MARGARITA M. FERNÁNDEZ PhD.

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RESEARCH INTERESTS

I am a forest ecologist working at the interface of forest dynamics, climate-smart silviculture, and stakeholder engagement. My research examines how management decisions shape carbon sequestration, structural diversity, biodiversity, and ecosystem resilience in privately owned temperate forests across the Americas.

I serve as Co-Principal Investigator and scientific lead of a federally funded project at Penn State, where I design and implement inventory-based scenario simulations to support wildlife habitat, climate adaptation planning, and carbon stewardship strategies. This work is conducted in close collaboration with foresters, academic partners, NGOs, and family forest owners.

EDUCATION

PhD. 2019-23	Penn State University, Ecology. Dissertation: Impacts of anthropic disturbance on microarthropods: implications for sustainable management in Patagonian woodlands Graduation*:* August 2023.
BSc. 2015	School of Forestry, Universidad Nacional de Misiones (U.Na.M., Argentina) Forest Engineering, *Summa Cum Laude*

CORE COMPETENCIES AND SKILLS

- *Forest Modelling & Analysis*: proficient user Forest Vegetation Simulation (FVS) software, forest biometrics, structural diversity metrics, statistical modelling and programming in R.
- *Scenario Development*: Climate-Smart forestry, management scenario design, carbon sequestration assessment, adaptive management.
- *Stakeholder Engagement*: Technical discussion groups, extension-based dialogue, integration of management priorities into scenario design.
- *Project Coordination*: interdisciplinary and international collaboration, grant writing, scientific writing, students' supervision and mentoring.
- *Languages*: Spanish (native), English (fluent), Portuguese (conversational), German (basic).

RESEARCH APPOINTMENTS

Postdoctoral Fellow in Climate Smart Forestry Assessment and Policy
Penn State University, USA | 2023–present

Develop and evaluate climate smart forestry scenarios using forest inventory data and the Forest Vegetation Simulator (FVS) to assess carbon sequestration, structural diversity, and ecosystem resilience under alternative management strategies. Facilitate structured discussions with forest owners and practitioners to identify management priorities and perceived co benefits and trade-offs related to wildlife conservation, integrating stakeholder informed scenarios into simulation analyses and extension materials that support evidence-based decision making in private forestlands. Contribute to research and extension programs locally and internationally, strengthening exchange between academic and stakeholder communities.
PI: Christopher Scott, PhD., E-mail: cascott@psu.edu & Melissa Kreye, PhD.

Research Fellow in Forest Dynamics
Penn State University, USA | Summer 2022-2023
McIntire-Stennis Project – Carbon and Climate Adaptation in Pennsylvania Forests

Led fieldwork campaigns and laboratory operations for carbon and climate adaptation research in eastern temperate forests. Supervised and mentored 6 undergraduate students across two field seasons, overseeing data collection, processing, and analysis.
PI: Margot W. Kaye, PhD. E-mail: mwk12@psu.edu.

Graduate Research Associate and Fulbright Scholar, Ecology PhD Program
Penn State University, USA | 2019–2023

Conducted independent and collaborative research, including experimental design, data analysis, and manuscript preparation. Contributed to scientific writing and publication efforts in peer reviewed journals, and supported undergraduate training through field instruction, mentoring, and classroom teaching.
Advisors: David M. Eissenstat, PhD., & Margot W. Kaye, PhD.

Graduate Research Fellow
Universidad Nacional de Río Negro (IRNAD-UNRN), Argentina | 2016–2018

Designed and implemented a novel 4-hectare fertilization experiment in Patagonian woodlands, coordinating multidisciplinary field and research teams. Led the establishment of a woodland enrichment experiment and directed field campaigns for plant and soil sampling. Mentored 2 undergraduate students.
Advisors: Lucas A. Garibaldi, PhD., & José C. Bedano, PhD.

PROFESSIONAL TRAINING IN EXTENSION AND OUTREACH

Extension Fellow-Broadening Extension through Student Training (BEST) Program
Penn State University, USA | Summer 2022

Professional development certificate (34 hours) in extension education, program delivery, stakeholder engagement, and impact evaluation methods. Formally participated in Forest Owner Carbon and Climate Education Program (FOCCE) and produced three extension articles with landowners and professionals to disseminate in *Argentina Forestal*.
PI: Melissa Kreye, PhD.

HONORS & AWARDS

- Seal of Excellence**.** Marie Skłodowska-Curie Postdoctoral Fellowship (2025 call). European Commission.
- Best Poster Presentation (2024). 16th Annual Postdoc Research Symposium. Penn State University.
- Outstanding Graduate Student Teaching Award (2023). Penn State University.
- De La Torre Scholar (2021). Penn State University.
- College of Ag. Sciences Graduate Competitive Grant (2020-21). Penn State University.
- Robert W. Graham Award (2019). Penn State University.
- Graduate Fulbright Scholarship (Argentina, 2019-21). Penn State University.
- Graduate Scholarship (Argentina, 2016-2019). Agencia de Promoción Científico-Tecnológica.
- Fulbright Scholarship, Future Leaders Program (Argentina, 2015). The University of Texas at Austin.

FUNDED RESEARCH GRANTS

2024–2026 – Advancing the Co-benefits of Climate-Smart Forestry through Research and Extension in Pennsylvania's Private Forestlands. *Role:* CO- Principal Investigator*.* Grant prize: USD 172,409.7. McIntire-Stennis Competitive Grants Program (US Dept. of Agriculture, National Institute of Food and Agriculture, USDA-NIFA).

2024–2026 – Augmenting Climate Transition across the Atlantic Transect: Extension-driven solutions to implementing socially responsible, high-integrity forest carbon offsets (ACT-AT Forests) *Role:* Co-Principal Investigator*.* Grant prize: USD 200.000. Climate Solutions Accelerator Phase II (Institute of Energy and Environment IIE, Penn State University).

2024 – Climate Solutions Accelerator, Phase I. Forest Carbon Assessment and Management across Scales: Using Improved Forest Management for Climate Resilience and Mitigation Role: Organizer. *Grant prize:* $15,000.

2023 – Workshop Travel Grant. Forest Vegetation Simulator Training. *Grant prize*: $2000, The Maurice K. Goddard Chair in Forestry and Environmental Resource Conservation.

MENTORING AND SUPERVISION

Graduate Student Mentor – Universidad Jorge Tadeo Lozano (Colombia) | 2025–present
Doctoral committee member (forest carbon modelling and climate policy).

Undergraduate Research Supervisor – Penn State University | 2023–2025
Supervised 6 students in forest inventory, data management, and climate-smart forestry projects.

Undergraduate Research Supervisor – IRNAD-UNRN (Argentina) | 2017–2019
Supervised two Environmental Engineering students in professional practice projects.

TEACHING EXPERIENCE (SELECTED, PAST 5 YEARS). FA= FALL (AUTUMN) SEMESTER; SP= SPRING SEMESTER

Forest Ecology (FOR 308), Penn State University **| FALL 2022, 2024, 2025**

Full Instructor. (Undergraduate Course). Delivered lectures and laboratories on Forest Ecology topics for undergraduate students in the Forest Resources Management and the Wildlife programs, 15 weeks during each Fall 2022, Fall 2024 and Fall 2025 semesters (average enrollment 27 students).

Forest Ecology (FOR 308), Penn State University **| FALL 2021**

Graduate Teaching Assistant. (Undergraduate Course). Graded homework, lectured, assisted in laboratories and led student office hours for Prof. Margot W Kaye (Instructor of record).

Restauración de Bosques Nativos: Construyendo la Resiliencia del Paisaje,
Universidad Nacional de Misiones (Argentina) **| FALL 2024**

Guest Lecturer. (Undergraduate Course) Native Forest Restoration: Building Landscape Resilience Date: October 14, 2024**.**

Water, Energy, and Food (WEF) Nexus, FOR 597, Penn State University **| SP 2024**
Guest Lecturer (Graduate Course). Date: January 13, 2024.

PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES

Lockwood B., Kaye MW., Maynard-Bean E., & **Fernández MM.** (2025). Impacts of management on ecosystem service capacity in northeastern U.S. Appalachian Forest stands. *Canadian Journal of Forest Research*. 55: 1-11. https://doi.org/10.1139/cjfr-2025-007

Fernández MM., Kaye MW., Eissenstat DM., Pérez-Méndez N., & Garibaldi LA. (2025). Nutrient addition hinders microarthropod-driven leaf litter decomposition in Patagonian woodlands. S120: Mediterranean Ecosystems. *Plant and Soil*. https://doi.org/10.1007/s11104-025-07281-1

Garibaldi LA., Zermoglio PF., Agüero JI., Nacif ME., Goldenberg MG., Fioroni F., **Fernández MM.,** & Puntieri JG. (2024). Designing multifunctional forest systems in Northern Patagonia, Argentina. *Frontiers in Sustainable Food Systems*, 8, 1357904. https://doi.org/10.3389/fsufs.2024.1357904

Fioroni F., Fernández N., **Fernández MM.**, & Garibaldi LA. (2022). La disponibilidad de luz limita la producción frutícola del calafate en un matorral mixto nativo (Río Negro, Argentina). *Ecología Austral*, 32(3), 984-989. https://doi.org/10.25260/EA.22.32.3.0.1952

Fernández MM., Casas C., Bedano JC., Eissenstat DM., Kaye MW., García IM., & Garibaldi LA. (2022). Mite density, not diversity, declines with biomass removal in Patagonian woodlands. *Applied Soil Ecology*, 169, 104242. https://doi.org/10.1016/j.apsoil.2021.104242

Pérez-Méndez N., **Fernández MM.**, van Doorn L., Català-Forner MM., Martínez L., & Garibaldi LA. (2021). Bottom-up effects of woodland eutrophication: Interacting limiting nutrients determine herbivory frequency in northwestern Patagonia. *Science of The Total*

Environment, 151608. https://doi.org/10.1016/j.scitotenv.2021.151608

Eskiviski ER., Schapovaloff ME., Dummel DM., **Fernández MM.,** & Aguirre FL. (2018). Susceptibility of eucalyptus species and hybrids to the gall wasp *Leptocybe invasa* (Hymenoptera: Eulophidae) in northern Misiones, Argentina. *Forest Systems*, 27(1), eSC01-eSC01. https://doi.org/10.5424/fs/2018271-11573

EXTENSION ARTICLES AND OUTREACH MATERIALS

Kreye M., Papa C., Beresford E., Widderich, S., Anderegg W., Belair E., Chizmar S., Cushing T., Daigneault A., **Fernández MM**., Galik C., Gibson J., Gunn J., Haya B., Hayes D., Hurteau M., Kaarakka L., Kowalczyk T., Latta G., McEvoy D., Novick K., Pokharel R., Ruseva T., Sohngen B., & Stanton J. (2025). Identifying research priorities for the development of high-integrity forest carbon offset credits [White paper]. Learning Exchange Series 2025. Forest Carbon and Climate Program (FCCP), Michigan State University. Forest Owner Carbon and Climate Education Program (FOCCE), Penn State University.

Fernández MM. (2024). Climate-smart forestry: Mitigating climate change and enhancing resilience in Pennsylvania. *Institute of Energy and the Environment (IEE) Blog*.

Fernández MM., & Kreye M. (2024). Valoración del carbono en la actividad forestal: conectando el manejo forestal con los mercados de carbono. *Argentina Forestal*.

Fernández MM., Fragni S., & Kreye M. (2024). Perspectivas del mercado voluntario de carbono tras la experiencia de un propietario de bosque y una consultora argentina. *Argentina Forestal.*

Fernández MM. & Kreye M. (2024). El carbono forestal ¿dónde encontramos los reservorios?. *Argentina Forestal.*

PRESENTATIONS AT CONFERENCES AND SCIENTIFIC EVENTS (SELECTED, PAST 5 YEARS)

Fernández, MM. (2025). Carbon Rich, Forest Strong: Advancing Climate-Smart Silviculture for Biodiversity and Carbon Co-Benefits in Private Forests. 2025 Ecological Society of America Annual Meeting. Ongoing Projects Session (Poster). Baltimore, Maryland. August 14, 2025.

Fernández MM. (2024). Forest Rich, Carbon Strong: unleashing carbon stewardship for PA and beyond. Penn State's 17th Annual Postdoctoral Symposium (Oral). State College, Pennsylvania. December 6, 2024.

Fernández MM., Lockwood B. & Kaye MW. (2024). Quantifying IFM potential for forest carbon sequestration and additionality in the eastern US: a synthesis. 2024 Society of American Foresters National Convention (Oral). Loveland, Colorado. September 20, 2024.

Fernández MM., Pérez-Méndez, N., van Doorn L., Fioroni F., Martínez L., Eissenstat DM., Kaye MW., Marrero H., Garibaldi LA. (2024). From roots to leaves: multifunctional outcomes of nutrient enrichment in Patagonian woodlands. 2024 Ecological Society of America Annual Meeting (Oral). Long Beach, California. August 5, 2024.

OUTREACH ACTIVITIES

Fernández MM., Ocasio-Rivera Z. (2026). Taller de Monitoreo del Bosque**.** ECOSISTEMA project, Trees in Your Community Program. USDA Forest Service-Green Latinos. *Role:* Technical Facilitator.

Papa C., Pokharel R., Kreye M., **Fernández MM.** (2025). Forest Carbon Market Decision-Support Workshop. Penn State Extension, Forest Carbon and Climate Program (FCCP), FOCCE, Michigan State University. *Role*: Presenter.

Daigneault A., **Fernández MM.**, Kaarakka L., Latta G. (2025). 2025 Learning Exchange Series. Webinar 2: Additionality. Addressing uncertainties in additionality for forest carbon offsets. *Role:* Panelist.

Leopold P., Muth A., **Fernández MM.**, Scott CA., Kreye M. (2024). Keep Penn's Woods Healthy Workshop. Organizing Institutions: NIACS, FOCCE, Penn State University. Goal: Test our climate risk assessment tool *in situ* with landowners and foresters in central Pennsylvania.

Kreye M., Muth A., **Fernández MM.**, Neupane K. (2024). Climate-Smart Forest Legacy program 2024. Forest Owner Carbon and Climate Education Program (FOCCE). *Role:* Moderator and Group Discussion Leader.

Kreye M., Norman C., **Fernández MM.**, Neupane K. (2024). Professional Training Series: Teaching Forest Owners about Carbon Incentives. FOCCE Live Webinar Series 2024. *Role:* Moderator.

PUBLICATIONS IN PREPARATION

Fernández MM., Kaye MW., Lockwood B., Kreye M., Scott CA. Moving beyond extended rotations: Analysis of carbon outcomes of Climate-Smart Forestry in eastern U.S. forests. To be submitted to *Forest Ecology and Management*.

Scott CA., Kreye M., Frávega M., Orrego S., Sanquetta C., Papa C., **Fernández MM.**, Widderich S. Enabling conditions for land-use credit stacking: Policy assessment of forest carbon, biodiversity, and source-water protection across an Atlantic social-ecological transect. To be submitted to *Forest Policy & Economics*.

Kreye, M., Fragni S., Longo M. Orrego S., Widderich S., **Fernández MM.**, Scott CA. Carbon Offsets at a Crossroads: A Collective Reflection on Integrity, Participation, and Practice. Letter to *Forest Science* special issue on *Forest Carbon and Resilience.*