Curriculum Vitae

Kendall K. Beals, PhD

Postdoctoral Research Associate in Soil Carbon Ecology
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RESEARCH SUMMARY

I examine how soil microbial communities interact with plants and the abiotic environment to influence soil carbon storage and carbon release into the atmosphere. I have worked in a variety of ecosystems ranging from tropical forests to deserts, and I now focus on agro-ecosystems. In my research I use a diversity of approaches including field observations, molecular biology and biogeochemistry laboratory techniques, glasshouse experiments, genomic sequencing, and bioinformatics. I am passionate about using rigorous and translatable science in conjunction with stakeholder partnerships to facilitate effective land stewardship and climate change mitigation.

EDUCATION

2022 Ph.D., Ecology & Evolutionary Biology, University of Tennessee
2013 B.S., Biology, Dickinson College

EXPERIENCE

Research

March 2024 – present **Postdoctoral Research Associate**, University of Arizona, Working Lands Conservation
May 2022 – Dec 2023 **Postdoctoral Research Associate**, San Diego State University
2016 - 2022 **Graduate Teaching Assistant**, University of Tennessee
2015 **Lab Manager**, University of New Mexico
2014 **Project Manager and Research Technician**, Duke University

Professional

March 2023 – June 2023 **Consultant**, Basecamp Research

PUBLICATIONS

1. Mason, C.N., Shahar, S., **Beals, K.K.**, Kelley, S.T., Lipson, D.A., Swingley, W.D., Barber, N.A. (2023). Taxonomic and functional restoration of tallgrass prairie soil microbial communities in comparison to remnant and agricultural soils. *FEMS Microbiology Ecology.* https://doi.org/10.1093/femsec/fiad120
2. **Beals, K.K.**, Lebeis, S.L., Bailey, J.K., Schweitzer, J.A. (2023). Conditionality of soil microbial mediation of *Solidago* plant phenotype: indicator taxa within complex microbiomes influence some, but not all *Solidago* traits. *Plant and Soil*. https://doi.org/10.1007/s11104-022-05828-0
3. Collins, C.G., Phillips, M.L., **Beals, K.K.,** Bailey, L., O'Brien, J., Dhungana, I., Jech, S. (2022). Mentoring is more than a mentor. *Frontiers in Ecology and the Environment*. https://doi.org/10.1002/fee.2518
4. **Beals, K.K.,** Scearce, A.E., Swystun, A.T., Schweitzer, J.A. (2022). Belowground mechanisms for oak regeneration: interactions among fire, soil microbes and plant community alter oak seedling growth. *Forest Ecology and Management*. https://doi.org/10.1016/j.foreco.2021.119774

5. Kivlin, S.N., Harpe, R.V., Turner, J.H., Moore, J.A.M., Moorhead, L.C., **Beals, K.K.**, Hubert, M.M., Papes, M., Schweitzer, J.A. (2021). Arbuscular mycorrhizal fungal response to fire and urbanization in the Great Smoky Mountains National Park. *Elementa: Science of the Anthropocene*. https://doi.org/10.1525/elementa.2021.00037
6. Dickey, J.R., Swenie, R.A., Turner, S.C., Winfrey, C.C., Yaffar, D., Padukone, A., **Beals, K.K.,** Sheldon, K.S., Kivlin, S.N. (2021). The utility of macroecological rules for microbial biogeography. *Frontiers in Ecology and Evolution*. https://doi.org/10.3389/fevo.2021.633155
7. **Beals, K.K.**, Moore, J.A., Kivlin, S.N., Bayliss, S.L.J., Lumibao, C.Y., Moorhead, L.C., Patel, M., Summers, J.L., Ware, I.M., Bailey, J.K., Schweitzer, J.A. (2020). Predicting plant-soil feedback in the field: meta-analysis reveals that competition and environmental stress differentially influence PSF. *Frontiers in Ecology and Evolution*. https://doi.org/10.3389/fevo.2020.00191
8. Rosin, C., **Beals, K.K.**, Belovtich, M.W., Harrison, R.E., Pendred, M., Sullivan, M.K., Yao, N., Poulsen, J.R. (2020). Assessing the effects of elephant foraging on the structure and diversity of an Afrotropical forest. *Biotropica*. https://doi.org/10.1111/btp.12758
9. Van Nuland, M.E., Vincent, J.B., Ware, I.M., Mueller, L., Bayliss, S.L., **Beals, K.K.**, Schweitzer, J.A., Bailey, J.K. (2020). Intraspecific trait variation across elevation predicts a widespread tree species' climate niche and range limits. *Ecology and Evolution*. https://doi.org/10.1002/ece3.5969
10. Ware, I.M., Fitzpatrick, C.R., Senthilnathan, A., Bayliss, S.L.J., **Beals, K.K.**, Mueller, L.O., Summers, J.L., Wooliver, R.C., Van Nuland, M.E., Kinnison, M.T., Palkovacs, E.P., Schweitzer, J.A., Bailey, J.K. (2018). Feedbacks link ecosystem ecology and evolution across spatial and temporal scales: Empirical evidence and future directions. *Functional Ecology*. https://doi.org/10.1111/1365-2435.13267
11. Kivlin, S.N., Lynn, J.S., Kazenel, M.R., **Beals, K.K.**, Rudgers, J.A. (2017). Biogeography of plant-associated fungal symbionts in mountain ecosystems: A meta-analysis. *Diversity and Distributions*. https://doi.org/10.1111/ddi.12595

GRANTS AND AWARDS

2022 Outstanding Dissertation by a Graduate Student. Department of Ecology and Evolutionary Biology. University of Tennessee. **($500)**
2021 Outstanding Scholarly Achievement by a Graduate Student. Division of Biology. University of Tennessee **($1,000)**
2020 Extraordinary Professional Promise. Chancellor's Honors Award. University of Tennessee.
2019 Hesler Herbarium Student Research Award. University of Tennessee. **($1,100)**
2018 Ecological, Evolutionary, and Conservation Genomics Award. American Genetic Association **($9,927)**
2018 Graduate Student Training Fellowship. Torrey Botanical Society. **($1,000)**
2018 Student-Faculty Research Award. University of Tennessee. **($4,800)**
2017 Hesler Herbarium Student Research Award. University of Tennessee. **($500)**

PRESENTATIONS (*, invited presentation)

Beals, K.K., Zedler, P., Barber, N.A. 2023. Soil microbial dynamics of carbon cycling respond to woody encroachment and land management history in a mesic tallgrass prairie. Ecological Society of America. Oral presentation.
Beals, K.K., Schweitzer, J.A. 2022. Fire-induced shifts in microbial community composition influence rates of carbon degradation. Soil Ecological Society. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2021. Bouncing back from burn: examining asynchrony in soil microbial responses to wildfire over time. Ecological Society of America. Oral presentation.

***Beals, K.K.**, Bailey, J.K., Schweitzer, J.A. 2021. Bouncing back from burn: examining asynchrony in soil microbial responses to wildfire over time. National Park Service (National Capital Area) Science Spillover. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2021. Bouncing back from burn: long-term monitoring of GSMNP soil microbial stability from Chimney Tops 2 wildfire. Great Smoky Mountains National Park Science Colloquium. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2020. Fire induced changes to the soil microbiome shift plant phenotype. Natural Areas Conference. Poster presentation.
Beals, K.K., Lebeis, S.L., Bailey, J.K., Schweitzer, J.A. 2020. Importance of soil microbiome for plant phenotype differs among traits and plant species. Ecological Society of America. Poster presentation.
Scearce, A., Swystun, A., **Beals, K.K.**, Franklin, J., Hughes, K., Schweitzer, J.A. 2020. Oak regeneration after Chimney Tops II fire is influenced by pine seedling neighbors and soil microbes. Great Smoky Mountains National Park Science Colloquium. Oral presentation.
***Beals, K.K.**, Moore, J.A.M., Moorhead, L., Hubert, M., Kivlin, S.N., Schweitzer, J.A. 2020. Burning questions: How wildfire alters ecosystem dynamics in a Southeastern forest through disruptions of plant-soil interactions. National Ecological Observatory Network. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2019. Burning questions: Importance of plant-soil microbiome interactions and how the Chimney Tops fire affects this ecological internet. Science at Sugarlands, Great Smoky Mountains National Park. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2019. Burning questions: the role of wildfire severity on plant function through disruptions of plant-soil interactions. Ecological Society of America. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2019. Hidden players of plant function: variation in soil microbiome conditioning source influences phenotypic variation in a common perennial. Soil Ecology Society. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2019. Understanding Chimney Tops 2 wildfire from the ground up: functional response of plant-soil interactions to fire. Great Smoky Mountains National Park Science Colloquium. Oral presentation.
Beals, K.K., Bailey, J.K., Schweitzer, J.A. 2018. Hidden players of plant function: the role of the soil microbiome on plant phenotype. Ecological Society of America. Oral presentation.

TEACHING EXPERIENCE

Plant Ecology (EEB 433), University of Tennessee, 2019-2022
Field Ecology (EEB 415), University of Tennessee, 2019
Skills of Biological Investigation Laboratory (BIOL 159), University of Tennessee, 2017-2019
Cell, Genetic, and Physiology Laboratory (BIOL 101), University of Tennessee, 2016
Natural History of Vertebrates (BIOL 332), Dickinson College, 2013

PROFESSIONAL SERVICE

Grant Proposal Reviewing

Panel reviewer
National Science Foundation: Division of Environmental Biology; 2023

Ad hoc reviewer
National Science Foundation: Division of Environmental Biology; 2022

Journal Reviewing

Nature Communications

Soil Biology and Biochemistry
Journal of Ecology
Plant and Soil
Fungal Ecology
Frontiers in Forest and Global Change
Ecological Monographs

OUTREACH

Leadership team member, co-organizer: Women in Soil Ecology network

Help organize events to facilitate professional development of women in soil science across sectors and career stages, including skills-based workshops, career panels, customized mentorship matching, and in-person and virtual meet and greets.

Presentations to non-scientific audiences

San Diego Mission Trails Regional Park. Eco Ambassadors Program for Teens. “Adventures with a Soil Scientist.” 2023. 2024.

National Park Service: National Capital Area. Science Spillover event. “Bouncing back from burn: examining asynchrony in soil microbial responses to wildfire over time.” 2021.

Great Smoky Mountains National Park. Science at Sugarlands event. “Importance of plant-soil microbiome interactions and how the Chimney Tops fire affects this ecological internet.” 2019.

SKILLS

- Extensive fieldwork in diverse environments
- Skilled use of R statistical software (including Rmarkdown) and working knowledge of command line
- Proficient at using remote servers (e.g., AWS)
- Develop and maintain reproducible research workflows using Git and GitHub
- Working knowledge of GIS
- French (professional working proficiency)