.** (Starting as a PhD student at the University of Maryland)
- Grave Avalos. 2019. NSF REU at MSU Kellogg Biological Station. Poster presentation at Kellogg Research Symposium. (Starting as a PhD student at the University of Maryland)
- Megan Frick. 2018–2019. **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. (Currently a graduate student at the University of California, Irvine)
- Beth Ann Hansen. 2018. NSF REU at MSU Kellogg Biological Station. Poster presentation at Kellogg Research Symposium. (Currently a PhD student at the University of Arizona)
- 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). (Currently a graduate student at the University of Michigan)
- Dan Pearlstein. 2015–2016. Cornell University. Undergraduate research experience and honors thesis. (Currently a PhD student at the University of Illinois)
- Kayla Spawton. 2011–2013. UC Davis. Undergraduate honors thesis. Oral presentation at UC Davis Undergraduate Research Conference. **Published thesis in Environmental Entomology.** (Currently a PhD student at Washington State University)
- Sam Krasnobrod. 2010–2013. High school student, Bishop, California. (Currently an Environmental Scientist at the California Department of Food and Agriculture)
- Cassandre Kaplinsky. 2012–2013. UC Davis. Undergraduate research experience. (Currently Director of Research at Carroll-Loye Research)
- Ivana Li. 2012. UC Davis. Undergraduate research experience. (Currently Instructor at the University of California, Davis)
- Robyn Screen. 2012–2013. UC Davis. Undergraduate research experience. (Currently a PhD student at the University of Hawaii)
- Melissa Cruz. 2010–2011. UC Davis. Undergraduate research experience. Poster at UC Davis Undergraduate Research Conference. (Currently the Outreach and Leadership Program Manager at UC Davis Arboretum and Public Garden)

ACADEMIC SERVICE AND OUTREACH

Founder and lead PI of The Herbivory Variability Network, a global project with >200 researchers from 100+ institutions and 30+ countries. www.HerbVar.org

Organized Symposium for 2021 annual meeting of the Entomological Society of America, Denver, CO: "Herbivory Through the Ages: Understanding Patterns of Insect Damage Through Space and Time"

Organized Oral session for 2020 meeting of the Ecological Society of America: "Plants as Mosaics: How Trait Variability Within Plants Shapes the Ecology and Evolution of Plant-Animal Interactions"

Organized Oral Session at 2018 meeting of the Ecological Society of America, New Orleans, LA: "The Consequences of Plant Trait Diversity for Higher Trophic Levels: A Mechanistic Perspective"

Editing and review

Associate Editor, *Oecologia* (2021-present)

Faculty member of Faculty Opinions, Population Ecology Section (2020-present)

Ad hoc subject-matter editor for *Ecology* (6 manuscripts handled)

NSF Grant Review Panelist (2021)

NSF ad hoc grant review (2021)

USDA NIFI AFRI Foundational Program Grant Review Panelist (2018)

NSF-USDA Plant Biotic Interactions Program Grant Review (2019)

EU European Research Council ad hoc grant review (2019)

Manuscript review: *Agriculture, Ecosystems & Environment* (2020), *American Journal of Botany* (2018), *American Naturalist* (2019), *Annals of Botany* (2016, 2019, 2020), *Basic and Applied Ecology* (2017), *Biotropica* (2018), *BMC Ecology* (2018), *Botanical Sciences* (2022), *Current Biology* (2018), *Ecological Applications* (2019, 2021), *Ecological Monographs* (2016), *Ecology* (2014, 2015 x2, 2016, 2017, 2019, 2020), *Ecology and Evolution* (2020), *Ecology Letters* (2015, 2017, 2019, 2022 x2), *Ecosphere* (2017), *Entomologia Experimentalis et Applicata* (2016), *Frontiers in Ecology & the Environment* (2018), *Functional Ecology* (2018, 2019 x2, 2020), *Global Ecology and Biogeography* (2020), *Journal of Animal Ecology* (2016), *Journal of Ecology* (2020, 2022 x2), *Journal of Plant Ecology* (2018), *Nature* (2017), *New Phytologist* (2020, 2021 x2, 2022), *Oecologia* (2015 x2), *Oikos* (2012, 2019), *PLOS ONE* (2014, 2017), *PNAS* (2021, 2022), *Proceedings of the Royal Society B: Biological Sciences* (2022), *Scientific Reports* (2017, 2020), *Trends in Ecology & Evolution* (2019), *Trends in Plant Science* (2022)

Academic committees

Diversity, Equity, and Inclusion Comm., College of Ag. & Natural Resources, MSU 2022-present

Space Committee, Dept. of Entomology, MSU 2022-present

Search Committee, Quantitative Biologist, Dept. of Integrative Biology, MSU 2022-present

Diversity, Equity, and Inclusion Comm., Department of Entomology, MSU
Committee Chair 2021-2022

Founding member 2018-2022

Director Search Committee, MSU Plant Resilience Institute 2021-2022

Committee for the MSU Presidential Postdoc in Ecology, Evolution, and Behavior
Member of inaugural committee 2020-2021

Interim chair 2020-2020

Committee member 2021-2022

MSU Plant Resilience Institute Postdoctoral Fellowship Committee, MSU	2020-2021
Seminar Committee, Ecology, Evolutionary, & Behavior, MSU	2018-2021
Seminar Committee, Department of Entomology, MSU	2017-2020
Committee Chair	2019-2020

Society Memberships

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

Outreach

Plenary Speaker, Kellogg Biological Station K-12 Education Partnership Summer Institute, 2019
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

PRESS COVERAGE

USDA NIFA Update. 9 September 2020. Plant Chemicals are a Trick or Treat for Insects.
<https://content.govdelivery.com/accounts/USDANIFA/bulletins/29f6a64>

MSU CANR News. 21 August 2020. Plant Chemicals are a Trick or Treat for Insects.
<https://www.canr.msu.edu/news/plant-chemicals-are-a-trick-or-treat-for-insects>

MSU Futures Magazine. 1 January 2019. Studying the impacts of diversity in all forms.
<https://www.canr.msu.edu/news/studying-the-impact-of-diversity-in-all-forms>

MSU Today. 24 July 2018. Researchers explore diversity as a new weapon against crop pests.
<https://msutoday.msu.edu/news/2018/researchers-explore-diversity-as-new-weapon-against-crop-pests/>

Kellogg Biological Station Newsletter. 23 August 2018. Wetzel Comes to KBS to conduct research on plant-insect relationships. <http://www.kbs.msu.edu/2018/08/wetzel/>

MSU CANR News. 13 October 2016. New entomologist Wetzel's research on plant diversity published in Nature. https://www.canr.msu.edu/news/new_entomologist_wetzels_research_on_plant_diversity_published_in_nature

NPR Capital Public Radio. 17 October 2016. Creating Poly-Culture Fields Could Ward Off Pests, Study Finds. (Radio interview and article) <http://www.capradio.org/articles/2016/10/17/mono-culture-leads-to-ideal-conditions-for-crop-eating-pests-uc-davis-study-finds/>

Science Daily. 12 October 2016. Why insect pests love monocultures, and how plant diversity could change that. <https://www.sciencedaily.com/releases/2016/10/161012134054.htm>