

◆ ADRIENNE BLAIR KELLER ◆

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EDUCATION

- Indiana University - Bloomington**, Department of Biology 2014-2020
Ph.D. in Evolution, Ecology & Behavior (Advisor: Dr. Richard Phillips)
Thesis: On the relationship between plant nutrient use strategies and soil biogeochemistry from individual trees to biome scales
- University of Montana - Missoula**, Department of Ecosystem and Conservation Science 2009 – 2011
M.S. in Resource Conservation (Advisor: Dr. Cory Cleveland)
Thesis: Effects of different canopy tree species on belowground ecosystem processes in a wet lowland tropical forest
- Macalester College** 2002 – 2006
B.A. in Biology (Advisor: Dr. Mark Davis) and Geography (Advisor: Dr. William Moseley)
Thesis: Microbial biomass and enzyme activity responses to elevated N and P deposition: a comparison between temperate and tropical soils

RESEARCH FOCUS

I am a terrestrial ecosystem ecologist and soil biogeochemist. I investigate how biotic and abiotic properties interact to drive element cycling, and how such interactions affect ecosystem processes in the wake of global environmental changes. My research spans multiple systems (forests, grasslands, and agricultural systems) and scales (lab incubations to greenhouse and field studies to global data syntheses).

RESEARCH EXPERIENCE

- 2020 – **Post-doctoral research scientist**, Sarah Hobbie's Lab, Department of Ecology, Evolution, and Behavior, University of Minnesota, Minneapolis, MN. Examining how nutrient addition affects plant and soil dynamics in grasslands in collaboration with Nutrient Network project.
- 2012 – 2013 **Research Assistant**, Bethany Bradley's Lab, Department of Environmental Conservation, University of Massachusetts Amherst, Amherst, MA. Built database of georeferenced presence/absence data of invasive plant species across continental U.S to model predictions of invasive species distributions under future climates.
- 2008 – 2009 **Research Assistant**, Paul Moorcroft's Lab, Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA. Collated data and developed statistical models of dual infection rates of blister rust and mountain pine beetle in whitebark pine ecosystems; assembled and analyzed data to build spatially explicit model of leafy spurge spread

TEACHING EXPERIENCE

- 2017-2019 **Fellow**, Graduate Women in STEM Teaching Fellows Program, Indiana University
- 2014 – 2019 **Associate Instructor**, Dept. of Biology, Indiana University, Bloomington, IN. Taught Introductory Biology lecture (L111) and lab/discussion course (L113), and Field Ecology (L474) for undergraduate science majors.

- 2013 **Field Instructor**, Ecology Project International, Puerto Ayora, Galápagos Islands, Ecuador. Taught intensive 5-10 day ecology field courses with U.S. and Ecuadorian students in English and Spanish.
- 2008 – 2009 **Science Teacher**, Science from Scientists, Boston, MA. Developed and taught hands-on science modules to public school students

GRANTS, AWARDS, AND FELLOWSHIPS (total awarded: \$172,695)

- 2019 USDA NIFA Pre-doctoral Fellowship, “Getting to the root of tree-mycorrhizal effects on carbon and nitrogen cycling in temperate forests” (\$119,985)
- 2019 Floyd/Ogg/Cleland Final Year Fellowship, Indiana University (\$10,833, declined)
- 2019 AAAS DoSER Public Engagement Award, “A Science-Faith Dialogue in the Indiana Heartland” (\$1,000)
- 2018, 2019 Provost’s Travel Award for Women in Science, Indiana University (\$1,000)
- 2018 Science and Democracy Fellowship, Union of Concerned Scientists (\$5,500)
(6-month fellowship focused on leading local science education and advocacy initiatives)
- 2018 McCormick Science Grant, Indiana University (\$2,500)
(Awarded to IU College of Arts and Sciences graduate student member of faculty/graduate student team whose research is judged most creative, visionary, and innovative)
- 2018 Blatchley Nature Study Club Scholarship, Indiana University (\$500)
(Communicated my research in a non-technical presentation to Nature Club members)
- 2017 CTFS-ForestGEO Research Grants Program, “A tree’s perspective of forest nutrient cycling: linking above- and belowground tree nutrient strategies” (\$14,977)
- 2017 Student Research Grant, Indiana University Research and Teaching Preserve (\$2,000)
- 2017 Louise Constable Hoover Fellowship, Department of Biology, Indiana University (\$1500)
- 2016 Fred Seward Award, Department of Biology, Indiana University (\$2,000)
- 2015 – 2018 Floyd Plant Summer Fellowship, Indiana University (\$1,600 each year)
- 2011 Best Student Presentation, Ecological Society of America Soil Ecology Section
- 2011 George E. Bright Memorial Scholarship, College of Forestry, University of Montana (\$3,000)
- 2010 NSF Graduate Research Fellowship Honorable Mention
- 2010 Edward F. Barry Scholarship, College of Forestry, University of Montana (\$1,500)
- 2010 Outstanding Presenter Award, U. of Montana Graduate/Faculty Research Conference
- 2006 William R. Angell Foundation Prize in Biology, Macalester College

SERVICE, MENTORSHIP, AND ENGAGEMENT

- 2017 – **Concerned Scientists @ Indiana University** (CSIU; a campus-community science advocacy organization), Steering Committee Member. Organize public events, develop and lead workshops, and elevate civic engagement related to science advocacy. Founder of **Advocates for Science @ Indiana University**, the IU student organization arm of CSIU.
- 2016 – 2020 **SciU Blog Writer**, Indiana U. College of Arts and Sciences blog (<https://blogs.iu.edu/sciu/>)
- 2016 – 2020 **Group Scholars STEM Mentoring Program Mentor**, Indiana University
- 2016 **Jim Holland Summer Science Research Program Mentor**, Indiana University. Mentored a high school student from underrepresented population to develop an independent research project.
- 2015 – 2016 **EcoLunch Committee Co-chair**, Indiana University; Organized research and professional development seminar series, spearheaded efforts to strengthen ecology group at IU

2015 – 2020 **Undergraduate Research Mentor**, Mentees: Corben Andrews, Madison Barney, Andrea Bloom, Daniel Boyes, Lily Bunis-Haines, Megan Du, Daniel Du, Kelly Fox*, Jordan Gregory, Emma Hand, Jaema Howard, Alicia Mehling, Kelsey Nicholson, James Keys, Hongxi Lyu*, Michaela Lock, Brindin Parrott, Elizabeth Parent, Naomi Reibold, Shelby Roberts*, Caleb Smith*, Rachel Zeunik

* indicates students I supervised who carried out independent research projects

PUBLICATIONS

Keller, A.B., Brzostek, E.R., Craig, M.E., Fisher, J.B., and Phillips, R.P. (2021) Root-derived inputs are major contributors to soil carbon in temperate forests. *Ecology Letters*. DOI: 10.1111/ele.13651

Keller, A.B. and Phillips, R.P. (2019) Relationship between belowground carbon allocation and nitrogen uptake in saplings varies by plant mycorrhizal type. *Frontiers in Forests and Global Change*. 2:81 DOI: 10.3389/ffgc.2019.00081

Keller, A.B. and Phillips, R.P. (2019) Leaf litter decay rates differ between mycorrhizal groups in temperate, but not tropical, forests. *New Phytologist*. DOI: 10.1111/nph.15524

Zhang, H., Lü X., Hartmann, H., **Keller, A.B.**, Han, X., Trumbore, S., and R.P. Phillips. (2018) Foliar nutrient resorption differs between arbuscular mycorrhizal and ectomycorrhizal trees at local and global scales. *Global Ecology and Biogeography*. 1:11 DOI: 10.1111/geb.12738

Waring B.G., Álvarez-Cansino, L., Barry, K.E., Becklund, K.K., Dale, S., Gei, M.G., **Keller, A.B.**, Lopez, O.R, Markesteijn, L., Mangan, S., Rigs, C.E., Rodríguez-Ronderos, M.E., Segnitz, R.M., Schnitzer, S.A., Powers, J.S. (2015) *Pervasive and strong effects of plants on soil chemistry: a meta-analysis of individual plant ‘Zinke’ effects*. Proc. R. Soc. B 282: 20151001

Keller, A.B., Reed, S.C., Townsend, A.R., Cleveland, C.C. (2013) *Effects of canopy tree species on belowground biogeochemistry in a lowland wet tropical forest*. Soil Biology and Biochemistry 58:61-69

Cleveland, C.C., Reed, S.C., **Keller, A.B.**, Nemergut, D.R., Sean P.O., Ostertag, R., Vitousek, P.M. (2013) *Litter quality versus microbial community controls over decomposition: a quantitative analysis*. Oecologia DOI 10.1007/s00442-013-2758-9

SELECTED PRESENTATIONS

Keller, A.B., Brzostek, E.R., Craig, M.E., and Phillips, R.P. Plant and mycorrhizal trait effects on soil carbon dynamics across six temperate forests. Oral Presentation, **2019 American Geophysical Union Fall Meeting**, San Francisco, CA

Keller, A.B., and Limaye, V.S. Engaged science: strategies, opportunities, and benefits. Oral Presentation, **2019 American Geophysical Union Fall Meeting**, San Francisco, CA

Keller, A.B., Brzostek, E.R., and Phillips, R.P. Looking belowground: how belowground carbon allocation varies among AM and ECM species in eastern U.S. temperate forests. Oral Presentation, **2019 Ecological Society of America Meeting**, Louisville, KY

Keller, A.B. and Phillips, R.P. A tree’s perspective of nutrient cycling: linking above- and below-ground nutrient use strategies. Oral Presentation, **2018 Ecological Society of America Meeting**, New Orleans, LA

Keller, A.B. and Phillips, R.P. Tree mycorrhizal association predicts leaf litter decomposition rates across temperate forests. Oral Presentation, **2017 Ecological Society of America Meeting**, Portland, OR

Keller, A.B. and Phillips, R.P. *The carbon cost of nitrogen uptake: does mycorrhizal association predict rhizosphere carbon and nitrogen dynamics?* Poster Presentation, **2016 Ecological Society of America Meeting**, Fort Lauderdale, FL

Keller, A.B. Reed, S.C., Townsend, A.R., Cleveland, C.C. *Effects of canopy tree species on belowground biogeochemistry in a lowland wet tropical forest.* Oral Presentation, **2011 Ecological Society of America Meeting**, Austin, TX

Cleveland, C.C., Reed, S.C., **Keller, A.B.** *Does soil microbial community composition affect decomposition rates?* Oral Presentation, **2010 University of Montana Graduate/Faculty Research Conference**, Missoula, MT

PROFESSIONAL AFFILIATIONS

American Geophysical Union

Ecological Society of America