

Curriculum Vitae

James David (Jim) Shaffer

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Education

- 2013- Present** **Ph.D. in Biology**, *University of Kentucky*. Expected Completion, May 2021
Qualifying Exam Passed, May 2017
Dissertation Title: “Restoring the legend: Competition, herbivory, and fire influence the survival, growth, and physiology of native tree seedlings in the Kentucky Bluegrass Savanna-Woodland.”
Thesis Advisor: Scott K. Gleeson (UK Biology); Co-Advisor: John J. Cox (UK Forestry)
- 2010- 2013** **M.S. in Biology**, *University of Kentucky*. August 2013
Thesis Title: “Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass Blue Ash-Oak Savanna-Woodland.” *Thesis Advisor: Scott K. Gleeson*
- 2002-2006** **B.S. in Ecology & Biodiversity**, *Sewanee: The University of the South*. May 2006
Senior Independent Research Projects: (1) “Water quality of exurban, agricultural, and forested watersheds in the Sequatchie Valley, TN.” (2) “Mortality of redbay (*Persea borbonia*) on St. Catherine’s Island, GA by the invasive redbay ambrosia beetle (*Xyleborus glabratus*).”
- 2000-2002** *Roane State Community College*
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Teaching Experience

University of Maine at Farmington (Instructor of Record, Title: Lecturer I)
Bio110N-Botany for Humans. Lecture and Lab Instructor. (1 semester, Spring 2018)

University of Kentucky (Graduate Teaching Assistant)

Bio303- Introduction to Evolution Recitation. Graduate Teaching Assistant (6 semesters, most recent Spring 2017)

Bio325- Introductory Ecology Lab. Graduate Teaching Assistant (4 semesters, most recent Fall 2014)

Bio325- Introductory Ecology Lab. Lab Development Coordinator and Graduate Teaching Assistant (Spring 2014)

Bio325- Introductory Ecology Lab. TA Co-Coordinator and Graduate Teaching Assistant (Spring 2012)

Bio151- Principles of Biology Lab I. Graduate Teaching Assistant (Spring 2011)

Bio153- Principles of Biology Lab II. Graduate Teaching Assistant (Fall 2010)

University of Kentucky (Grader)

Bio152- Principles of Biology II. Graduate Teaching Assistant (3 semesters, most recent Spring 2019)

University of Kentucky (Guest Instructor)

For365- Wildlife Assessment, Native Mammal Herbivory Lab (Spring 2017)

NSF Research Experience for Undergraduates (REU), Bluegrass Savanna Ecosystem (Summer 2014, 2013, 2012)

Bio325- Introductory Ecology Lecture, Ecology Research Symposium (Fall 2013)

Bio452G- Laboratory in Ecology, Stream Ecology Session (Spring 2011)

Eastern Kentucky University (Guest Instructor)

Bio318- Plant Ecology and Taxonomy Lab, Bluegrass Savanna Restoration (Spring 2015)

Wld382-Wildlife Population Ecology Lab, Bluegrass Savanna Ecology (Summer 2014)

Sewanee: The University of the South

Bio131- Evolution, Ecology, and Biodiversity Lab, Undergraduate Teaching Assistant (Fall 2003 to Spring 2006)

Publications

Published Manuscripts

Westneat, D.F., Potts, L.J., Sasser, K.L., and **Shaffer, J.D.** 2019. Causes and consequences of phenotypic plasticity in complex environments. **Trends in Ecology & Evolution** 34(6): 555-568.
<https://doi.org/10.1016/j.tree.2019.02.010>

Technical Reports

Shaffer, J.D., Gleeson, S.K., and Cox, J.J. 2016. Incorporating Disturbance Ecology into Native Hardwood Tree Seedling Restorations of the Kentucky Inner Bluegrass Savanna-Woodland. Kentucky Department of Fish and Wildlife Resources Annual Research Highlights, 2015. Volume IX. Publication of the Wildlife and Fisheries Division. November 2016, 85 pp. <https://fw.ky.gov/More/documents/2015researchhighlights.pdf>

Shaffer, J.D. 2016. Emerald Ash Borer Threatens Native Ash Trees. EcoLink: Newsletter of the Ecological Research and Education Center (Field Station of the Bluegrass). Ecolink 1(2): 2.
http://darwin.uky.edu/~erec/documents/EcoLink_V01-I02.pdf

Shaffer, J.D. 2016. Tree Restoration in Kentucky Bluegrass Woodlands. EcoLink: Newsletter of the Ecological Research and Education Center (Field Station of the Bluegrass). Ecolink 1(1): 2.
http://darwin.uky.edu/~erec/documents/EcoLink_V01-I01_Feb2016.pdf

Shaffer, J.D., Gleeson, S.K., Cox, J.J., and Lhotka, J.M. 2014. Ecological Factors Influencing Native Hardwood Seedling Establishment in the Kentucky Inner Bluegrass Blue Ash-Oak Savanna-Woodland. Kentucky Department of Fish and Wildlife Resources Annual Research Highlights, 2013. Volume VII. Publication of the Wildlife and Fisheries Division. October 2014, 90 pp.
<https://fw.ky.gov/More/Documents/2013ResearchHighlights.pdf>

Thesis

Shaffer, J.D. 2013. "Factors Influencing the Establishment and Survival of Native Hardwood Tree Seedlings of the Kentucky Inner Bluegrass Blue Ash-Oak Savanna-Woodland". *Theses and Dissertations--Biology*. Paper 15. http://uknowledge.uky.edu/biology_etds/15/

Manuscripts in Preparation (draft in progress and/or work has been presented publicly)

Shaffer, J.D., Reed, D.J., Bate, C.P., Gleeson, S.K., Cox, J.J. Impacts of Prescribed Fire and Post-Fire Herbivory on Tree Seedling Growth in a Kentucky Bluegrass Savanna-Woodland Old-Growth Remnant. *In prep.* Target Journal: American Midland Naturalist.

Shaffer, J.D., Gleeson, S.K., Cox, J.J., and Lhotka, J.M. Competition and herbivory influence the survival and growth of fourteen native hardwood tree seedlings in the Kentucky Inner Bluegrass Savanna-Woodland. *In prep.* Target Journal: Ecology.

Shaffer, J.D., Gleeson, S.K., Cox, J.J. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. *In prep.* Target Journal: Forest Ecology and Management.

Shaffer, J.D. and Gleeson, S.K. Photosynthetic rates, chlorophyll density, and specific leaf area of ten hardwood tree seedling species in manipulated shade environments. *In prep.* Target Journal: Journal of Plant Physiology.

Shaffer, J.D., Gleeson, S.K., and Cox, J.J., Prescribed fire impacts on the survival and growth of experimentally planted tree seedlings in the Kentucky Bluegrass Savanna-Woodland. *In prep.* Target Journal: Ecology.

Mentoring

I have had the opportunity to mentor and guide capstone independent research projects for two University of Maine at Farmington and eleven University of Kentucky undergraduates. This has covered the diversity of student type and has included foreign visiting, minority, first generation, and non-traditional college students. Their research has covered a breadth of ecological areas and has been presented at local and national conferences with strong possibilities for future publication.

Sp 2019 – F 2020	Isaiah Reed. Height and diameter differences in southern and northern species of tree seedlings in response to a changing climate in Maine.
Sp 2019-- F 2020	Jordan Fried. Bud and leaf phenology differences in southern and northern species of tree seedlings in response to a changing climate in Maine
Spring 2017	Ehren Anderson. Deer herbivory influences sapling architecture after five years of browsing. -Accepted to MS Biology Program, University of KY, graduated May 2019 -Admitted to Auburn University Veterinary Medicine Program, Class of 2023
Summer 2016	Zach Hackworth. Hardwood tree seedling physiology in manipulated shade environments. -Earned MS in Forestry, University of Kentucky, Spring 2018. Now employed as Research Technician for University of Kentucky, Department of Forestry and Natural Resources.
Spring 2016	Ryan McDuffie. Fire effects on invasive poison hemlock (<i>Conium maculatum</i>). -Employed as Environmental Educator by Catalina Island Marine Institute 2 years; Now employed by Adventures Cross Country (ARCC), a Service Travel Educational Institution.
Spring 2016	Pierre Fwelo. Soil nutrient responses to controlled burning of a restored native grassland. -Earned MS in Public Health at UK, now applying for PhD programs in Public Health.
Summer 2015	Jessica Lima-Guin. (Foreign exchange student from Brazil). Impacts of experimental shading on growth and photosynthetic rates of native hardwood tree seedlings of the Kentucky Bluegrass Savanna-Woodland.
Fall 2014	Matthew Hillenbrand. Temperature influences chlorophyll loss in deciduous tree leaves.
Summer 2014	Daniel Reed. Fire sensitivity and re-growth in hardwood tree seedlings after prescribed fire in a Kentucky Bluegrass Savanna remnant.
Spring 2012-2014	Cameron Bate. Herbivory by small mammals and ungulates on native hardwood tree seedlings of the Kentucky Bluegrass Savanna.
Fall 2011	Steve Morgan. Native vegetation diversity and biomass in restored fields of the Kentucky Bluegrass Savanna.
Summer 2011	Jon Johnson. Field methods in restoration and native plant ecology. -Now employed by Florida Department of Natural Resources as Conservation Officer.
Spring 2011	Tommy Lyman. Restoration ecology of Kentucky Bluegrass Savanna trees.

Honors and Awards

2018	College of Arts & Sciences Outstanding Teaching Award. University of Kentucky (\$500).
2018	Biology Department Outstanding Teaching Assistant Award. University of Kentucky.
2017	Biology Department Outstanding Teaching Assistant Award. University of Kentucky.
2016	Student Poster Presentation Award. 2016 Joint Meeting of the Kentucky and Tennessee Prescribed Fire Councils (\$250).
2014	Graduate Student Oral Presentation Award. American Society of Plant Biologists-Southern Section (ASPB-SS) Annual Meeting (\$150).
2013	Travel Honorarium. Daughters of the American Revolution (DAR) (\$50).
2010-Present	Teaching Assistantship and Tuition Waiver. University of Kentucky (Total: \$183,000).
2002-2006	Academic Scholarships. Sewanee: The University of the South (Total: \$63,850).

Funding Awarded

- 2019 -University of Kentucky, Biology Department Conference Travel Support Grant (Total: \$541)
2011-2016, 2019 -University of Kentucky, Biology Department Ribble Summer Research Grant (Total: \$4,300)
2011-2016 -G. Flora Ribble Conference Travel Enrichment Grant (Total: \$2,500)
2011-2016 -University of Kentucky Graduate School Conference Travel Grant (Total: \$1,525)
2016 -University of Kentucky Forestry Department Conference Travel Award (\$472)
2012 -Kentucky Native Plant Society (KNPS) Graduate Research Award (\$500)
2011, 2013 -G. Flora Ribble Research Fellowship (Total: \$4,000)
Total Funding Awarded: \$13,838

Funding Submitted

- 2019 University of Kentucky, 2019 Morgan Graduate Fellowship (\$12,000) (*Not funded*)
2019 University of Kentucky, 2019 Biology Summer Fellowship (\$4,333) (*Not funded*)
2018 University of Kentucky, 2018 Arts & Sciences Graduate Fellowship (\$15,000) (*Not funded*)
2017 University of Kentucky, Emeriti Faculty Endowed Fellowship (\$2,000) (*Not funded*)
2016 University of Kentucky, Emeriti Faculty Endowed Fellowship (\$2,000) (*Not funded*)
2016 University of Kentucky, Graduate School Academic Year Fellowship (\$15,000) (*Not funded*)
2015 University of Kentucky, Donovan Memorial Grant (\$15,000) (*Not funded*)
2015 University of Kentucky Sustainability Challenge Grant Program, President's Sustainability Advisory Committee (\$18,420) (*Not funded*)
2015 University of Kentucky, Presidential Fellowship (\$30,000) (*Not funded*)
2014 University of Kentucky Sustainability Challenge Grant Program, President's Sustainability Advisory Committee (\$18,370) (*Not funded*)
2013 Prairie Biotic Research Small Grants Program, Prairie Biotic Research Inc. (\$1,000) (*Not funded*)
2011 Native Plant Society (KNPS) Graduate Research Award (\$500) (*Not funded*)
Total Funding Applied: \$133,623
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Presentations

Invited Presentations

- 2019 **Shaffer, J.D.** Burned and Eaten: Fire and Herbivory as Ecological Disturbances in the Kentucky Bluegrass Savanna-Woodland. University of Maine at Farmington, Farmington, ME. **Invited Speaker**
2017 **Shaffer, J.D.** Patterns and Processes in Terrestrial Ecosystems: Biomes and the Kentucky Bluegrass Savanna-Woodland. Campbellsville University, Campbellsville, KY. **Invited Speaker**
2015 **Shaffer, J.D.** Dynamic disturbance: Survival and growth of Kentucky Bluegrass Savanna-Woodland tree seedlings. Kentucky Botanical Symposium. Lexington, KY. **Invited Speaker**

Award Winning Presentations

- 2016 **Shaffer, J.D.**, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. 2016 Joint Meeting of the Kentucky and Tennessee Prescribed Fire Councils. Ft. Campbell, KY. **Student Poster Presentation Award Winner (\$250).**
2014 **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. The American Society of Plant Biology-Southern Section (ASPB-SS) Annual Meeting. Lexington, KY. **Graduate Student Oral Presentation Winner (\$150).**

National Conference Oral Presentations

- 2019** **Shaffer, J.D.**, S.K. Gleeson, J.M. Lhotka and J.J. Cox. Fuel load manipulations influence prescribed fire intensity and severity in an experimentally restored Kentucky Bluegrass savanna-woodland. Ecological Society of America (ESA) Annual Meeting. Louisville, KY.
- 2016** **Shaffer, J.D.**, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. Ecological Society of America (ESA) Annual Meeting. Ft. Lauderdale, FL.
- 2014** **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. The Wildlife Society (TWS) Annual Meeting. Pittsburg, PA.
- 2014** **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. Ecological Society of America (ESA) Annual Meeting. Sacramento, CA.

National Conference Poster Presentations

- 2013** **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass blue ash-oak savanna-woodland. Ecological Society of America (ESA) Annual Meeting. Minneapolis, MN.
- 2012** **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, J.M. Lhotka. The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass of Kentucky. Ecological Society of America (ESA) Annual Conference. Portland, OR.

Regional Conference/Symposia Presentations

- 2017** *Anderson, E.E., & **J.D. Shaffer.** Architectural Responses of Native Trees to Deer Herbivory in the Kentucky Bluegrass Savanna-Woodland. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY. **Undergraduate presenter.*
- 2017** **Shaffer, J.D.**, S.K. Gleeson, and J.J. Cox. Prescribed Fire Dynamics in an Experimentally Reconstructed Kentucky Bluegrass Savanna-Woodland. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY.
- 2016** *McDuffie, R., **J.D. Shaffer**, S.K. Gleeson, P. Fwelo. Poison Hemlock Response Following Prescribed Fire. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY. **Undergraduate presenter.*
- 2016** *Fwelo, P., S.K. Gleeson, **J.D. Shaffer**, R. McDuffie. Prescribed Fire Temperatures and the Impact on Soil Moisture. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY. **Undergraduate presenter.*
- 2016** **Shaffer, J.D.**, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. Experimental Urban Ecology: An NSF-Sponsored Workshop. Ecological Research and Education Center (EREC), Lexington, KY.
- 2016** **Shaffer, J.D.**, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. Prescribed fire impacts on old-growth remnants, and experimental plantings, of Kentucky Bluegrass Savanna-Woodland tree seedlings. Ecolunch Seminar Series. Lexington, KY.
- 2016** **Shaffer, J.D.**, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY.
- 2016** **Shaffer, J.D.** A Tale of Two Disturbances: Herbivory and Fire impact tree seedling success in the Kentucky Bluegrass Savanna-Woodland. Ecolunch Seminar Series. Lexington, KY.
- 2015** *Connor English, Emily Griggs, Hejab Malik, Ryan McDuffie, Olivia Windhurst, Rose Marks, **James Shaffer**, Joshua Radner, Cynthia Townsend, Patricia Works, Kimberly Zeidler-Watters, and Philip Crowley. A Module on Sustainability & Garden Science for Elementary Schools. 2015 University of Kentucky STEM Teaching Enhancement Workshop and Scholarly Forum. Lexington, KY.
**Undergraduate presenter.*

- 2014 *Reed, D.J., **J.D. Shaffer**, C.P. Bate, and J.J. Cox. Seedling reaction to Fire in a Bluegrass Savanna Ecosystem. Natural Resources and Environmental Science (NRES) Capstone Presentations. University of Kentucky, Department of Forestry, Lexington, KY. **Undergraduate presenter*.
- 2014 **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY.
- 2014 **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. The Wildlife Society-Kentucky Chapter (KY-TWS) Annual Meeting. Barren River Lake State Park, KY.
- 2013 **Shaffer, J.D.**, S.K. Gleeson, J.J. Cox, and J.M. Lhotka. Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass blue ash-oak savanna-woodland. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington, KY.
- 2013 **Shaffer, J.D.** Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass blue ash-oak savanna-woodland. Thesis Defense. University of Kentucky, Department of Biology, Lexington, KY.
- 2013 **Shaffer, J.D.** The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass Savanna of Kentucky. UK Biology Graduate Student Association Poster Presentation Event. University of Kentucky, Lexington, KY.
- 2012 **Shaffer, J.D.** Travel Based, Experiential Courses at UK: Fragile Ecosystems of Texas and Florida. Ecolunch Seminar Series. University of Kentucky, Lexington, KY.
- 2012 **Shaffer, J.D.** The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass Savanna of Kentucky. Ecolunch Seminar Series. University of Kentucky, Lexington, KY.
- 2006 **Shaffer, J.D.** and D.A. McGrath. Water quality in exurban, agricultural, and forested watersheds in the Sequatchie Valley, TN. Scientific Sewanee Conference. The University of the South, Sewanee, TN.
- 2006 **Shaffer J.D.**, J.L. Reid, and D.A. McGrath. Photosynthetic rates, water use efficiency, and xylem pressure potential in *Quercus prinus* and *Sassafras albidum* in a clear-cut and a secondary forest. Scientific Sewanee Conference. The University of the South, Sewanee, TN.

Service

- 2018-2020 **Farmington Conservation Commission, Associate Member**. Farmington, ME.
- 2018-2020 Researcher and Site Co-Coordinator. Common Campus Tree Seedling Project. Farmington, ME.
- 2018 Invited Speaker. Rotary Club of Farmington. Farmington, ME.
- 2018 Poster Presentation Judge. Michael D. Wilson Symposium. University of Maine at Farmington. Farmington, ME.
- 2017 **Symposium Organizer, 16th Annual Center for Ecology, Evolution, & Behavior (CEEB) Symposium**. University of Kentucky, Lexington, KY.
- 2017 Planting Coordinator and Invasive Species Removal Director, Urban Forest Initiative. Ecological Research and Education Center (EREC). University of Kentucky, Lexington, Ky.
- 2016-2017 **Oversight Advisory Committee Member, Ecological Research and Educational Center (EREC)**. University of Kentucky, Lexington KY.
- 2016 Invited Reviewer, Journal of the Kentucky Academy of Sciences, Louisville, KY.
- 2016 Biobonanza Exhibitor, Biology Department Open-House. University of Kentucky, Lexington, KY.
- 2016 Training Committee At-Large Member, Kentucky Prescribed Fire Council. Frankfort, KY.
- 2015 Program Developer/Instructor, Sustainability and Garden Science. Yates Elementary, Lexington, KY
- 2015 Science Fair Judge, Glendover Elementary. Lexington, KY
- 2011-2015 Volunteer Coordinator, Reforest the Bluegrass. Lexington, KY

2014 **President, Biology Graduate Student Association (BGSA).** University of Kentucky, Lexington. KY
2013 Guest Speaker, Daughters of American Revolution (DAR), Nashville Chapter Meeting. Nashville, TN.
2013 Kentucky Biodiversity Day Presenter, Legislature Informational Event at the Capitol. Frankfort, KY.
2011-2012 Ecolunch Seminar Series Coordinator. University of Kentucky, Lexington, KY.
2011 Planting Coordinator, Griffith Woods WMA Native Tree Restoration. Harrison County, KY

Related Employment

2010 Stream Restoration Technician, Obed Watershed Community Association. Crossville, TN.
2009 Seasonal Naturalist, Nashville Parks Department, Beaman Park Nature Center. Nashville, TN.
2008 Assistant Manager, Shaffer Quarries. Crossville, TN.
2007 Field Research Technician, Dinkins Biological Co. Sherwood, TN.

Technical Skills and Experiences

-Identification of trees, wildflowers, birds, mammals, reptiles, amphibians, and rocks of North America
-Operational expertise with the Licor 6400 Portable Photosynthesis Machine
-General Biology Lab Skills (microscope, spectrophotometer, cultures, electrophoresis, pipetting, PCR, etc.)
-Familiarity with JMP Statistical Package, Microsoft Office suite, ArcGIS
-Direct knowledge with ecosystems of North America from personal travel experience:
 Eastern Deciduous Forests (Blue Ridge, Cumberland Plateau, Central Hardwoods, Northern Hardwoods);
 Atlantic Coast Maritime Forests and Barrier Islands (SC, GA, FL, FL Keys); Florida Interior Ecosystems (e.g. Everglades); Desert Southwest (Texas, Arizona, New Mexico, Utah); Rocky Mountain West (Colorado, Wyoming, Montana, Idaho); Pacific Northwest (Coastal Range, Sierra Nevada, Cascades); Great Plains; Great Lakes; Alpine tundra (Colorado, Montana, Maine).
-Personal collection of plant specimens and wildlife/landscape photography for teaching labs
-Operational experience with field vehicles and heavy equipment (ATV, UTV, four-wheel drive, forklift, bobcat)

Professional Affiliations

Ecological Society of America (ESA), The Wildlife Society (TWS), Kentucky Native Plant Society (KNPS), Kentucky Prescribed Fire Council (KPFC)