

# Alison R. Marklein

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email: alison.marklein@gmail.com • website: alisonmarklein.com • phone: 513.479.8926

## EDUCATION

**Ph.D.**, University of California, Davis (*Ecology, Advisor: B. Z. Houlton*), 2014

**Dissertation:** Nitrogen and Phosphorus Cycling in Terrestrial Ecosystems: Using Models and Meta-analysis to Understand Patterns and Processes

**B.A.**, Cornell University (*Biological Sciences – Computational Biology*), 2008

## RESEARCH APPOINTMENTS

*Postdoc*, UC Drought and Carbon Management Consortium (August 2016 – present)  
University of California, Berkeley; Lawrence Berkeley National Lab  
Advisors: W. J. Riley, E. L. Brodie

*Postdoc*, UC Global Food Initiative (January 2016 – present)  
University of California, Davis; Lawrence Berkeley National Lab  
Advisors: P. S. Nico, K. S. Steenwerth

*Postdoc*, Terrestrial Biogeochemistry (September 2014 – November 2015)  
College of Forestry and Conservation, University of Montana  
Advisor: C. C. Cleveland

*Postdoc*, Global Ecology and Biogeochemistry (January 2014 – July 2014)  
Department of Land, Air, and Water Resources, University of California, Davis  
Advisor: B. Z. Houlton

## RESEARCH GRANTS

Collaborative Research: Bioavailability of soil phosphorus in tropical forest soils: Is slowly cycling phosphorus accessible to plants and soil biota? Dr. Cory Cleveland (PI), Dr. Noah Fierer (Co-PI), **Dr. Alison Marklein (Co-PI)**. National Science Foundation Award 1556643. \$399,759.00. August 2016 – July 2019.

## PUBLICATIONS

**Marklein, A.R.**, J.B. Cookingham, S.K. Enders, D.J.X. Gonzalez, T.L. van Huysen, J.E. Izquierdo, D.R. Light, D. Liptzin, K.E. Miller, S.L. Morford, R.A. Norton, B.Z. Houlton. “Mineralization ratios of nitrogen and phosphorus from decomposing litter in temperate versus tropical forests.” *Global Ecology and Biogeography* 2015.

Huang, W., B.Z. Houlton, **A.R. Marklein**, J. Liu, G. Zhou. “Plant stoichiometric responses to elevated CO<sub>2</sub> vary with nitrogen and phosphorus inputs.” *Scientific Reports*, 2015. (*Biology Faculty of 1000 selection*)

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Houlton, B.Z., **A.R. Marklein**, E. Bai. “Improving nitrogen in climate change forecasts.” *Nature Climate Change* 2015.

Cleveland, C., B.Z. Houlton, W.K. Smith, **A.R. Marklein**, S.C. Reed, W. Parton, S. Del Grosso and S.W. Running. “Patterns of new production point to sustained CO<sub>2</sub> uptake capacity in tropical forests.” *Proceedings of the National Academy of Sciences* 2013.

**Marklein, A.R.**, B. Houlton. “Nitrogen inputs accelerate phosphorus cycling rates across a wide variety of terrestrial ecosystems.” *New Phytologist* 2012. (*Biology Faculty of 1000 selection*)

Cleveland, C., A. Townsend, S. Alvarez-Clare, M. Bustamante, G. Chuyongs, P. Grierson, K. Harms, B. Houlton, **A.R. Marklein**, W. Parton, S. Porder, S. Reed, C. Sierra, W. Silver, P. Taylor, E. Tanner, and W. Wieder. “Relationships among net primary productivity, nutrients, and climate in tropical rain forest: a pan-tropical analysis.” *Ecology Letters* 2011.

Pimentel, D., **A.R. Marklein**, M. Toth, M. Karpoff, G. Paul, R. McCormack, J. Kyriazis and T. Krueger. “Environmental and Economic Costs of Biofuels” in *Human Ecology*, D. Bates and J. Tucker, Eds. Springer, 2010, pp 349-360. (*not peer-reviewed*)

Pimentel, D., **A.R. Marklein**, M. Toth, M. Karpoff, G. Paul, R. McCormack, J. Kyriazis and T. Krueger. “Food Versus Biofuels: Environmental and Economic Costs.” *Human Ecology* 2009.

Pimentel, D., **A.R. Marklein**, M. Toth, M. Karpoff, G. Paul, R. McCormack, J. Kyriazis, and T. Krueger. “Biofuel Impacts on World Food Supply: Use of Fossil Fuel, Land and Water Resources.” *Energies* 2008.

Rhesus Macaque Genome Sequencing and Analysis Consortium: Gibbs, R., [...] **A.R. Marklein** *et al.* “Evolutionary and biomedical insights from the Rhesus Macaque Genome.” *Science* 2007.

### FELLOWSHIPS AND AWARDS

Powerhouse Science Center’s Science Communication Fellow (2016)

American Association of University Women American Postdoctoral Fellowship Alternate (2016)

U.C. Davis Community Service Award (2012)

UC Davis Graduate Student Researcher Award, Engineering & Computer Science (2011)

Peter J. Shields and Henry A. Jastro Research Fellowship (2009, 2010)

University of California – Davis Block Grant Fellowship (2009)

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## UNIVERSITY TEACHING EXPERIENCE

*Teaching Assistant*, Ecosystem Biogeochemistry (March – June 2011; March – June 2013)  
Department of Land, Air and Water Resources, University of California, Davis  
Developed and led 2 meta-analysis and 2 modeling workshop sessions; led 2 discussion sections per week; held 2 office hours per week; graded 2 exams and managed grades

*Teaching Assistant*, Global Environmental Interactions (January – March 2010; January – March 2012)  
Department of Environmental Resource Science, University of California, Davis  
Led 3 discussion sections per week and 2 lectures per quarter; graded problem sets, writing assignments and exam questions; held 3 office hours per week; managed grades

*Guest Lecturer*, Modeling nutrient limitation in the tropics (May 2009)  
Ecology of Tropical Latitudes, Dr. Arthur Shapiro  
Department of Evolution and Ecology, University of California, Davis

*Teaching Assistant*, Freshman Seminar: Seed Biology and Health (January – May 2007)  
Department of Biology, Cornell University  
Supported students to prepare for future research by sharing experiences and building skills

## CONFERENCE PRESENTATIONS

*Interactions among plants, symbiotic  $N_2$  fixing bacteria, and arbuscular mycorrhizal fungi: A model based analysis to predict NPP and nutrient uptake*, Ecological Society of America (Baltimore, MD; August 2015)

*Nitrogen isotopes inform nitrogen by climate interactions*, Ecological Society of America (Sacramento, CA; August 2014)

*Nitrogen isotopes improve predictions of N losses and climate change*, Lawrence Berkeley National Lab, Land Modeling Group (Invited talk, Berkeley, CA; June 2014)

*Nitrogen/Phosphorus mineralization ratios across forests worldwide*, American Geophysical Union (San Francisco, CA; December 2013)

*Globally coherent patterns of litter nitrogen and phosphorus mineralization in temperate and tropical forests*, International Nitrogen Initiative (Kampala, Uganda; November 2013)

*Plant-microbe competition for nitrogen and phosphorus in tropical and temperate forests*, Ecological Society of America (Minneapolis, MN; August 2013)

*Global patterns of nitrogen/phosphorus mineralization in forests*, Carnegie Institute of Global Ecology Internal Seminar (Invited talk, Stanford, CA; January 2013)

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*N/P mineralization ratios across forest ecosystems*, Ecological Society of America (Portland, OR; August 2012)

*Nitrogen inputs stimulate phosphorus-mineralizing enzymes*, American Geophysical Union (San Francisco, CA; December 2010)

*Nitrogen inputs stimulate phosphorus-mineralizing enzymes*, International Nitrogen Initiative (New Delhi, India; December 2010)

*Nitrogen inputs stimulate phosphorus-mineralizing enzymes*, Ecological Society of America (Pittsburgh, PA; August 2010)

### WORKING GROUPS

Department of Energy Workshop: Strategies to Promote Integrated Experiment-Model Approaches to Terrestrial Ecosystem Study (Washington, DC; March 2012)

An Integrated Network for Terrestrial Ecosystem Research on Feedbacks to the Atmosphere and Climate (INTERFACE): Linking experimentalists, ecosystem modelers, and Earth system modelers. Working group: Using top-down approaches to constrain global N and P mineralization Rates (Fort Collins, CO; January 2012)

National Center for Ecological Analysis and Synthesis (NCEAS): Tropical Nutrient Limitation (Santa Barbara, CA; 2009 – 2011)

Ecological Society of America: Coupled Biogeochemical Cycles Symposium and Discussion (Invited participant, Albuquerque, NM; August 2009)

### OUTREACH AND MENTORING

*Scientist, Meet a Scientist Day at Powerhouse Science Center* (2016)

Powerhouse Science Center, Sacramento, CA

Developed and presented hands-on activity about my research at Sacramento science museum

*Volunteer Scientist, Science is Elementary* (2015)

Conducted hands-on experiments in elementary schools

*Guest Lecturer, Applications of Algebra II in Ecological Research* (2014)

Algebra II, Berkeley High School

Developed lecture, discussion, and problem set using Algebra II to predict atmospheric CO<sub>2</sub>

*Mentor, Student Landowner Education & Watershed Stewardship* (2011 – 2013)

Center for Land Based Learning, Winters, CA

Lead and mentor group of high school students during restoration project field trips

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*EnvironMentor* for minority high school student (2011 – 2012)

College of Agriculture and Environmental Science, University of California, Davis

Mentored high school student in environmental science and collaborate on research project

My student was a finalist and competed in national science fair in Washington, D.C.

*Outreach Educator, Watch it Don't Squash It* (2010)

Society for Conservation Biology, University of California, Davis

Developed and led environmental activities for elementary classes

*Assistant Coordinator and Web Developer*, Education and Public Outreach (2007 – 2008)

Department of Radiophysics and Space Research, Cornell University

*Public Awareness Co-Chair*, Roosevelt Institution, Cornell University (2007 – 2008)

### ACADEMIC SERVICE

*Board Member, Science Ambassador Scholarship*, Cards of Humanity (2015 - present)

*Organized Oral Session Organizer: From bacteria to the biosphere: Nitrogen*

isotope applications across systems and scales, Ecological Society of America (Sacramento, CA 2014)

*Admissions Committee Reviewer*, Graduate Group in Ecology, UC Davis (2011 - 2013)

*Treasurer*, Graduate Group in Ecology, UC Davis (2011 - 2013)

*Ecology Symposium Organizer* (2011, 2013), *Co-chair* (2012), UC Davis

*Seminar Organizer: Ecological Stoichiometry* (2012), *Animals and Biogeochemistry* (2011), Graduate Group in Ecology, UC Davis

*Manuscript Reviews: Reviewed manuscripts for Acta Oecologia, Ecological Modelling, Ecological Processes, Ecology, Forests, Geoderma, Geophysical Research Letters, Global Biogeochemical Cycles, Global Change Biology, Journal of Ecology, New Phytologist, Plant and Soil, Proceedings of the National Academy of Sciences, Public Library of Science ONE, Reviews of Geophysics, Science of the Total Environment, Scientific Reports, Soil Biology and Biochemistry, and Theoretical Ecology*

### PROFESSIONAL AFFILIATIONS

Ecological Society of America (Biogeosciences section)

American Geophysical Union (Biogeosciences section)