

## KATIE M. BECKLIN

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### EDUCATION

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2010 Ph.D. in Biology University of Missouri, Columbia, MO  
Advisor: Dr. Candace Galen  
2004 B.S. in Biology University of Puget Sound, Tacoma, WA  
Advisor: Dr. Elizabeth Kirkpatrick

### RESEARCH INTERESTS

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- Global change effects on plant physiology, species interactions, and community dynamics across paleo and contemporary time scales
- Physiological mechanisms driving spatial and temporal variation in species interactions
- Eco-evolutionary dynamics of complex interaction webs across environmental gradients
- Linkages between above- and belowground interactions in terrestrial communities
- Distribution, diversity, and functioning of plant-microbe interactions across ecotonal boundaries
- Impacts of microbial symbionts on plant physiology, species distributions, and eco-evolutionary dynamics across space and time

### ACADEMIC APPOINTMENTS

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2017–Present *Assistant Professor*, Department of Biology, Syracuse University, Syracuse, NY  
2016–2017 *Associate Researcher*, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, KS  
2012–2015 *NIH IRACDA Postdoctoral Fellow*, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, KS  
2013–2014 *Adjunct Faculty*, Department of Natural Sciences, Haskell Indian Nations University, Lawrence, KS  
2010–2012 *Postdoctoral Researcher*, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, KS  
2005–2012 *Life Sciences Graduate Fellow*, Division of Biological Sciences, University of Missouri, Columbia, MO

### AWARDS AND HONORS

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#### *Academic Awards*

2015 *IRACDA Outstanding Scholar Award*, NIH IRACDA National Conference

- **National award** in recognition of excellence in promoting diversity through research, teaching, mentoring, and outreach

2015 *Postdoctoral Research Award*, KU Postdoc Research Symposium

- 2012 *Plant, Cell, & Environment Postdoctoral Award*, ESA Physiological Ecology Section
- **Internationally competitive award** in recognition of the best presentation in physiological ecology (“Mycorrhizal functioning since the last glacial period: Evidence from packrat middens and stable isotopes”)
- 2010 *Dean’s Certificate for Outreach*, University of Missouri
- Certificate in recognition of contribution to the university’s service mission through outreach to local K-12 and adult populations (first recipient)
- 2004 *Gordon D. Alcorn Award in Biology*, University of Puget Sound
- Award in recognition of academic achievement, accomplished research in biology, and outstanding service to the department and community

### **Other Awards**

- 2015 *Travel Award*, KU Ecology and Evolutionary Biology Department
- 2013 *Travel Award*, KU Postdoctoral Association
- 2011 *Travel Award*, KU Ecology and Evolutionary Biology Department
- 2010 *Travel Award*, MU Biological Graduate Student Association
- 2009 *Travel Award*, Ecological Society of America
- 2008 *Travel Award*, Botanical Society of America

## **FUNDING RECORD**

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### **Competitive Fellowships**

- 2012–2015 *NIH IRACDA Fellowship*, University of Kansas
- 2012–2013 *AAUW American Postdoctoral Fellowship* (fellowship was declined due to acceptance of the NIH IRACDA fellowship)
- 2009–2010 *Predocctoral Fellowship*, Association of Women in Science
- 2005–2009 *Life Sciences Fellowship*, University of Missouri
- 2007–2008 *Environmental Scholarship*, Trans World Airlines
- 2005 *Graduate Fellowship*, Phi Kappa Phi Honor Society

### **External Grants (funded)**

- 2008–2010 National Science Foundation, Doctoral Dissertation Improvement Grant, DEB0027756, “Friends in high places: Mycorrhizal associations in alpine plant communities” (Co-PI with Candace Galen, University of Missouri)
- 2007–2008 Colorado Native Plant Society, John W. Marr Award, “Do mycorrhizal associations affect the invasibility of alpine willow communities?”

## **PUBLICATIONS (\*Undergraduate co-authors)**

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### **Peer-Reviewed Publications**

- Becklin KM**, Walker SM, Way DA, and Ward JK. 2017. CO<sub>2</sub> studies remain key to understanding a future world. *New Phytologist*, 214: 34-40.
- Becklin KM**, Anderson JT, Gerhart LM, Wadgyman SW, Wessinger CA, and Ward JK. 2016. Examining plant physiological responses to climate change through an evolutionary lens. *Plant Physiology*, 172: 635-649.
- Becklin KM**, Mullinix GWR\*, and Ward JK. 2016. Host plant physiology and mycorrhizal functioning shift across a glacial through future [CO<sub>2</sub>] gradient. *Plant Physiology*, 172: 789-801.

Voelker SL, Brookes JR, Meinzer FC, Anderson R, Bader M, Battipaglia G, **Becklin KM**, Beerling D, Bert D, Betancourt JL, Dawson TE, Domec J-C, Guyette RP, Körner C, Leavitt SW, Linder S, Marshall JD, Mildner M, Ogée J, Panyushkina I, Plumpton HJ, Pregitzer KS, Saurer M, Smith AR, Siegwolf RTW, Stambaugh MC, Talhelm AF, Tardif JC, Van de Water PK, Ward JK, and Wingate L. 2016. A dynamic leaf gas-exchange strategy is conserved in woody plants under changing ambient CO<sub>2</sub>: evidence from carbon isotope discrimination in paleo and CO<sub>2</sub> enrichment studies. *Global Change Biology*, 22:889-902.

**Becklin KM**, Medeiros JS, Sale KR\*, and Ward JK. 2014. Evolutionary history underlies plant physiological responses to global change since the Last Glacial Maximum. *Ecology Letters*, 17:691-699. (Highlighted in Koskella *et al.* 2014, *Evolutionary Applications*, 7:431-432)

**Becklin KM**, Hertweck KL, and Jumpponen A. 2012. Host identity impacts rhizosphere fungal communities associated with three alpine plant species. *Microbial Ecology*, 63:682-693.

**Becklin KM**, Pallo ML\*, and Galen C. 2012. Willows indirectly reduce arbuscular mycorrhizal colonization of understory plants. *Journal of Ecology*, 100:343-351.

**Becklin KM**, Gamez G\*, Uelk B\*, Raguso RA, and Galen C. 2011. Soil fungal effects on floral signals, rewards, and aboveground interactions in an alpine pollination web. *American Journal of Botany*, 98:1299-1308.

**Becklin KM** and Galen C. 2009. Intra- and interspecific variation in mycorrhizal associations across a heterogeneous habitat gradient in alpine plant communities. *Arctic, Antarctic, and Alpine Research* 41:183-190.

**Becklin KM**. 2008. An evolutionary arms race: understanding plant-herbivore interactions. *American Biology Teacher*, 70:288-292.

**Becklin KM** and Kirkpatrick HE. 2006. Compensation through rosette formation: Scarlet gilia's (*Ipomopsis aggregata*) response to mammalian herbivory. *Canadian Journal of Botany*, 84:1298-1303.

### **Minor Publications**

**Becklin KM**. 2014. Ancient packrat middens provide clues about climate change in the Snake Range. *The Midden* [newsletter], 14:5.

**Becklin KM**. 2009. Effects of habitat and mycorrhizal associations on the exotic dandelion, *Taraxacum officinale*, in alpine communities. *Aquilegia* [newsletter], 33:10-13.

### **Cover Images**

October 2016. Arbuscular mycorrhizal fungi colonizing *Taraxacum ceratophorum* roots. *Plant Physiology*, Focus Issue on Plant Ecophysiology.

### **Relevant Press**

January 2016. *The Leaflet* science newsletter highlights a collaborative project involving researchers at the Australian National University, University of Kentucky, and University of Kansas.

August 2014. *KU Today* and *Lawrence Journal-World* featured *Ecology Letters* paper on plant physiological responses to global change.

April 2014. *Evolutionary Applications* highlighted *Ecology Letters* paper in an article on "Predicting the evolutionary response of populations to climate change" (Koskella B. 2014. *Evolutionary Applications*, 7:431-432).

## **PRESENTATIONS (\*Undergraduate co-authors)**

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### **Invited University Seminars**

2017 Texas Tech University, Lubbock, TX, USA.

- University of Georgia, Athens, GA, USA.  
 Purdue University, West Lafayette, IN, USA.  
 University of Kansas, Lawrence, KS, USA.  
 Eastern Michigan University, Ypsilanti, MI, USA.
- 2016 Syracuse University, Syracuse, NY, USA.  
 State University of New York, Old Westbury, NY, USA.  
 California State University, Los Angeles, CA, USA.  
 University of Pittsburgh, Pittsburgh, PA, USA.  
 University of Central Florida, Orlando, FL, USA.  
 Roosevelt University, Chicago, IL, USA.  
 University of West Georgia, Carrollton, GA, USA.
- 2015 Oklahoma State University, Stillwater, OK, USA.
- 2014 North Dakota State University, Fargo, ND, USA.  
 Haskell Indian Nations University, Lawrence, KS, USA.  
 University of Missouri, Columbia, MO, USA.
- 2013 Haskell Indian Nations University, Lawrence, KS, USA.
- 2012 Wichita State University, Wichita, KS, USA.
- 2011 Kansas State University, Manhattan, KS, USA.

### ***Invited Symposium / Workshop Presentations***

- Becklin KM.** Photosynthetic constraints on C<sub>3</sub> plant responses to rising [CO<sub>2</sub>]: A legacy of the past? *Gordon Research Conference on CO<sub>2</sub> Assimilation in Plants*. Florence, Italy. May 2017.
- Becklin KM** and Ward JK. Learning from the past: Ancient packrat middens provide novel insights into global change ecology. *KU Postdoc Research Day*, Lawrence, KS, USA. May 2015.
- Becklin KM**, Medeiros JS, Sale KR\* and Ward JK. Evolutionary history underlies plant physiological responses to global change since the Last Glacial Maximum. *New Phytologist: Next Generation Scientists Symposium*, Norwich, UK. July 2014.
- Becklin KM** and Ward JK. Plant physiology and adaption over recent geologic history. Pacific Northwest National Laboratory, Richland, WA, USA. February 2013.
- Becklin KM.** Mycorrhizal associations: Connecting belowground processes to aboveground biodiversity. National Park Service, Lakewood, CO, USA. November 2008.

### ***Presentations at Scientific Meetings***

- Becklin KM**, Ward JK, Way DA, and Whitney SM. Photosynthetic constraints on C<sub>3</sub> plant responses to rising [CO<sub>2</sub>]: A legacy of the past? *Ecological Society of America 100<sup>th</sup> Annual Meeting*, Fort Lauderdale, FL, USA. August 2016.
- Becklin KM**, Bergmann C\*, Mullinix GWR\*, Wang W\* and Ward JK. A dual perspective: Plant and fungal traits that underlie shifts in mycorrhizal responses to rising [CO<sub>2</sub>]. *Ecological Society of America 100<sup>th</sup> Annual Meeting*, Baltimore, MD, USA. August 2015.
- Becklin KM** and Ward JK. Integrating research and teaching in a flipped classroom. *IRACDA Conference*, San Diego, CA, USA. June 2015.
- Becklin KM**, Medeiros JS, Sale KR\* and Ward JK. Evolutionary history underlies plant physiological responses to global change since the Last Glacial Maximum. *American Geophysical Union Fall Meeting*, San Francisco, CA, USA. December 2014.
- Becklin KM**, Medeiros JS, Sale KR\* and Ward JK. Evolutionary history underlies plant physiological responses to global change since the Last Glacial Maximum. *Ecological Society of America 99<sup>th</sup> Annual Meeting*, Sacramento, CA, USA. August 2014.

- Becklin KM**, Brewer A and Maxwell J. Mini-journal articles engage non-major students in the scientific method. *IRACDA Conference*, Albuquerque, NM, USA. June 2014.
- Becklin KM**, Mullinix GWR\* and Ward JK. Mycorrhizal responsiveness of *Taraxacum* species shifts across glacial through future atmospheric [CO<sub>2</sub>]. *Ecological Society of America 98<sup>th</sup> Annual Meeting*, Minneapolis, MN, USA. August 2013.
- Becklin KM**, Medeiros JS, Sale KR\* and Ward JK. Ancient packrat middens provide novel insights into plant responses to global change: Linking paleoecological research and inquiry-based teaching strategies. *IRACDA Conference*, Atlanta, GA, USA. June 2013.
- Becklin KM**, Medeiros JS, and Ward JK. Mycorrhizal functioning since the last glacial period: Evidence from packrat middens and stable isotopes. *Ecological Society of America 97<sup>th</sup> Annual Meeting*, Portland, OR, USA. August 2012.
- Becklin KM**, Gamez G\*, Uelk B\*, Raguso RA, and Galen C. Soil fungal effects on floral signals, rewards, and aboveground interactions in an alpine pollination web. *Gordon Research Conference on Plant Volatiles*, Ventura, CA, USA. January 2012.
- Becklin KM**, Hertweck KL, and Jumpponen A. Host identity impacts rhizosphere fungal communities associated with three alpine plant species. *Botany Annual Meeting*, St. Louis, MO, USA. July 2011.
- Becklin KM**, Pallo ML\*, and Galen C. Indirect effects of willows reduce arbuscular mycorrhizal colonization of understory plants. *Ecological Society of America 95<sup>th</sup> Annual Meeting*, Pittsburgh, PA, USA. August 2010.
- Gamez G\*, **Becklin KM**, and Galen C. The fungus factor: Effects of mycorrhizae on floral traits and reproductive fitness in *Polemonium viscosum*. *Ecological Society of America 95<sup>th</sup> Annual Meeting*, Pittsburgh, PA, USA. August 2010.
- Becklin KM**, Pallo ML\* and Galen C. Using net mycorrhizal benefits to explain and predict plant invasions. *Ecological Society of America 94<sup>th</sup> Annual Meeting*, Albuquerque, NM, USA. August 2009.
- Pallo, M\*, **Becklin KM**, and Galen C. Variation in soil communities across heterogeneous landscapes. *Ecological Society of America 94<sup>th</sup> Annual Meeting*, Albuquerque, NM, USA. August 2009.
- Becklin KM** and Galen C. The good, the bad, and the costly: Effects of shading and drought on the costs and benefits of mycorrhizal associations. *Botany and Mycology Annual Meeting*, Vancouver, BC, Canada. July 2008.
- Becklin KM** and Bertness MD. Effects of changes in temperature and precipitation on salt pannes in the southern United States. *Benthic Ecology Meeting*, Williamsburg, VA, USA. May 2005.

## TEACHING EXPERIENCE

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### Courses Taught

- *Isotopic Approaches in Global Change Ecology*, Syracuse University (Fall 2017)
- *Global Change: Ecological, Physiological, and Isotopic Approaches*, University of Kansas (Spring 2014)
- *General Biology*, Haskell Indian Nations University (Fall 2013 & Spring 2014)
- *Seminar in Environmental Biology*, University of Missouri (Spring 2010)
- *General Ecology*, University of Missouri (Fall 2009)
- *Plant Population Biology*, University of Missouri (Fall 2006)

### Other Experience

- Gave 8 guest lectures at 3 universities
- Developed and led 3 workshops on scientific writing and peer review

- Developed 6 new inquiry-based labs for general biology and plant population biology (1 lab was published in *American Biology Teacher*)

## **SERVICE AND OUTREACH**

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### **Professional Service**

- 2016            *External Reviewer*, National Science Foundation
- 2015            *Proposal Review Panel Member*, Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Richland, WA
- 2013            *Conference Liaison*, ASBMB Conference on Public Outreach and Science Communication, University of Missouri, Columbia, MO, USA
- 2013            *Invited Participant*, Belowground carbon cycling processes at the molecular scale: New tools for user research. February 2013. Environmental Molecular Science Laboratory, Pacific Northwest National Laboratory, Richland, WA
- 2008            *Invited Participant*, Alpine Vegetation Workshop: Response of alpine and subalpine plant species to changes in atmospheric N deposition. November 2008. National Park Service and US Environmental Protection Agency, Lakewood, CO
- 2011–Present   *Manuscript Reviewer* for *Applied and Environmental Microbiology*, *Botany*, *Ecology Letters*, *Journal of Biogeography*, *Microbial Ecology*, *Oecologia*, *Oikos*, *Plant and Soil*, *Symbiosis*, and others

### **University Service**

- 2016            *AAUW Liaison and Mentor*, Jayhawks Breaking Barriers, University of Kansas (program to raise awareness about gender gaps in science)
- 2013 & 2014    *Instructor*, Scientific Integrity Workshop for KU-Haskell BRIDGE Program (NIH-funded research program for Native Americans), University of Kansas
- 2013            *Committee Member*, KU Postdoctoral Research Day and STEM Career Fair, University of Kansas
- 2010            *Research Mentor*, Plant Genomics Internship Program, University of Missouri (NSF-funded summer research program)
- 2007–2010     *Research Mentor*, Undergraduate Mentoring in Environmental Biology, University of Missouri (NSF-funded research program for minorities)

### **Community Service**

- 2015 & 2016    *Exploring Plant Genetics*, University of Kansas
- Developed inquiry-based activities on plant genetics for 6<sup>th</sup> grade students from Lawrence, KS (~30 students)
- 2014            *Funky Fungi*, University of Kansas
- Outreach program for home-schooled students in Lawrence, KS (1 family has participated thus far)
  - Developed an inquiry-based activity on fungal ecology and coordinated visits to 3 fungal biology labs on campus
- 2013            *West Middle School*, Columbia, MO
- Developed an inquiry-based activity on paleoecology and climate change for 6<sup>th</sup> grade students from Columbia, MO (~60 students)
- 2013–Present   *Kansas City Gear-Up*, University of Kansas

- Annual outreach program for 6<sup>th</sup> grade students from Kansas City, KS (~100 students annually)
  - Developed an inquiry-based activity on paleoecology and climate change
- 2012–Present     *Women in Science Day*, Washburn University
- Annual outreach program for 7<sup>th</sup> grade girls sponsored by the Association for Women in Science (~40 students annually)
  - Developed and led two separate inquiry-based activities on paleoecology and plant mutualisms
- 2011                 *Research Day at KU*, University of Kansas
- Annual outreach program for 4<sup>th</sup> grade students in Lawrence, KS
  - Developed an inquiry-based activity on plant biology (~100 students)
- 2008–Present     *PlantingScience*, Botanical Society of America
- National online mentoring program in plant biology
  - Member of the Master PlantingScience Team
  - Mentored ~16 students annually
  - Served as a teacher-mentor liaison
- 2008–2010         *Science and Me*, University of Missouri
- Seminar and discussion series for retirees in Columbia, MO
  - Developed a seminar on climate change
  - Spoke at 4 independent living facilities, public library, and the annual Mizzou alumni back-to-school event (~125 adults)
- 2006–2010         *Life Sciences Outreach Program*, University of Missouri
- Outreach program for K-12 students in Columbia, MO
  - Developed an inquiry-based activity on fungal biology (~100 students)
  - Contributed to the annual *Mizzou Adventures in Education* event
  - Contributed to development of outreach lessons on forensic science and conservation biology (~50 students annually)

## **PROFESSIONAL DEVELOPMENT**

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- 2014                 *NIH Grant Writing Workshop*, University of Kansas, Lawrence, KS
- 2013                 *Scientific Communication Workshop*, University of Kansas
- 2008–2009         *Preparing Future Faculty*, University of Missouri
- 2009                 *Assisting in the Writing Intensive Classroom*, University of Missouri
- 2007                 *Entering Mentoring Training*, University of Missouri
- 2004                 *Introduction to ArcGIS*, ESRI [online course]

## **PROFESSIONAL MEMBERSHIPS**

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- 2016–Present     American Society of Plant Biologists
- 2014–Present     American Geophysical Union
- 2010–Present     American Association of University Women
- 2008–Present     Ecological Society of America
- 2007–Present     Botanical Society of America

## **STUDENT TRAINING AND MENTORING**

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### ***Graduate Students***

2014–2017 Austin Lynn, University of Missouri (consultant)  
2010–2016 Alice Tipton, University of Missouri (consultant)

### ***Undergraduate Students***

2016–2017 Claire Byers, University of Kansas  
2015–2016 Caitlin Bergmann, University of Kansas  
2015–2016 Matthew Herndon, University of Kansas  
2015–2016 Caelan Graham, University of Kansas  
2014–2015 Wendy Wang, University of Kansas  
2012–2013 Kayla Sale, University of Kansas  
2012–2013 George Mullinix, University of Kansas  
Fall 2011 Kelly Kluthe, University of Kansas  
Summer 2010 Audrey Freiberger, University of Missouri  
Summer 2010 Gavin Johnson, Utah State University  
2009–2010 Guadalupe Gamez, University of Missouri  
2008–2009 Megan Pallo, University of Missouri  
2008–2009 Bryan Uelk, University of Missouri  
Summer 2008 Timothy Cornell, University of Missouri  
Summer 2007 JunHo Han, Gyeongsang National University  
2007–2008 Alyce Johnson, University of Missouri