

## **Kimberly O’Keefe, *Curriculum Vitae*** (updated June 2023)

3001 South Congress

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### **Research Interests**

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plant biology, plant ecophysiology, climate change biology, plant responses to stress, grasslands / savannas, fire ecology, woody encroachment, stable isotope ecology, ecohydrology

### **Appointments**

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- 2021 – Present**    **Assistant Professor**  
Department of Biological Sciences, St. Edward’s University
- 2021 – Present**    **Program Director**  
Environmental Biology and Climate Change, St. Edward’s University
- 2021**                **Postdoctoral Research Associate**  
Department of Ecosystem Science and Management, University of Wyoming
- 2017 – 2021**       **Postdoctoral Research Associate**  
Department of Botany, University of Wisconsin-Madison

### **Education**

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- 2012 – 2016**        **Kansas State University, PhD Biology**  
Advisor: Jesse B. Nippert  
Dissertation: “Patterns and ecological consequences of water uptake, redistribution, and loss in tallgrass prairie”
- 2010 – 2012**       **Saint Joseph’s University, MS Biology**  
Advisor: Clint J. Springer  
Thesis: “Influences of local adaptation and genome size on *Panicum virgatum* (switchgrass) responses to variable precipitation timing”
- 2006 – 2010**       **The College of New Jersey, BS Biology (Fine Arts Minor)**  
Advisors: Howard K. Reinert and Janet Morrison  
Thesis: “Habitat utilization by the northern pine snake (*Pituophis m. melanoleucus*) in the New Jersey Pine Barrens”

### **Teaching Experience**

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- 2021 – Present**    **Assistant Professor, St. Edward’s University**  
BIOL 2423: Environmental Conservation and Climate Change (Fall 2021, 2022)
- BIOL 3353: Geographic Information Systems (Fall 2021, 2022)
- BIOL 2427: Terrestrial Plant Ecology (Spring 2022, 2023)
- BIOL 1308: General Biology II (Spring 2022)

- 2017**                    **Co-Instructor**, University of Wisconsin-Madison  
 BOT 950: Stable Isotope Ecology, Taught with Kate McCulloh (1 semester)  
 Designed syllabus and lecture materials; presented lessons;  
 evaluated graduate student projects
- 2012 – 2016**           **Graduate Teaching Assistant**, Kansas State University  
 BIO 501: Plant Physiology (3 semesters)  
 Taught senior-level plant physiology laboratory; advised small group  
 independent projects; evaluated student research papers
- BIO 198: Principles of Biology (3 semesters)  
 Team-taught introductory biology course; led Plant Ecology / Physiology  
 “module”; provided feedback for students as they completed laboratory materials
- 2014 – 2015**           **NSF GK-12 Resident Scientist**, Kansas State University and  
 Junction City High School  
 Freshman Physical Science (2 semesters)  
 Taught physics and chemistry to high school freshman; developed active-learning  
 “modules” based off my own research; led laboratory and field trip activities
- 2010 – 2012**           **Service Learning Teacher**, Saint Joseph’s University and  
 Samuel Gompers Elementary School  
 Service Learning Science Education Program  
 Led science classroom activities in 3<sup>rd</sup> – 4<sup>th</sup> grade classrooms
- 2007 – 2008**           **Teaching Assistant**, Long Beach Island Foundation of Arts and Sciences  
 Elementary Science Education Program  
 Assisted with marine biology / coastal ecology program for children  
 (Kindergarten – 4<sup>th</sup> grade)

## Students Mentored

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- 2023 – Present**        Annie Dale; undergraduate student at SEU
- 2023 – Present**        Rylie Katz; undergraduate student at SEU
- Summer 2023**         Elizabeth Payne; undergraduate student at SEU
- Summer 2023**         Savanah Zambrano; undergraduate student at SEU
- 2022 – 2023**         Sam Mathieu; undergraduate student at SEU
- 2022 – 2023**         Ricardo Martinez; undergraduate student at SEU
- 2022 – 2023**         Alecia Becker; undergraduate student at SEU
- 2022 – 2022**         Isabela Sanfeliz; undergraduate student at SEU
- 2019 – 2020**         Megan Grejczyk: Senior Thesis undergraduate student at UW-Madison
- 2019 – 2020**         Andres Paredes-Vincent: Undergraduate Research Scholar at UW-Madison
- 2018 – 2019**         Chad Kluender: Honor’s Thesis undergraduate student at UW-Madison
- 2018 – 2019**         James Hart: Honor’s Thesis undergraduate student at UW-Madison
- 2017 – 2019**         Kevin Hobbins: Honor’s Thesis undergraduate student at UW-Madison
- Summer 2017**         Sam Jaeger: UW-Madison undergraduate student
- Summer 2015**         Braden Hoch: REU student at Konza LTER
- Summer 2014**         Andy Muench: REU student at Konza LTER
- 2013 – 2016**         Rachel Lease: KSU undergraduate student
- 2012 – 2014**         Ben Ketter: KSU undergraduate student

## Grants and Fellowships

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- 2023**      **NSF:** Supporting Ecology & Data Science Scholars (StEDS Scholars). Senior Personnel: Kimberly O'Keefe.
- 2022**      **NSF DUE:** Robert Noyce Teacher Scholarship Program: Maker Education and Community Building as Tools to Recruit, Develop, and Retain STEM Teachers. PI: Steven Fletcher; Co-PIs: Kimberly O'Keefe, Catherine Campbell, and Casey Sherman. Awarded \$1,181,608.
- 2022**      **NSF i4 ROA Award:** Assessing the impact of drought on Central Texas grassland communities. Awarded \$30,000 to PI O'Keefe and co-PI Concilio.
- 2021**      **NSF Integrative Research in Biology:** Collaborative Proposal: Integrating trait diversity across hierarchical scales to predict biological resilience in an era of extreme environmental change. Total award of \$1,402,568; Subaward amount of \$341,093 to O'Keefe.
- 2018**      **Lakeshore Nature Preserve Research Grant**, University of Wisconsin-Madison  
Awarded \$1500
- 2015**      **Sigma Xi Grants in Aid of Research**, Kansas State University  
Awarded \$200
- 2014**      **NSF GK-12 Teaching Fellowship**, Kansas State University  
Awarded \$30,000, plus tuition and health benefits; included teaching appointment, participation in summer teaching workshop, and weekly teaching seminars
- 2014**      **Prairie Biotic Research Grant**, Small Grants Program  
Awarded \$1000
- 2013**      **KSU Biology Graduate Student Association Research Grant**  
Awarded \$500
- 2013**      **DOE Flux Course Fellowship**  
Awarded \$2500 to attend the 6<sup>th</sup> Annual Summer Course in Flux Modeling and Advanced Measurements at the University of Colorado Mountain Research Station
- 2012**      **Sigma Xi Student Research Grant**, Saint Joseph's University  
Awarded \$200
- 2009**      **Mentored Undergraduate Summer Experience Research Fellowship**,  
The College of New Jersey  
Awarded \$1000

## Travel Awards

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- 2020**      **Joint International Grassland / International Rangeland Congress Travel Grant**, Forage and Grassland Foundation and IGIR Congress  
Awarded \$2300 total
- 2014 – 2016**      **Biology Graduate Student Travel Grant**, Kansas State University  
Awarded \$2000

**College of Arts and Sciences Travel Award, Kansas State University**  
Awarded \$2200

**Graduate Student Council Travel Award, Kansas State University**  
Awarded \$1500

## **Awards**

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- 2023**      **Dean’s Excellence Award for Research**  
St. Edward’s University, School of Natural Sciences
- 2022**      **Prairie Project Education Fellowship (2022 – 2024)**  
Texas A&M University
- 2016**      **Michael Scott Watkins Award for Excellent Graduate Student Teaching,**  
Kansas State University, Division of Biology
- 2016**      **Chris Edler Award for Outstanding Research on Konza Prairie**  
Kansas State University, Division of Biology
- 2016**      **John C. Frazier Award for Excellence in Graduate Research in Plant Biology,**  
Kansas State University, Division of Biology
- 2015**      **Best Short Talk,** Kansas State University, Division of Biology
- 2015**      **Graduate Oral Presentation (2<sup>nd</sup> Place),** Kansas State University  
Awarded \$250
- 2013**      **Graduate Oral Presentation (1<sup>st</sup> Place),** ESA MA Conference  
Awarded \$650
- 2009**      **NSF Graduate Research Fellowship**  
Honorable Mention

## **Publications** (\*indicates undergraduate student)

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18. **O’Keefe K**, Smith DD, McCulloh KA (2023) Linking stem rehydration kinetics to hydraulic traits using a novel method and mechanistic model. *Annals of Botany*. <https://doi.org/10.1093/aob/mcad066>
17. McCulloh KA, Augustine SP, Goke A, Jordan R, Krieg CP, **O’Keefe K**, Smith DD (2022) At least it is a dry cold: the global distribution of freeze–thaw and drought stress and the traits that may impart poly-tolerance in conifers. *Tree Physiology*. <https://doi.org/10.1093/treephys/tpac102>
16. Rastetter EB, Kwiatkowski BL, Kicklighter DW, Barker Plotkin A, Genet H, Nippert JB, **O’Keefe K**, Perakis SS, Porder S, Roley SS, Ruess RW, Thompson JR, Wieder WR, Wilcox K, Yanai RD (2022) N and P constrain C in ecosystems under climate change: Role of nutrient redistribution, accumulation, and stoichiometry. *Ecological Applications*. e2684. doi:10.1002/eap.2684
15. Keen RM, Nippert JB, Sullivan PL, Ratajczak Z, Ritchey B, **O’Keefe K**, Dodds WK (2022) Impacts of Riparian and Non-riparian Woody Encroachment on Tallgrass Prairie Ecohydrology. *Ecosystems*. <https://doi.org/10.1007/s10021-022-00756-7>

14. **O’Keefe K**, Bachle S, Keen R, Tooley EG, Nippert JB (2021) Root traits reveal safety and efficiency differences in grasses and shrubs exposed to different fire regimes. *Functional Ecology*. <https://doi.org/10.1111/1365-2435.13972>
13. Wedel ER, **O’Keefe K**, Nippert JB, Hoch B\*, O’Connor RC (2021) Spatio-temporal differences in leaf physiology are associated with fire, not drought, in a clonally integrated shrub. *AoB PLANTS*. <https://doi.org/10.1093/aobpla/plab037>
12. Berry CZ, Ávila-Lovera E, De Guzman ME, **O’Keefe K**, Emery NC (2021) Beneath the Bark: Assessing Woody Stem Water and Carbon Fluxes and Its Prevalence Across Climates and the Woody Plant Phylogeny. *Frontiers in Forests and Global Change*. DOI=10.3389/ffgc.2021.675299
11. **O’Keefe K**, McCulloh KA (2020) Do invasive jumping worms impact sugar maple (*Acer saccharum*) functioning during a novel invasion of a temperate forest? *Biological Invasions*. DOI: 10.1007/s10530-020-02360-z
10. **O’Keefe K**, Bell DM, McCulloh KA, Nippert JB (2020) Bridging the flux gap: sap flow measurements reveal species-specific patterns of water-use in a tallgrass prairie. *JGR Biogeosciences*. DOI: 10.1029/2019JG005446
9. Hart J\*, **O’Keefe K**, Augustine S, McCulloh KA (2020) Physiological responses of germinant *Pinus palustris* and *P. taeda* seedlings to water stress and the significance of the grass-stage. *Forest Ecology and Management*. DOI: 10.1016/j.foreco.2019.117647
8. **O’Keefe K**, Nippert JB, McCulloh KA (2019) Plant water uptake along a diversity gradient provides evidence for complementarity in hydrological niches. *Oikos*. DOI: 10.1111/oik.06529
7. **O’Keefe K**, Nippert JB (2018) Drivers of nocturnal water flux in a tallgrass prairie. *Functional Ecology*. DOI: 10.1111/1365-2435.13072
6. **O’Keefe K**, Nippert JB (2017b) An assessment of diurnal water uptake in a mesic prairie: evidence for hydraulic lift? *Oecologia* DOI: 10.1007/s00442-017-3827-2
5. **O’Keefe K**, Nippert JB (2017a) Grazing by bison is a stronger driver of plant ecohydrology in tallgrass prairie than fire history. *Plant and Soil* DOI: 10.1007/s11104-016-3048-1
4. Muench AT\*, **O’Keefe K**, Nippert JB (2016) Comparative ecohydrology between *Cornus drummondii* and *Solidago canadensis* in upland tallgrass prairie. *Plant Ecology*. DOI: 10.1007/s11258-016-0567-z
3. **O’Keefe K**, Swemmer A, Nippert JB (2016) Savanna tree seedlings are physiologically tolerant to nighttime freeze events. *Frontiers in Plant Science* 7:46. DOI: 10.3389/fpls.2016.00046
2. **O’Keefe K**, Del Cid C, Arango CP, Puetz W\*, Springer CJ (2013) Elevated [CO<sub>2</sub>] does not ameliorate the negative consequences of infection with the xylem-limited bacteria *Xylella fastidiosa* in *Quercus rubra* seedlings. *Castanea* 78(3):216-226. DOI: 10.2179/12-040
1. **O’Keefe K**, Tomeo N, Nippert JB, Springer CJ (2013) Population origin and genome size do not impact *Panicum virgatum* (switchgrass) responses to variable precipitation. *Ecosphere* 4(3):37. DOI: 10.1890/ES12-00339.1

## Edited Book Chapters

1. **O’Keefe K**, Springer CJ, Grennell J, Davis S (2014) Biofuel Development from Cellulosic Sources. *in*: The Plant Sciences – Ecology & the Environment, ed: Russel Monson, Springer Reference Series, Springer-Verlag Berlin Heidelberg. 2013-12-01 19:08:16 UTC

## Invited Talks

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O’Keefe K (2023) Ecology and eco-grief in an era of global change. **The LBJ Presidential Library**, Austin, TX.

O’Keefe K, Nippert J, McCulloh K (2022) Linking aboveground and belowground traits to understand shrub encroachment in a changing climate. **Ecological Society of America Annual Conference**, Montreal, Canada.

O’Keefe K, Nippert J, McCulloh K (2022) Linking aboveground and belowground traits to understand shrub encroachment in a changing climate. **Multiscale Plant Vascular Biology Gordon Conference**, Newry, ME.

O’Keefe K (2021) Using plant traits to understand tallgrass prairie community and ecosystem dynamics in a changing world. **Saint Edward’s University**, Austin, TX (virtual).

O’Keefe, K (2021) Plant hydraulic traits that influence grassland communities. **Lunch with a Scientist at Cedar Creek LTER**, Bethel, MN (virtual).

O’Keefe K (2020) Using plant traits to understand tallgrass prairie community and ecosystem dynamics in a changing world. **St. Mary’s College of Maryland**, St. Mary’s City, MD (virtual).

O’Keefe K (2020) Using plant traits to understand tallgrass prairie community and ecosystem dynamics in a changing world. **Eastern Connecticut State University**, Willimantic, CT.

O’Keefe K, McCulloh KA (2018) Effects of invasive jumping earthworms on sugar maple functioning. **Upper Midwest Invasive Species Conference**, Rochester, MN.

O’Keefe K, Nippert JB, McCulloh KA (2017) Ecohydrology of biological invasions in two contrasting ecosystems. **Cedar Creek Ecosystem Science Reserve**, Bethel, MN.

## Talks (first authored only)

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O’Keefe K, Keen R, Tooley E, Bachle S, Nippert JB, McCulloh K. (2021) Hydraulic Responses of Shrubs and Grasses to Fire Frequency and Drought in a Tallgrass Prairie Experiencing Bush Encroachment. **International Grassland / International Rangeland Congress**, Nairobi, Kenya (virtual).

O’Keefe K, McCulloh KA (2019) How do drought and fire impact water-use traits in a common grassland shrub? **University of Wisconsin Postdoc Symposium**, Madison, WI.

O’Keefe K, Nippert JB, McCulloh KA (2018) Plant water uptake along a diversity gradient: Evidence for complementarity in hydrological niches? **Ecological Society of America Annual Meeting**, New Orleans, LA.

O’Keefe K, McCulloh KA (2018) Plant water uptake along a diversity gradient: Evidence for complementarity in hydrological niches? **University of Wisconsin Postdoc Symposium**, Madison, WI.

O’Keefe K, McCulloh KA (2017) When earthworms invade! Effects of invasive jumping earthworms on sugar maple functioning at the UW Arboretum. **University of Wisconsin Postdoc Symposium**, Madison, WI.

O'Keefe K, Nippert JB (2015) Nocturnal transpiration is highly variable within a tallgrass prairie community. **Ecological Society of America Annual Meeting**, Baltimore, MD.

O'Keefe K, Swemmer A, Nippert JB (2015) Physiological mechanisms of drought and cold tolerance in coexisting woody species from South African savannas. **Annual Savanna Science Networking Meeting**, Skukuza, South Africa.

O'Keefe K, Nippert JB (2014) Grazing impacts on hydraulic lift in a tallgrass prairie. **Ecological Society of America Annual Meeting**, Sacramento, CA

O'Keefe K, Nippert JB, Springer CJ (2013) Population-level adaptation and genome size do not influence *Panicum virgatum* (switchgrass) responses to variable precipitation timing. **Mid-Atlantic Ecological Society of America Meeting**, Dover, DE.

O'Keefe K, Nippert JB, Springer CJ (2012) Influences of local adaptation and genome size on *Panicum virgatum* (switchgrass) responses to variable precipitation timing. **Ecological Society of America Annual Meeting**, Portland, OR.

### **Poster Presentations** (\*indicates undergraduate student)

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Becker A,\* Dale A,\* O'Keefe K (2022) Native and invasive grasses function similarly in the Texas Hill Country. **The Texas Society for Ecological Restoration Annual Conference**, Austin, TX.

O'Keefe K, R Keen, JB Nippert, KA McCulloh (2019) Hydraulic responses of *Cornus drummondii* to fire frequency and drought in a tallgrass prairie. **American Geophysical Union Annual Meeting**, San Francisco, CA.

O'Keefe K, McCulloh KA (2018) Effects of invasive jumping earthworms on sugar maple hydraulics at the UW-Madison Arboretum. **UW-Madison Arboretum Science Day**, Madison, WI.

O'Keefe K, Nippert JB (2016) Tallgrass prairie ecohydrology: Implications for a changing climate. **ILTER Open Science Meeting**, Skukuza, South Africa

O'Keefe K, O'Connor R, Hoch B,\* Nippert JB (2015) Does size matter? Size class differences in *Cornus drummondii* physiology. **American Geophysical Union Annual Meeting**, San Francisco, CA.

O'Keefe K, Nippert JB (2015) Up All Night: Nocturnal water-use in a tallgrass prairie. **LTER All Scientists Meeting**, Estes Park, CO.

O'Keefe K, Nippert JB (2014) Nighttime transpiration is highly variable within a tallgrass prairie community. **American Geophysical Union Annual Meeting**, San Francisco, CA.

O'Keefe K, Nippert JB (2013) Local adaptation, plasticity and physiological stress tolerance among five perennial grasses. **Ecological Society of America Annual Meeting**, Minneapolis, MN

O'Keefe K, Nippert JB, Springer CJ (2012) "Population-level adaptation and genome size do not influence *Panicum virgatum* (switchgrass) responses to variable precipitation timing" **LTER All Scientists Meeting**, Estes Park, CO.

O'Keefe K, Nippert JB, Springer CJ (2012) Genome size as an indicator of plastic responses to drought stress in *Panicum virgatum* L. (switchgrass) exposed to variable precipitation timing. **Annual Meeting of the American Society of Plant Biology**, Austin, TX.

O’Keefe K, Nippert JB, Springer CJ (2012) Genome size as an indicator of plastic responses to drought stress in *Panicum virgatum* L. (switchgrass) exposed to variable precipitation timing. **23rd Annual Sigma Xi Student Research Symposium**, Philadelphia, PA.

O’Keefe K, Nippert JB, Springer CJ (2012) Phenotypic responses of switchgrass (*Panicum virgatum* L.) to simulated climate change. **Grasslands in a Global Context Symposium**, Manhattan, KS.

## Service

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<b>2021 – Present</b>	<b>Manager</b> , St. Edward’s University SEU Greenhouse and Herbarium
<b>2021 – Present</b>	<b>Committee Member</b> , St. Edward’s University Tree Campus USA Committee; NSCI social committee; Environmental Science, Justice, and Sustainability Working Group
<b>2021 – 2022</b>	<b>McNair Journal Faculty Reviewer</b> , St. Edward’s University
<b>2020 – Present</b>	<b>Botany Diversity and Inclusion Working Group</b> , University of Wisconsin-Madison Focus group to foster equitable merit, promotion, and evaluation processes
<b>2020 – Present</b>	<b>Botany Informal Talk Series</b> , University of Wisconsin-Madison Co-Organizer
<b>2020 – Present</b>	<b>Wisconsin Ecology Committee</b> , University of Wisconsin-Madison Postdoc Chair Representative
<b>2018 – Present</b>	<b>Data Carpentry Workshop</b> , University of Wisconsin-Madison Developed advanced data analysis workshop for plant scientists Taught “Visualization in R” lessons for 2-day data carpentry workshops
<b>2018 – Present</b>	<b>Wisconsin Institutes for Discovery</b> , University of Wisconsin-Madison Volunteered at a variety of science outreach events for K-12 students
<b>2018 – 2020</b>	<b>Skype A Scientist</b> , Nationwide Video chatted with K-12 students about my research and being a scientist
<b>2018</b>	<b>Research Mentor Training Workshop</b> , University of Wisconsin-Madison Facilitated a 5-week mentoring workshop for post-docs and graduate students
<b>2015 – 2016</b>	<b>Konza Prairie Docent</b> , Konza Environmental Education Program Led educational tours of Konza Prairie to K-12 groups and the public
<b>2012 – 2016</b>	<b>Konza Prairie Volunteer</b> , Konza Prairie Biological Station Assisted with bison roundup and annual prescribed burning
<b>2014</b>	<b>Ecological Consultant</b> , EPA RainWorks Challenge Acted as an ecological consultant for undergraduate students as they developed EPA grant proposals
	<b>Biology Graduate Student Association</b> , Kansas State University Vice President
	<b>Graduate Student Recruitment Committee</b> , Division of Biology, KSU



**2009**                      **Herpetological Survey**, New Jersey Audubon Society  
Surveyed Pine Snake nesting habitat in the New Jersey Pine Barrens

### **Professional Development / Training**

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**2022**                      **Prairie Project – 2022 Educator Cohort**, Texas A&M University  
**2021**                      **PhysFest III: Short course in plant ecophysiology**, Instructor, CSU Mountain Campus  
**2019**                      **Data Carpentry Instructor Training**, UW-Madison  
**2018**                      **PhysFest II: Short course in plant ecophysiology**, Holden Arboretum, Kirkland, OH  
**2018**                      **Software Carpentry workshop**, UW-Madison  
**2018**                      **Data Carpentry workshop**, UW-Madison  
**2018**                      **Research Mentor Training – Instructor Training**, UW-Madison  
**2018**                      **Research Mentor Training Workshop**, UW-Madison  
**2018**                      **The Learning Environments and Pedagogics (LEaP) Institute**, UW-Madison  
**2018**                      **The Morgridge Entrepreneurial Bootcamp**, UW-Madison  
**2016**                      **PhysFest I: Short course in plant ecophysiology**, Konza Prairie LTER  
**2015**                      **Konza Prairie Docent Training Workshop**, Konza Prairie LTER  
**2014**                      **NSF GK-12 Summer Teaching Workshop**, KSU  
**2013**                      **Flux Course**, Rocky Mountain Field Station  
Training in Eddy Flux and Remote Sensing techniques  
**2013**                      **Isotopes and Paleoenvironments Workshop**, KS

### **Research Societies**

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American Geophysical Union, Beta Beta Beta Biological Honor Society, Ecological Society of America, Sigma Xi Scientific Research Society (Full Member)

### **Journals Reviewed For**

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American Journal of Botany, Agricultural and Forest Meteorology, Biological Invasions, Ecohydrology, Ecosphere, Frontiers in Plant Science, Functional Ecology, Journal of Botany, New Phytologist, Oecologia, Photosynthesis Research, Plant Cell & Environment, Tree Physiology