

Amy C. Patterson

Current Address:

Science Initiative Building
University of Wyoming
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Education

Case Western Reserve University, Cleveland, OH	2017-2023
Ph.D., Biology	
Thesis: <i>Ecological crashes and explosions: Improving early warning signals for ecological tipping points and exploring how eco-evolutionary feedbacks change the trajectory of species invasions</i>	
Advisor: Karen C. Abbott	
Washington University, St. Louis, MO	2011-2015
B.A., Biological Sciences – Ecology and Evolution (<i>Cum Laude</i>)	
Minors in Physics and Mathematics	
Thesis: <i>Phylogenetically novel species are more successful due to high competitive ability at local and regional spatial scales</i>	
Research Advisor: Tiffany M. Knight	

Publications

- Patterson, A.C., Strang, A.G., and Abbott K.C. 2021. When and where we can expect to see early warning signals in multi-species systems approaching tipping points: insights from theory. *The American Naturalist* 198(1): E12-E26.
- Dang, D.K.D., Patterson, A.C., and Carrasco L.R. 2019. An analysis of the spatial association between deforestation and agricultural field sizes in the tropics and subtropics. *PLoS ONE* 14(1): e0209918.

Certifications and Awards

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| • Outstanding Paper Award- Honorable mention, for Patterson et. al. 2021, AmNat (\$75) | 2022 |
| • Joanne Westin Distinguished Graduate Student Teaching Award – Honorable mention (\$75) | 2021 |
| • Joanne Westin Distinguished Graduate Student Teaching Award – Honorable mention (\$75) | 2018 |
| • Wilderness First Responder certification, SOLO, Conway NH | 2016 |
| • National Rube Goldberg Contest – 2013: 1 st place nationally, best single step; 2014: 2 nd place nationally, people's choice award, best single step | 2013-2014 |

Research and Professional Experience

- Postdoctoral Research Associate, EPSCoR and Botany Departments, University of Wyoming, Laramie, WY 2022-present
- Research Assistant, Carrasco Bio-Economics lab, Department of Biological Sciences, National University of Singapore, Singapore 2016-2017
- Conservation and Land Management Intern – Biological Technician, Chicago Botanic Garden and Bureau of Land Management, Burns, OR 2015
- Student researcher, Knight lab – Invasive species team, Department of Biology, Washington University, St. Louis, MO 2013-2015
- Wildlife Intern, MassAudubon Allens Pond, Westport, MA 2012

Teaching and Mentoring

- Guest Lecturer for Introduction to Experimental design 2023
- Teaching Assistant, Case Western Reserve University- Disease Ecology, Quantitative Biology Laboratory, Fitting Models to Data: Maximum Likelihood Methods and Model Selection, Taming the Tree of Life: Phylogenetic Comparative Methods – from Concept to Practical Application, Genes Evolution and Ecology Lab (X6), Genes Evolution and Ecology Lecture 2017-2022
- Case Western Reserve University – Mentored an undergraduate student on a project based on early warning signals of overharvesting 2021
- National University of Singapore – Assisted 3 undergraduate students in the lab with their final year independent projects 2016
- Teaching Assistant, Washington University in St. Louis, Experimental Ecology – Mentored students on independent field based projects 2015
- Tyson Research Center – Mentored 6 high school students and several junior field assistants over two field seasons 2013-2014
- Group leader for Peer-Led Team Learning, General Chemistry – Facilitated problem solving sessions proven to improve student performance 2013

Grants and Fellowships

- Verhosek Fund Conference Travel Award (\$250), Case Western Reserve University 2022
- Women in Science and Engineering Roundtable (WISER) Conference Travel Grant (\$600), Case Western Reserve University 2019
- Summer Undergraduate Research Fellow (SURF) (\$4000), Department of Biology, Washington University in St. Louis 2014
- Tyson Summer Undergraduate Research Program Fellow (\$4000), Tyson Research Center, Washington University in St. Louis 2013

Oral presentations

- Patterson, A.C., Weiss-Lehman, C.P., Abbott, K.C., *Competition-based eco-evolutionary interactions speed invasions while simultaneously reducing* 2023

their severity, Ecological Society of America (ESA) Conference, Portland, OR.

- Patterson, A.C., Strang, A.G., and Abbott, K.C., *How to avoid silent catastrophes: Improving the theory of early warning signals for ecological tipping points*, Department of Zoology and Physiology- Brown Bag Seminar Series, University of Wyoming, Laramie, WY. 2023
- Patterson, A.C., and Abbott, K.C., *Ecological crashes and explosions: improving early warning signals for ecological tipping points and exploring how eco-evolutionary feedbacks change the trajectory of species invasions*, Dissertation Defense seminar, Department of Biology, Case Western Reserve University, Cleveland, OH. 2022
- Patterson, A.C., and Abbott, K.C., *Plant competition during invasion under evolving toxicity and resistance*, Ecological Society of America (ESA) Conference, Montreal, QC, Canada. 2022
- Patterson, A.C., Strang, A.G., and Abbott, K.C., *How to avoid silent catastrophes by improving early warning signal detection*, Case Western Reserve University, Biology Annual Graduate Research Symposium, Cleveland, OH. 2020
- Patterson, A.C., Strang, A.G., and Abbott, K.C., *How to avoid silent catastrophes by improving early warning signal detection*, Ecological Society of America (ESA) Conference, Louisville, KY. 2019
- Patterson, A.C. and Carrasco, L.R., *Evaluating the impacts of deforestation on income in Indonesia*, Society for Conservation Biology (SCB) and Association for Tropical Biology and Conservation (ATBC) Conference, Singapore. 2016

Poster Presentations

- Patterson, A.C. and Knight, T.M., *Phylogenetically novel species are more successful due to high competitive ability at local and regional spatial scales*, Washington University, St. Louis, MO. 2015
- Patterson, A.C. and Knight, T.M., *Becoming common: Lack of competitors and herbivores is not enough to explain invasiveness in Lamiaceae, the mint family*, Washington University, St. Louis, MO. 2014
- Patterson, A.C. and Knight, T.M., *Mechanisms of invasion: How invasive species eclipse the competition*, Washington University, St. Louis, MO. 2013

Professional courses and workshops

- Reading Group in Linear Algebra and Statistical Rethinking 2023
- Matrix Methods for Dynamic Models and Data Analysis, Short course, taught by Shripad Tuljapurkar 2021
- Reading Group in Branching Processes 2020
- Introduction to GAM and GAMM, Highland Statistics Ltd, Singapore 2016
- Identification of Grasses of the Pacific Northwest– Carex Working Group, Bend OR 2015

- Conservation and Land Management Training Workshop – Chicago Botanic Garden, Chicago IL 2015

Reviewer history

- Methods in Ecology and Evolution: 2023
- Journal of Theoretical Biology: 2023

Affiliated Organizations

- Ecological Society of America
- Sigma Xi

Professional References

Dr. Karen Abbott

Professor – Case Western Reserve University

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Dr. Jean Burns

Associate Professor – Case Western Reserve University

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Dr. Robin Snyder

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Dr. Peter Thomas

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Dr. Christopher Weiss-Lehman

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