

Michael E. Van Nuland, Ph.D.

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EDUCATION

- Ph.D. Ecology and Evolutionary Biology (2012–2017)
University of Tennessee, Advisor: Jennifer Schweitzer, PhD
- B.S. Biology (2007–2011)
Seattle University, *Cum Laude*, Advisor: Lindsay Whitlow, PhD

PROFESSIONAL APPOINTMENTS

Stanford University

Postdoctoral Scholar July 2017–Present
Faculty Mentor: Kabir Peay, PhD

University of Tennessee

NSF Graduate Research Fellow 2013–2016
Graduate Teaching Assistant 2012, 2017

PUBLICATIONS

Submitted / In Revision

- M E Van Nuland**, P-J Ke, J Wan, & K G Peay (2021) Different mycorrhizal nutrient acquisition strategies shape tree species competition and coexistence dynamics. (In Review) bioRxiv: <https://doi.org/10.1101/2021.10.26.465925>.
- L Berrios, **M E Van Nuland**, J A Manjarrez, J Yeam, G S Clarke, A Clarke, K Alston, & K G Peay (2021) Of plants and microbes: The value in partnerships and cooperation. (Submitted to *Frontiers for Young Minds*)
- C E Willing, P T Pellitier, **M E Van Nuland**, K N Chin, L M Villa, J Yeam, S D Bourque, W Tripp, & K G Peay (2021) The forest microbiome and global change. (In Revision).
- L Mo, [**M E Van Nuland** as part of the Global Forest Biodiversity Initiative consortium led by T W Crowther] (2021) The impact of deforestation and degradation on global forest biomass. (In Revision).
- I Hordijk, [**M E Van Nuland** as part of the Global Forest Biodiversity Initiative consortium led by T W Crowther] (2021) Evenness mediates the global relationship between forest productivity and richness (In Revision).

Published

- M E Van Nuland**, I M Ware, C W Schadt, Z K Yang, J A Schweitzer, & J K Bailey (2021) Natural soil microbiome variation affects spring foliar phenology with consequences for plant productivity and climate-driven range shifts. *New Phytologist*, 232, 762-775.
- I M Ware, **M E Van Nuland**, Z K Yang, C W Schadt, J A Schweitzer, & J K Bailey (2021) Climate-driven divergence in plant-microbiome interactions generates range-wide variation in microbially-mediated bud break phenology. *Communications Biology*, 4, 1-9.

- M E Van Nuland**, D P Smith, J M Bhatnagar, A Stefanski, S E Hobbie, P B Reich, & K G Peay (2020) Warming and disturbance alter soil microbiome diversity and function in a northern forest ecotone. *FEMS Microbiology Ecology*, 96, fial108.
- M E Van Nuland** & K G Peay (2020) Symbiotic niche mapping reveals functional specialization by two ectomycorrhizal fungi that expands the host plant niche. *Fungal Ecology*, 46, 100960.
- M E Van Nuland**, J B Vincent, I M Ware, L O Mueller, S L J Bayliss, K K Beals, J A Schweitzer, & J K Bailey (2020) Intraspecific trait variation across elevation predicts a widespread tree species' climate niche and range limits. *Ecology & Evolution*, DOI: 10.1002/ece3.5969.
- B S Steidinger, T W Crowther, J Liang, **M E Van Nuland**, *et al.* (2019) Climate drives the global biogeography of forest tree symbioses. *Nature*, 569, 404-408.
- M E Van Nuland**, M Chen, & B J England (2019) Bringing plants and soils to life through a simple role-playing activity. *The American Biology Teacher*, 81, 287-290.
- I M Ware, **M E Van Nuland**, J A Schweitzer, *et al.* (2019) Climate-driven reduction of genetic variation in plant phenology alters soil communities and nutrient pools. *Global Change Biology*, 25, 1514-1528.
- I M Ware, C Fitzpatrick, S Athmanathan, S Bayliss, K Beal, L Mueller, J Summers, R Wooliver, **M E Van Nuland**, *et al.* (2019) Feedbacks link ecosystem ecology and evolution: an eco-evolutionary synthesis across terrestrial and aquatic systems. *Functional Ecology*, 33, 31-42.
- M E Van Nuland**, I M Ware, J K Bailey, & J A Schweitzer (2018) Ecosystem feedbacks contribute to geographic variation in plant-soil eco-evolutionary dynamics across a fertility gradient. *Functional Ecology*, 33, 95-106.
- R C Wooliver, B M Potts, J K Senior, **M E Van Nuland**, J K Bailey, & J A Schweitzer (2018) Soil fungi underlie phylogenetic patterns in plant growth responses to nitrogen enrichment. *Journal of Ecology*, 106, 2161-2175.
- J A Schweitzer, **M E Van Nuland**, & J K Bailey (2018) Intraspecific positive, neutral, and negative feedbacks across gradients link ecology and evolutionary biology. In *Aboveground-Belowground Community Ecology*, Springer.
- M E Van Nuland**, J K Bailey, & J A Schweitzer (2017) Divergent plant-soil feedbacks influence range dynamics and ecosystem processes across elevation. *Nature Ecology & Evolution*, 1, 0150.
- A A Pfennigwerth, **M E Van Nuland**, J K Bailey, & J A Schweitzer (2017) Plant-soil feedbacks mediate shrub expansion in declining forests, but only in the right light. *Journal of Ecology*, 106, 179-194.
- M E Van Nuland**, R C Wooliver, A A Pfennigwerth, Q D Read, I M Ware, L Mueller, J A Fordyce, J A Schweitzer, & J K Bailey (2016) Plant-soil feedbacks: connecting ecosystem ecology and evolution. *Functional Ecology*, 30, 1032-1042.
- M E Van Nuland** & W L Whitlow (2014) Temporal effects on biodiversity and composition of arthropod communities along an urban-rural gradient. *Urban Ecosystems*, 1-14.
- J K Bailey, M A Genung, I Ware, C E Gorman, **M E Van Nuland**, *et al.* (2013) Indirect genetic effects: An evolutionary mechanism linking feedbacks, genotypic diversity and coadaptation in a climate change context. *Functional Ecology*, 28, 87-95.

C E Gorman, Q D Read, **M E Van Nuland**, J A M Bryant, J N Welch, *et al.* (2013) Species identity influences belowground arthropod assemblages via functional traits. *Annals of Botany Plants*, DOI: 10.1093/aobpla/plt049.

M E Van Nuland, E N Haag, J A M Bryant, Q D Read, R N Klein, *et al.* (2013) Fire promotes pollinator visitation: Implications for ameliorating declines of pollinator services. *PLoS ONE*, e79853.

FUNDING & AWARDS

- 2017 **DOE JGI Community Science Program Small-scale Microbial/Metagenome grant:** “How Does Precipitation Impact the Taxonomic and Functional Diversity of the *Populus trichocarpa* Soil Microbiome?” (co-PI with Kabir Peay)
- 2017 Jim Tanner EEB Outstanding Dissertation Award, University of Tennessee
- 2017 Outstanding Graduate Research Award, University of Tennessee Graduate School
- 2016 BES Functional Ecology Haldane Award Nominee
- 2016 University of Tennessee EEB “Best Progress Towards Dissertation” (\$500)
- 2016 **NSF Doctoral Dissertation Improvement Grant:** “Do plant genetic X soil microbiome X environment interactions determine plant and soil function across global change gradients?” (\$19,630)
- 2015 Soil Ecology Society Conference Best Oral Presentation, honorable mention
- 2015 Soil Ecology Society Travel Award (\$500)
- 2015 Outstanding Graduate Research Award, University of Tennessee Graduate School
- 2014 University of Tennessee Graduate Student Senate Travel Award (\$850)
- 2014 University of Tennessee EEB Departmental Travel Award (\$1100)
- 2014 SSSA Francis & Evelyn Clark Soil Biology Scholarship (\$2000)
- 2013 Editors choice (Gorman *et al.* *Annals of Botany Plants*)
- 2013 Open Access Publishing Grant, University of Tennessee Library (\$810)
- 2013 Soil Ecology Section of the Ecological Society of America Travel Award (\$500)
- 2012-15 University of Tennessee EEB Chancellors Funds (total \$7500)
- 2012-17 **NSF Graduate Research Fellowship:** “Do soil communities mediate evolutionary consequences of plant-soil feedback?” (total \$96,000)
- 2009-11 Seattle University Science & Engineering Bannan Scholar (total \$13,000)
- 2011 Seattle University Biology Award (1 awarded per graduating class)

PRESENTATIONS

Invited talks & seminars

- 2021 **Mississippi State University** Department of Biological Sciences Seminar – Symbioses and species ranges: plant-microbe interactions and the structure of terrestrial ecosystems (Starkville, MS; virtual).
- 2021 **McMaster University** Department of Biology Seminar – Symbioses and species ranges: plant-microbe interactions and the structure of terrestrial ecosystems (Hamilton, Ontario; virtual).
- 2020 **FEMS Microbiology Ecology Webinar** – Warming and disturbance alter soil microbiome diversity and function in a northern forest ecotone (Virtual).
- 2020 **West Virginia University** Department of Biology Seminar – Symbioses and species ranges: plant-microbe interactions and the structure of terrestrial ecosystems (Morgantown, WV).

- 2020 **UCLA Department of Ecology and Evolutionary Biology Seminar** – Symbioses and species ranges: plant-microbe interactions and the structure of terrestrial ecosystems (Los Angeles, CA).
- 2019 **Bay Area Mycological Society** – Fungal symbioses and plant ecological niches (University of California, Berkeley).
- 2019 **Rutgers University Newark Department of Biological Sciences Seminar** – Linking plant and soil microbial responses to global change from local to landscape scales (Newark, NJ).
- 2019 **Advanced Seminar in Microbial Molecular Biology** – Mapping ectomycorrhizal symbioses and plant niche dimensions (Stanford University; *Invitation passed to colleague to promote gender balance in the series*).
- 2018 **San Francisco State University, Biology Department Seminar Series** – Linking plant and soil microbial responses to global change (*Invitation rescheduled*).
- 2018 **Stanford Eco Evo lunch seminar series** – Writing science tips and tricks.
- 2015 **The 100th ESA Conference** – Landscape level eco-evolutionary dynamics of plant-soil feedbacks (SYMP 14; Baltimore, MD).
- 2014 **Great Smoky Mountains National Park Science Colloquium** – Fire promotes pollinator visitation (Gatlinburg, TN).

Other presentations

- 2021 **DOE Genomic Science Program** – Patterns of diversity in the North American *Populus* mycobiome (Virtual conference; Washington, D.C.).
- 2019 **Soil Ecological Society Conference** – The biogeography of ectomycorrhizal fungi across North American *Populus* species ranges (Toledo, OH).
- 2019 **DOE Genomic Science Program** – Environmental drivers of the North American *Populus* root microbiome (Washington, D.C.).
- 2018 **The 103rd Annual ESA Conference** – How does precipitation influence the mycobiome of *Populus trichocarpa*? (New Orleans, LA).
- 2015 **Soil Ecology Society Conference** – Plant-soil feedbacks vary along elevation gradients and affect range shifts. *Second place winner (Colorado Springs, CO).
- 2014 **British Ecological Society & Société Française d'Ecologie Annual Meeting** – Plant-soil feedback drives landscape-level eco-evo dynamics (Lille, France).
- 2013 **The 98th ESA Conference** – Contemporary evolution drives landscape-level ecosystem change: Implications for feedbacks and range-shifts (COS 100-7; Minneapolis, MN).
- 2012 **The 95th & 97th ESA Conferences** – Investigation of Pacific Northwest forest litter invertebrate communities and resilience along an urbanization gradient (Pittsburgh, PA and Portland, OR).
- 2009 **Murdock Trust Natural Science Seminar** – Contaminants & Collembollans (Seattle University; Seattle, WA).

TEACHING

Instructor of Record

2016 Writing Science (graduate course)

Teaching Assistant

2013, 2017 Plant Ecology

2012, 2016 General Biology

Guest Lectures and Pedagogy Coursework:*

2017 Data analysis & visualization in R

- 2017 Plant-soil interactions and feedbacks
- 2014 Urban ecology
- 2014 Plant-soil feedbacks
- 2013 Belowground interactions
- 2013 Competition
- 2015 Teaching Soil Ecology* (Dr. Loren Byrne)
- 2013-14 Modern Curriculum Design* (Dr. Beth Schussler)

SERVICE & COMMUNITY ENGAGEMENT

- Referee: *Nature Ecology & Evolution, Trends in Ecology & Evolution, Ecology Letters, PNAS, New Phytologist, Ecology, Functional Ecology, Journal of Applied Ecology, Landscape Ecology, Oecologia, Oikos, Ecological Monographs, Global Ecology & Biogeography, Fungal Ecology, Environmental Microbiome, Plant and Soil, and PLoS ONE*
- Bay Area Mycological Society, fungal ecology guest lecture and discussion (Berkeley, 2019)
 - California Academy of Sciences Fungal Nightlife (2019 & 2020)
 - Science Fair Judge for Exhibition of Undergrad Research & Creative Achievement (UTK, 2017)
 - BES Plant-Soil-Ecosystems Student Representative (2015–2016)
 - Undergraduate mentor for 15 students (lab, research, writing, and presentation skills)
 - Blog posts: BES Plant-Soils-Ecosystems journal club, The Culture Dish (MO BIO)
 - Darwin Day event promoter, University of Tennessee (2014)
 - Boo at the Zoo departmental outreach event, Knoxville Zoo (2012)
 - Seward Park Audubon Center research presentation for general public (2011)
 - Bailey Gatzert Elementary Science Fair activity leader (2008–2011)
 - Explore Alki Beach science mentor, Seattle public beaches (2009)
 - Darwin Day co-organizer and activity leader, Seattle University (2009)

PROFESSIONAL ASSOCIATIONS

- Ecological Society of America – Soil Ecology Section and Microbial Ecology Section
- Soil Science Society of America
- Soil Ecology Society
- British Ecological Society Plant – Soil-Ecosystems special interest group
- National Association of Biology Teachers

PROFESSIONAL DEVELOPMENT & SKILLS

- 2015 Academic Professional Development course (Joe Bailey, Univ. of Tennessee)
- 2014 EDAMAME workshop – *Explorations in Data Analyses for Metagenomic Advances in Microbial Ecology* (Ashley Shade, Tracy Teal, Titus Brown, Michigan State Univ.)
- 2014 Structural Equation Modeling workshop (Jim Grace, Univ. of Tennessee)