Daniel F. Petticord

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HIGHLIGHTS

- **30+ peer-reviewed publications** published, in press, or in review, including articles in *New Phytologist, Global Change Biology, ISME,* and *Nature Communications*
- Over **$340,000** in competitive funding secured, including fellowships and scholarships
- National Science Foundation Graduate Research Fellow; ForEverglades Research Fellow
- Fulbright Fellow (awarded, declined); Smithsonian Tropical Research Institute Fellow
- Instructor of Record; Teaching Assistant for courses at Cornell University
- Research in 5 countries spanning forests, wetlands, and grasslands

EDUCATION

2020–2025 **Cornell University**—*Ithaca, NY*
Ph.D., Ecology and Evolutionary Biology
National Science Foundation Graduate Research Fellow
Dissertation: *The phytoremediation and conservation of phosphorus.*
Advisor: Dr. Jed P. Sparks

2015–2019 **Princeton University**—*Princeton, NJ*
A.B. *(cum laude)*, Ecology and Evolutionary Biology; Minor: Env. Science
Thesis: *The diet and movement of the Kenyan leopard tortoise.*
Mentors: Dr. Robert Pringle, Dr. Andy Dobson, Dr. Simon Levin, Dr. Daniel Rubenstein, Dr. Bridgett VonHoldt

PROFESSIONAL EXPERIENCE

2025– **Cary Institute for Ecosystem Studies**—*Millbrook, NY*
Postdoctoral Associate, MESS Lab. Advisor: Dr. Jane Lucas

2024–2025 **The Everglades Foundation**
ForEverglades Research Enhancement Fellow

2021–2022 **Archbold Biological Station**—*Venus, FL*
Visiting Scholar

2020–2022 **Cornell Stable Isotope Laboratory**—*Ithaca, NY*
Stable Isotope Research Technician

2019–2020 **Smithsonian Tropical Research Institute**—*Panama*
Short-Term Research Fellow (2020); Tropical Forest Intern (2019–2020)

2018–2019 **Princeton University, Zhang Laboratory**—*Princeton, NJ*
GC-FID Research Technician

2017–2019 **Princeton University, vonHoldt Laboratory**—*Princeton, NJ*
Genetics Research Technician

2017 **Princeton High Meadows Environmental Institute**—*Princeton, NJ*
Drone Research Technician

PUBLICATIONS

† Authors contributed equally; Mentees underlined.

Lead Author

[24] W. Wang†, **D. F. Petticord†,** S. Zhao, G. Yang, Y. Chen, X. Huang, "Conversion from farmland to orchard or agroforestry improves soil carbon sequestration by enhancing microbial biological activity in Northwest China," *PLOS ONE*, 2026.

[23] **D. F. Petticord**, R. Zhi, E. Boughton, Y. Guo, H. L. Liao, A. Reyes, J. Sparks, J. Qiu, "The abundance of a *Fusarium* taxa strongly predicts foliar phosphorus concentrations in Bahiagrass," *Soil Biology and Biochemistry*, 2026, In press.

[22] **D. F. Petticord**, E. H. Boughton, A. Gough, J. Qiu, A. L. Reyes, A. Saha, R. Zhi, J. P. Sparks, "Phosphorus mitigation through hay harvest: Addressing legacy P in subtropical pasture," *Agriculture, Ecosystems and Environment*, 2025, In press.

[21] **D. F. Petticord**, B. T. Uveges, E. H. Boughton, B. D. Strahm, J. P. Sparks, "Spatial decoupling of biological and geochemical phosphorus cycling in podzolized soils," *Soil Systems*, vol. 9, no. 4, p. 115, 2025. doi: 10.3390/soilsystems9040115.

[20] W. Luo†, **D. F. Petticord†,** S. Zhu, Y. Wu, X. Yi, X. Wang, Y. Guo, X. Song, "Biochar application and mowing independently and interactively influence soil enzyme activity and carbon sequestration in karst and red soils," *Agronomy*, vol. 15, no. 1, p. 252, 2025. doi: 10.3390/agronomy15010252.

[19] J. Li†, **D. F. Petticord†,** M. Jin, L. Huang, D. Hui, J. Sardans, J. Peñuelas, X. Yang, Y.-G. Zhu, "From nature to urbanity: Exploring phyllosphere microbiome and functional gene responses to the Anthropocene," *New Phytologist*, vol. 244, pp. 1404–1418, 2024. doi: 10.1111/nph.20255.

[18] **D. F. Petticord**, E. H. Boughton, H. Li, J. Qiu, A. Saha, R. Zhi, J. P. Sparks, "Planted species influences soil phosphorus losses in a historically fertilized pasture system: A mesocosm study," *Ecosphere*, vol. 15, no. 9, e4976, 2024. doi: 10.1002/ecs2.4976.

Co-authorships

[17] G.-C. Hsu, **D. F. Petticord**, K. F. Slimon, J. P. Sparks, "Heterospecific-neighbor-mediated changes in density and size increase prey capture by a carnivorous plant," *Oikos*, e11309, 2025. doi: 10.1002/oik.11309.

[16] G. Zhou, **D. F. Petticord**, X. Wang, Ü. Niinemets, Z. Zhang, G. Jin, Z. Liu, "Intraspecific variation in the growth–defense trade-off among deciduous and evergreen broadleaf woody plants," *New Phytologist*, e70781, 2025.

[15] R. Zhi, **D. F. Petticord**, Y. Guo, H.-L. Liao, E. H. Boughton, J. P. Sparks, J. Qiu, "Influence of soil phosphorus levels on rhizosphere fungal communities in managed subtropical perennial Bahiagrass," *Applied Soil Ecology*, vol. 206, p. 105347, 2025.

[14] [14 authors] J. Li, Y. Zhu, **D. F. Petticord**, ..., Y.-G. Zhu, "Phyllosphere to soil: How long-term fencing reshapes grassland microbial community construction and their functional genes," *Agriculture, Ecosystems and Environment*, vol. 381, p. 110062, 2025.

[13] [16 authors] X. Chen, ..., **D. F. Petticord**, ..., Z. Liu, "Roots dominate over extraradical hyphae in driving soil organic carbon accumulation during tropical forest succession," *Global Change Biology*, vol. 31, e70499, 2025.

[12] Z. Ding, ..., **D. F. Petticord**, ..., Z. Liu, "Topography mediates contrasting patterns of glomalin-related soil protein and its contribution to soil organic carbon in a tropical montane rainforest," *Plant and Soil*, 2025.

[11] S. Zhu, Y. Guo, H. Zhou, W. Luo, X. Yi, Y. Zhou, Y. Wu, **D. F. Petticord**, X. Song, "Biochar efficacy in enhancing soil carbon fractions is mediated by parent soil type in grazing karst grassland," *Carbon Research*, vol. 4, p. 52, 2025.

[10] C. Liang, M. Dong, Y. Jiang, **D. F. Petticord**, J. Li, J. Long, Q. Su, "Untangling community assembly through functional traits and phylogenetic alpha diversity in subtropical karst forests," *Ecology and Evolution*, vol. 15, e71616, 2025.

[9] R. Zhi, E. H. Boughton, H. Li, **D. F. Petticord**, A. Saha, J. Sparks, K. R. Reddy, J. Qiu, "Soil legacy phosphorus and loss risk in subtropical grasslands," *Journal of Environmental Management*, vol. 366, p. 121656, 2024. doi: 10.1016/j.jenvman.2024.121656.

[8] J. Qiu, E. H. Boughton, H. Li, C. R. B. Henderson, **D. F. Petticord**, A. Saha, R. Zhi, J. Sparks, K. R. Reddy, "Unraveling spatial heterogeneity of soil legacy phosphorus in subtropical grasslands," *Ecological Applications*, vol. 34, no. 6, e3007, 2024. doi: 10.1002/eap.3007.

[7] G. Zhou, Y. Qin, **D. F. Petticord**, X. Qiao, M. Jiang, "Plant-ant interactions mediate herbivore-induced conspecific negative density dependence in a subtropical forest," *Science of The Total Environment*, vol. 927, p. 172163, 2024. doi: 10.1016/j.scitotenv.2024.172163.

[6] C. S. Delavaux, J. K. Angst, H. Espinosa, M. Brown, **D. F. Petticord**, J. W. Schroeder, K. Broders, E. A. Herre, J. D. Bever, T. W. Crowther, "Fungal community dissimilarity predicts plant–soil feedback strength in a lowland tropical forest," *Ecology*, vol. 105, no. 1, e4200, 2023. doi: 10.1002/ecy.4200. [Top 10% most viewed in Ecology, 2023]

[5] J. Li, Z.-F. Liu, M.-K. Jin, ..., **D. F. Petticord**, D. W. Frey, Y.-G. Zhu, "Microbial controls over soil priming effects under chronic nitrogen and phosphorus additions in subtropical forests," *The ISME Journal*, vol. 17, no. 12, pp. 2160–2168, 2023. doi: 10.1038/s41396-023-01523-9.

[4] X. Xu, P. van der Sleen, P. Groenendijk, M. Vlam, D. Medvigy, P. Moorcroft, **D. F. Petticord**, Y. Ma, P. A. Zuidema, "Constraining long-term model predictions for woody growth using tropical tree rings," *Global Change Biology*, vol. 30, e17075, 2023. doi: 10.1111/gcb.17075.

[3] [17 authors] M. Leray†, L. G. E. Wilkins†, ..., **D. F. Petticord**, ..., J. A. Eisen, "Natural experiments and long-term monitoring are critical to understand and predict marine host–microbe ecology and evolution," *PLOS Biology*, vol. 19, no. 8, e3001322, 2021. doi: 10.1371/journal.pbio.3001322.

[2] J. W. Schroeder, A. Dobson, S. A. Mangan, **D. F. Petticord**, E. A. Herre, "Mutualist and pathogen traits interact to affect plant community structure in a spatially explicit model," *Nature Communications*, vol. 11, p. 2204, 2020. doi: 10.1038/s41467-020-16047-5.

[1] D. Tandon, K. Ressler, **D. F. Petticord**, A. Papa, J. Jiranek, ..., B. M. vonHoldt, "Homozygosity for mobile element insertions associated with WBSCR17 could predict success in assistance dog training programs," *Genes*, vol. 10, p. 439, 2019. doi: 10.3390/genes10060439.

Selected Publications in Review

— J. Gao, D. Smith, M. Kalyuzhny, A. Carteron, **D. Petticord**, D. Janos, Y. Zhang, Y. Yao, H. Ren, X. Mi, K. Ma, L. Chen, "An ontogenetic trade-off in density dependence explains species coexistence and mycorrhizal dominance in a subtropical forest." In review at *Science*.

— M.-K. Jin, J. Li, L. Huang, **D. F. Petticord**, T. M. Ghaly, X.-Z. Zhou, J.-Y. Xu, Y. Lei, J. Liu, P. Qie, Y. Zhu, J. He, D. Hui, M. R. Gillings, H.-F. Qian, X. Xue, B. Zhu, Y.-G. Zhu, "Selective suppression of resistance genes through changes in soil microbial community assembly." In review at *Microbiome*.

— J. Zhang, P. Wang, Q. Hu, Z. Mou, **D.F. Petticord**, Y. Li, D. Wu, D. Hui, J. Sardans, J. Peñuelas, Z. Liu, "Shifting microbial strategies regulate necromass accumulation and carbon stabilization during tropical forest succession." In review at *Journal of Applied Ecology*.

— Z. Mou, **D.F. Petticord**, D. Hui, D. Wu, J. Sardans, J. Peñuelas, Z. Liu*, "Microbial and mineral controls on depth-dependent soil carbon accrual in glacier forefield." In review at *Nature Geoscience*.

— G. Zhou, **D. F. Petticord**, Y. Qin, X. Qiao, M. Jiang, "Evidence for the plant apparency and Janzen–Connell hypotheses in a subtropical forest." In review at *Ecology Letters*.

FUNDING & AWARDS

Grants, Fellowships & Scholarships

Total competitive funding awarded (including fellowships and scholarships): **$342,183**

Pending: USDA New Investigator Grant ($300,000)

2025	Cornell Atkinson Graduate Research Grant ($7,000)
2024	ForEverglades Research Enhancement Grant ($30,000)
2024	Orenstein Award for Graduate Student Research ($750)
2024	Susan Lynch Award for Field Research ($2,000)
2024	Betty Miller Francis '47 Award for Field Research ($3,000)
2024	Cornell University Graduate Research Award ($1,013)
2024	Cornell University Mellon Award ($1,000)
2024	Cornell University Sigma Xi Award ($700)
2024	Cary Institute Bentley Holden Graduate Research Scholarship ($3,300)
2023	Cornell University Mellon Award ($1,000)
2023	Cornell University Sigma Xi Award ($1,000)
2023	Cornell University Graduate Student Research Award ($500)
2022	Archbold Biological Station Visiting Scholar Award ($2,000)
2020	National Science Foundation Graduate Research Fellowship ($159,000)
2019	Smithsonian Tropical Research Internship Award ($10,500)
2019	Fulbright Fellowship ($31,700). Awarded, declined.
2018	Curtis W. McGraw Class of 1919 Scholarship ($58,970)
2018	Ecological Society of America SEEDs Leadership Award ($1,000)
2018	Becky Colvin Memorial Award ($17,500)
2017	Princeton Environmental Institute Smith and Newton Scholar Award ($7,500)
2017	Princeton Office of Undergraduate Research Thesis Award ($2,500)
2017	Princeton Council on Science and Technology Award ($250)

INVITED TALKS & SELECTED PRESENTATIONS

Invited Talks

2025	D. F. Petticord, “Ground penetrating radar uncovers buried ‘islands of fertility’ in a Florida ranch landscape.” 380:608 Ground Penetrating Radar, Rutgers University.
2025	D. F. Petticord, “Farms need fertilizer, forests don’t.” Association for Tropical Biology and Conservation Annual Meeting, Oaxaca, Mexico.
2024	D. F. Petticord, “Plat du Jour — Eating in the Modern Era.” Cornell Adult University Summer Lecture Series.
2024	D. F. Petticord et al., “Grass species influences phosphorus losses in historically fertilized pasture soil: A mesocosm study.” Water Institute Symposium, University of Florida.
2024	D. F. Petticord et al., “Phytoremediation of legacy soil phosphorus.” Bambi Seminar Series, Smithsonian Tropical Research Institute.
2020	D. F. Petticord, “The ecology of the underworld: Mutualist microbes and their role in forest composition.” Bambi Seminar Series, Smithsonian Tropical Research Institute.

Contributed Talks & Posters

2025 D. F. Petticord, "The conservation and phytoremediation of phosphorus." Ph.D. Dissertation Defense, Cornell University.

2023 D. F. Petticord et al., "An atypical association: How unorthodox plant-fungal relationships may contribute to phosphorus loss in the subtropics." ESA-CSEE Joint Meeting, Montréal, Canada.

2022 D. F. Petticord et al., "Phytoremediation of legacy phosphorus: Forage cover species dynamically changes legacy P uptake and loss as leachate." ESA-CSEE Joint Meeting, Montréal, Canada.

2020 D. F. Petticord et al., "Mutualist and pathogen traits interact to affect plant community structure in a generalizable model." Poster, ISTF Conference, Yale University.

2020 D. F. Petticord et al., "Exploring how mutualist and pathogen traits interact to affect plant community structure." Poster, ESA-CSEE 2020.

2019 D. F. Petticord et al., "Using radio-tracking and DNA metabarcoding to understand the ecology of the African leopard tortoise." Undergraduate Thesis Research Symposium, Princeton University. Prize: Best Fieldwork Project.

2019 D. F. Petticord et al., "Fecal metabarcoding reveals leopard tortoise dietary preference." Poster, Student Conference for Conservation Science, AMNH.

2018 D. F. Petticord, "The use of drones to study pastoral grazing; software solutions for sustainability problems." Summer of Learning, Princeton HMEI.

TEACHING

Instructor of Record

Fall 2024 **Topics in Biogeochemistry** (BIOEE 7600), Cornell University
Graduate seminar course designed and taught independently.

Fall 2023 **What's for Dinner** (BIOEE 1640), Cornell University
Undergraduate course on food systems, sustainability, and nutrition.

Co-Instructor

Spr. 2024 **Graduate Field Course** (BIOEE 6602), Cornell University

Spr. 2022 **Quantitative Ecology** (BIOEE 4940), Cornell University

Teaching Assistantships

2021–2024 **Advanced Ecology** (BIOEE 3610), Cornell University. Lab TA, multiple semesters.

Sum. 2023 **Introduction to Evolution & Diversity** (BIOEE 1781), Cornell University.

MENTORING

Mentees

2024 **Charlotte Tysall** (Cornell '26). Field assistant for phosphorus phytoremediation research, Florida. Charlotte went on to found the Cornell ESA SEEDs chapter.

2024–2025 **Gen-Chang Hsu** [Cornell PhD student]. Research on carnivorous plant ecology, resulting in publication in *Oikos*.

2022–2023 **Ginny Halterman** (Cornell '23). Advised on honors thesis and NSF GRFP application. Currently M.S. student, University of Delaware.

2021–2022 **Daniela Rodriguez-Chavez** (Cornell '22). Advised on honors thesis and NSF GRFP proposal. Currently Ph.D. candidate and NSF GRFP Fellow, UC Berkeley.

PEER REVIEW & CONSULTING

Ad-hoc reviewer for: *Plant Biology*, *Ecology and Evolution, Environmental Microbiology*, *Pedosphere*, *Global Change Biology*

2022–present **Writing and Data Consultant**, HighEdit Consulting
Independent consulting practice assisting international clients to improve research manuscripts for publication in English-language journals.

2020–2025 Ad-hoc grant reviewer, Cornell College of Arts and Life Sciences

SERVICE, LEADERSHIP & COMMUNITY ENGAGEMENT

2023–2024 Treasurer, Cornell EEB Graduate Student Association
2021–2023 President, Cornell EEB Graduate Student Association
2020–present Member, Ecological Society of America
2019–present Member, Sigma Xi Honor Society
2018 Founder and President, Princeton ESA SEEDs chapter

SCIENCE COMMUNICATION & MEDIA

Media Coverage

2025 "2025 Graduate Research Grant Spotlight", Cornell Atkinson Center
2024 "Creating Solutions for a Sustainable World", The Everglades Foundation
2022 "Archbold's Visiting Scholars", Archbold Biological Station
2020 "The Roots of Tropical Diversity", Discovery Princeton
2019 "Petticord Explores a Kenyan Ecosystem One Tortoise at a Time", HMEI
2018 "Microsoft AI Empowering-Innovation", Microsoft (drone footage featured)
2017 "PEI Research Tracks Vegetation Changes With Drones", Princeton HMEI

FIELD EXPERIENCE

Substantial field experience working across diverse ecosystems and geographies, including subtropical pastures and wetlands (Florida, USA), tropical forests (Panama), savannas and rangelands (Florida, Kenya), and temperate grasslands (New York). Trained in first aid, 4×4 driving, remote fieldwork logistics, UAS/drone operations, radio telemetry, and field medicine.

ADDITIONAL INFORMATION

Languages: English (native), Spanish (developing), French (developing)
Programming: R, Python, Bash
Technical Skills: Isotope ratio mass spectrometry (EA-IRMS, GC-IRMS), GC-FID, molecular genetics and genomics, soil metagenomic analysis, clean lab fungal isolation, UAS/drone remote sensing, ground-penetrating radar
Athletics: Princeton Football (NCAA Division I, 2015–2019); Instructor, Cornell Physical Education — Weightlifting (Fall 2023, Fall 2024)