Robin Waterman

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I am interested in how agricultural weeds colonize and adapt to their environments through plasticity and evolution. I combine field, greenhouse, growth chamber, and genomic approaches to investigate these questions. I aim to aid our basic understanding of how plants colonize novel environments, while contributing to our ability to sustainably manage these problematic species impeding global food production.

Education

Michigan State University (East Lansing, MI): PhD Candidate; Plant Biology/EEB; GPA: 4.0/4.0 July 2020 – present

- Advisor: Dr. Jeffrey Conner, Committee: Drs. Emily Josephs, Lars Brudvig, and David Lowry
- Dissertation research: investigating the roles of phenotypic plasticity and genetic change in the successful invasion of weeds into agricultural fields
- Other Conner Lab research: investigating pollinator-mediated selection on anther traits in wild radish

Wesleyan University (Middletown, CT): BA/MA; Biology; GPA: 4.0/4.0 Sep. 2015 – May 2020

- Advisor: Dr. Sonia Sultan; Thesis: "Transgenerational effects of competition: Context-dependent effects of distinct parental competition treatments in *P. persicaria*" – describes common garden experiments investigating how the parental competitive environment influences seed and offspring growth traits
- Other Sultan Lab research: Correlations between light microsite variation and dispersal distance in the field and greenhouse to parameterize a transgenerational plasticity model, transgenerational effects of parental light environment on offspring fitness

School for International Training Study Abroad: *Tanzania Wildlife Conservation and Political Ecology* Spring 2018

- Studied conflicts between wildlife and various human land uses; practiced field-based ecological research methods

East Lyme High School (East Lyme, CT): GPA: 4.1/4.0, SAT: 2300/2400, *Salutatorian* Aug. 2011 – June 2015

Peer-Reviewed Publications

high school/undergraduate mentees *equal contribution

1. **Waterman, R.,** Song, S., Bhandari, N., Conner, J.K. Testing adaptive hypotheses for an evolutionarily conserved trait through slow-motion videos of pollinators. *Royal Society Open Science,* Accepted pending minor revision.
2. Palande, S., et al. (Foundations in Computational and Plant Sciences Course). (2025). Expression-based machine learning models for predicting plant tissue identity. *Applications in Plant Sciences*, 13(1), e11621. doi: 10.1002/aps3.11621
3. Smith, O.M., Davis, K.L., **Waterman, R.**, et al. (2024). (EEB Collaborative Research Group). Journals must expand access to peer review data. *Trends in Ecology & Evolution,* 39(4), 311-314. doi: 10.1016/j.tree.2024.02.003
4. Smith, O.M., Davis, K.L., Pizza, R.B.*, **Waterman, R.***, et al. (EEB Collaborative Research Group) (2023). Peer review bias perpetuates barriers for historically excluded groups. *Nature Ecology & Evolution*, 7(4), 512-523. doi: 10.1038/s41559-023-01999-w.
5. **Waterman, R.,** Sahli, H., Koelling, V. A., Karoly, K., & Conner, J. K. (2023). Strong evidence for positive and negative correlational selection revealed by recreating ancestral variation. *Evolution*, 77(1), 264-275. doi: 10.1093/evolut/qpac001
6. **Waterman, R.,** & Sultan, S. E. (2021). Transgenerational effects of parent plant competition on offspring development in contrasting conditions. *Ecology*, 102(12), e03531. doi: 10.1002/ecy.3531
7. Baker, B. H., Sultan, S. E., Lopez-Ichikawa, M., & **Waterman, R.** (2019). Transgenerational effects of parental light environment on progeny competitive performance and lifetime fitness. *Philosophical Transactions of the Royal Society B, 374*(1768), 20180182. doi:10.1098/rstb.2018.0182
8. **Waterman, R.,** Lewis, J., & Waterman, K. C. (2017). Accelerated stability modeling for peptides: A case study with bacitracin. *AAPS PharmSciTech, 18*(5), 1692-1698. doi:10.1208/s12249-016-0635-7

Submitted:

1. **Waterman, R.**, Catlett, B., Bhatt, I., Edmonds, G., Conner, J.K. Seed vernalization and gibberellic acid interact to affect life cycle type in facultative winter annual Canadian horseweed (*Erigeron canadensis*).

Honors & Awards

- Summer Mentoring & R Workshop Fellowship, KBS/MSU (5 awards, $10,855 total) May 2021 - 2025
- Summer Graduate Student Fellowship, KBS/MSU (3 awards, $6,339 total) May 2021, 2022, 2025
- Paul Taylor Endowment Award, MSU (4 awards, $4,685 total) April 2022 – Spring 2025

- USDA NIFA Pre-doctoral Fellowship ($175,405 total) June 2023 – June 2026
- Society for the Study of Evolution Lewontin Early Award ($2,500) May 2022
- EEB Professional Horizons Grant, MSU ($585) March 2022
- Science Education & Outreach Fellowship, KBS/MSU (2 awards, $42,000 total) Spring 2022 – Summer 2023
- College of Natural Science Early Start Fellowship, MSU ($6,000) May, 2020
- University Distinguished Fellowship, MSU (estimated $94,000 total) Feb., 2020
- Phi Beta Kappa, CT Chapter April, 2019
- Dean's List, Wesleyan Fall 2015 – Spring 2019
- Wesleyan Summer Research Fellowships ($12,000 total) Summer 2017, 2018, and 2019
- Environmental Professionals of CT Scholarship ($1,000) July, 2019
- Student Organization of the Year, Wesleyan (organization: Veg Out) May, 2017

Selected Poster & Oral Presentations

- **R. Waterman.** Evolution conference, Athens, GA, June 2025: "Horsing around with horseweed: evolution and plasticity in an agricultural weed". Talk.
- **R. Waterman**, B. Catlett, I. Bhatt, G. Edmonds, J.K. Conner. MSU Ecology, Evolution, and Behavior Symposium, May 2025: "Effects of growth hormone and stratification conditions on Canadian horseweed (*Conyza canadensis*) life cycle". Poster. Awarded *Best Poster.*
- **R. Waterman.** Evolution conference, Montreal, CA, July 2024: "Evolution and plasticity in a native agricultural weed". Talk.
- **R. Waterman**. Society for the Study of Evolution GREG Seminar, March, 2024: "Investigations of adaptation to agriculture in horseweed". Virtual talk.
- **R. Waterman**. KBS Colloquium, Hickory Corners, MI, December 2023: "Preliminary Results and Challenges from a Reciprocal Transplant Experiment of Agricultural Weeds". Talk.
- **R. Waterman**, S. Song, N. Bhandari, and JK Conner. Evolution conference, Albuquerque, NM, June 2023 and MSU Ecology, Evolution, & Behavior Symposium, East Lansing, MI, May 2023: "Testing adaptive hypotheses for tetradynamy through slow-motion videos of pollinators". Talk.
- **R. Waterman,** H. Sahli, V. Koelling, K. Karoly, and JK Conner. Evolution conference, Cleveland, OH, June 2022: "Strong evidence for positive and negative correlational selection revealed by recreating ancestral variation". Poster.
- **R. Waterman,** H. Sahli, V. Koelling, K. Karoly, and JK Conner. MSU Ecology, Evolution, and Behavior Symposium, May 2021: "Measuring selection on anther position using male and female fitness and expanded phenotypic variation". Virtual poster. Awarded *Runner-up Best Poster*.
- **R. Waterman.** Wesleyan University College of the Environment Senior Capstone Poster Session, Middletown, CT, May 2019: "Transgenerational Effects of Competition on Offspring Phenotypes in *Polygonum*". Poster & talk.

Teaching

Introduction to Data Analysis in R Summer Workshop,
Kellogg Biological Station (Hickory Corners, MI), *Coordinator and Instructor for 1 session/year* Summer 2024 & Summer 2025

Ecology Lab, Professor Louise Mead, Michigan State University (East Lansing, MI), *Teaching Assistant* Sept 2021 – Dec 2021

Evolution in Human-Altered Environments, Professor Sonia Sultan, Wesleyan University (Middletown, CT), *Teaching Assistant* Jan 2020 – May 2020

Environmental Justice Student Forum, full-credit student-run course, Wesleyan University (Middletown, CT), *Coordinator and Instructor for 1 session* Jan. 2017 – May 2017

Mentoring

Michael Kwalton (MSU Undergrad Research Assistant) Summer 2025
- Conducted methods testing for extracting plant DNA.

Eamon Bronson (Kalamazoo College, senior thesis in Biochemistry) May – Sept 2024
- Conducted herbivory survey of reciprocally transplanted plants in Ag and Non-Ag environments at KBS.

Lindsey Urban (Denison, NSF REU) & **Morgan Durham** (Agnes Scott, NSF REU) Summer 2024
- Measured leaf and physiological traits in field reciprocal transplant of agricultural weeds.

Ishwari Bhatt & **Georgia Edmonds** (Kalamazoo Area Math & Science Center Research Team) Fall 2023 – Spring 2024
- Conducted horseweed growth type experiment in greenhouse.

Brooke Catlett (Southern IL Carbondale, NSF REU) & **Dominick Stoops** (MSU Undergrad Research Assistant) Summer 2023
- Helped conduct reciprocal transplant field experiment, tested effect of gibberellic acid on horseweed growth type, and conducted pilot seed viability experiment.

Cole Cahill & **Nathan Gleason** (Kalamazoo Area Math & Science Center Research Team) Fall 2022 – Spring 2023
- Collected and analyzed seed production and morphology data in greenhouse-grown lambsquarters.

Shoshannah Blasczak (Suffolk County Community College, NSF REU) & **Sally Song** (Wellesley, NSF REUs) Summer 2022
- Helped conduct common garden experiment with agricultural and non-agricultural populations of 3 weedy species.
- Conducted a second year of slow-motion videos of pollinator visits to provide more definitive test of hypotheses.

Nicholas Bhandari (MSU Undergrad Research Assistant & biology honors thesis) May 2021 – Dec. 2021
- Tested adaptive hypotheses about anther position in wild radish using slow-motion videos of pollinator visits.

Co-mentored undergraduate researchers in Sultan Lab – Charlotte Babbin (Sept. 2019 – Sept. 2020), Jolie Villegas (Sept. 2019 - May 2020), Annie Thompson (Sept. 2019 - May 2020), and Amy Schaap (June 2018 – Dec. 2018)

Service & Outreach

Peer review: *New Phytologist* (Sept. 2020 & Aug. 2025), *American Journal of Botany* (Dec. 2020), *Proceedings of the Royal Society B* (July 2021)

Committees: KBS Culture and Inclusion Committee (Sept. 2022 – Fall 2025, co-chair starting Jan. 2023), PLB Graduate Student Organization (Oct. 2022 – Aug. 2024, KBS liaison), KBS Honors & Awards Committee (Jan. 2021 – May 2022), MSU Department of Plant Biology faculty search committee (May 2021-Feb 2022), Wesleyan College of the Environment Committee (Sept. 2017 – May 2019), Wesleyan Diversity and Sustainability Working Group (Dec. 2017 – Oct. 2018)

Professional organizations: Society for the Study of Evolution (Dec. 2020 – present), American Association for the Advancement of Science (Sept. 2021 – present), Association for Women in Science (Sept. 2022 – present)

Publications:

1. Rutkoski, C., Scamehorn, T., **Waterman, R**., Klotz, M., Zettlemoyer, M. (2023). Nature Journaling: Sharing Perspectives Between Art and Science. *Plant Science Bulletin,* 69(3),219-220. Special Issue: "Art in the Botanical Sciences". https://www.botany.org/psbarchive/issue/2023-v69-3.html
2. **Waterman, R.** (2018). Selection Perception: Views on the Theory of Evolution Among Residents of Moshi, Tanzania. School for International Training Independent Study Project (ISP) Collection. https://digitalcollections.sit.edu/isp_collection/3077

K-12 Science Outreach Spring 2022 - present
- Engage K-12 students with current science topics and science careers through classroom visits, career fairs, lesson plans, webinars, and field trips

EEB Collaborative Research Group, *Member* Aug. 2021 – Apr. 2023
- Conduct scholarly research on bias against underrepresented groups in academia

MSU Grads for Climate Justice, *Member* Jan. 2021- Jan. 2022
- Advocate for carbon neutrality at MSU, serve as representative on Utility Master Plan Working Group

Middletown Sustainability Team, Middletown, CT, *Volunteer* May 2019 – Aug. 2019
- Created updated inventory and GIS map of municipal brownfields in support of Sustainable CT Gold Certification

Veg Out, *Task Force Leader* Jan. 2016 – May 2019
- Promoted environmentally conscious and cruelty-free eating through campus events and campaigns (1-2 hours/week)

Natural Sciences and Mathematics Coalition, *Student Coordinator* Nov. 2017 – May 2019
- Promoted equity and inclusion in STEM through data collection, student-faculty discussions, and task committees

Wesleyan Fossil Fuel Divest, *Member* Oct. 2015 – May 2019
- Advocated for Wesleyan to divest its endowment from fossil fuel interests through peaceful protests and campaigns

Wesleyan Women in Science, *Member* Dec. 2015 – May 2019
- Attended events and discussions among fellow women in the STEM fields at Wesleyan

Everyone Outside, Durham, CT, *Nature Mentor/Coordinator* April 2019 – Oct. 2019
- Planned and led an after-school garden club for elementary school students; helped run nature-based field trips

Wesleyan Food Rescue, Middletown, CT, *Volunteer* Jan. 2019 – May 2019

- Redistributed extra food from Wesleyan dining halls to emergency homeless shelter

CT Forest and Parks Association, Middlefield, CT, *Service-Learning Partner* Fall 2017 & Spring 2019

- Used GIS tools to prioritize parcels along Blue-Blazed Trails based on various social and ecological factors

DEI, Mentorship, & Community Engagement Training

- MSU Community Engagement Workshops (40 hrs) Sept 2022-May 2022
- KBS Career Pathways seminars on workplace climate, mentoring, and fieldwork safety (6 hrs) Summer 2023
- KBS mentoring and inclusive interviewing/hiring trainings (3 hrs) Summer 2021 & 2022
- KBS Cultural Intelligence Workshop (1.5 hrs) Feb 23, 2022
- MSU Dialogues on Race: 9-week intergroup dialogue experience (1.5 hrs/week) Spring 2021