

Adam Pellegrini C.V.

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Positions

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| University of Cambridge (Cambridge, England) | 2020-present |
| Assistant Professor, Dept. of Plant Sciences | 2020-present |
| Director of Studies, Biology, Newnham College | 2020-present |
| Cambridge Conservation Research Institute | 2020-present |
| University of Michigan (Ann Arbor, Michigan, USA) | 2022-present |
| Fellow, Institute for Global Change Research | |
| Stanford University (Stanford, California, USA) | 2016-2020 |
| USDA National Institute of Food and Agriculture Postdoctoral Fellow | 2018-2020 |
| NOAA Climate and Global Change Postdoctoral Fellow, Dept. Earth System Science | 2016-2018 |

Education

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| Princeton University (Princeton, New Jersey, USA) | 2016 |
| Ph.D. Dept. of Ecology and Evolutionary Biology | |
| Princeton University (Princeton, New Jersey, USA) | 2012 |
| MA. Dept. of Ecology and Evolutionary Biology | |
| Colgate University (Hamilton, New York, USA) | 2010 |
| BA. <i>magna cum laude</i> with High Honors in Biology | |

Current and Previous Grants

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| Determining the potential for soil carbon storage under different fire regimes in drylands | 2023-present |
| (PI, €1,497,190, Starter Grant European Research Council; £1,290,287 UKRI) | |
| Nature-based climate solutions in UK Peatlands | 2022-present |
| (co-I, £206,892, Quadrature Foundation, UK) | |
| Landscape Regeneration Solutions to the Interlinked Extinction and Climate Crises that support Sustainable Development | 2022-present |
| (co-I, £87,387, co-I, total grant of £9,935,150, Natural Environment Research Council, UK) | |
| Farming for carbon: models and survey on potential climate change mitigation | 2022-present |
| (PI, £84,421, Natural Environment Research Council, UK) | |
| Public health burden of wildfires in the United Kingdom | 2021-present |
| (PI, £56,622, Isaac Newton-Wellcome Trust, Univ. Cambridge, UK) | |
| Ecosystem and biogeochemical reassembly after fire on peatlands | 2021-present |
| (PI, £82,059, Natural Environment Research Council, UK) | |
| The resilience of savannas to changing fire regimes | 2020-present |
| (PI, £82,059, Natural Environment Research Council, UK) | |
| Compounded biogeochemical effects of fire on western U.S. forests | 2018-2020 |
| (PI, \$7,500, National Park Service) | |
| Predicting the resilience of carbon sequestration and productivity of forests and grasslands to changes in fire | 2018-2020 |
| (PI, \$165,000, USDA National Institute of Food and Agriculture postdoctoral fellowship) | |
| Role of plant traits, fire history and nutrients in determining the response of ecosystems to fire | 2016-2018 |
| (PI, \$146,900, NOAA Climate & Global Change postdoctoral fellowship) | |
| Predicting the resilience of carbon sequestration in western forests and grasslands to changes in drought and fire | 2016 |
| (PI, \$151,800, USDA National Institute of Food and Agriculture postdoctoral fellowship, recipient declined) | |
| Resilience of plant communities to fire-driven biogeochemical changes | 2016 |
| (\$3,475, Princeton Univ.) | |
| Carbon and nutrient dynamics at Neotropical savanna-forest boundaries | 2014-2015 |

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| (\$4,930, National Geographic Society) | |
| Effects of fire on savanna ecosystem productivity | 2012-2015 |
| (~\$150,000, NSF Graduate Research Fellowship). | |
| Role of nutrient losses in determining tropical ecosystem function | 2011-2012 |
| (\$41,500, Latin American Studies at Princeton Univ.) | |

Publications

33. Gold, ZJ, **Pellegrini, AFA**, et al. (20 other co-authors). Greater herbaceous vegetation responses to fire in savannas than in forests suggest bistability. **Ecology Letters**, doi.org/10.1111/ele.14236.
32. Kelly, LT, Fletcher, MS, Oliveras-Menor, I, **Pellegrini, AFA**, Plumanns-Pouton, E, Pons, P, Williamson, GJ, Bowman, DMJS. Fire regime changes: a planetary synthesis. **Annual Review of Environment and Resources**, *accepted and in press*
31. **Pellegrini, AFA**, Anderegg, L, Pinto-Ledezma, J, Cavender-Bares, J, Hobbie, S, Reich, P. (2023) Consistent physiological, ecological, and evolutionary effects of fire regime on conservative leaf economics strategies in plant communities. **Ecology Letters**, 26:597-608
30. Shuman JK et al. (87 authors including **AFA Pellegrini**). (2022) Reimagine fire science for the anthropocene. **Proceedings of the National Academy of Sciences Nexus**, 1: 1-14.
29. Georgiou, K, Jackson, RB, Vinduskova, O, Abramoff, RZ, Ahlstrom, A, Feng, W, Harden, JW, **Pellegrini, AFA**, Polley, HW, Soong, JL, Riley WJ, Torn, MS. (2022) Global stocks and capacity of mineral-associated soil organic carbon. **Nature Communications**, 13: 1-12.
28. Eklund, J, Jones, JPG, Rasanen, M, Geldmann, J, Jokinen, AP, **Pellegrini, AFA**, Rakotobe, D, Rakotonarivo, OS, Toivonen, T, Balmford, A. (2022) Elevated fires during COVID-19 lockdown reveal protected area vulnerability. **Nature Sustainability**, 5: 603-609.
27. Xu, S, Eisenhauer, N, **Pellegrini, AFA**, Wang, J, Certini, G, Guerra, CA, Lai, DYF. (2022) Fire frequency and type regulate the response of soil carbon cycling and storage to fire across soil depths and ecosystems: a meta-analysis. **Science of the Total Environment**, 825: 153921.
26. **Pellegrini, AFA**, Harden, J, Georgiou, K, Hemes, K, Maholtra, A, Nolan, C, Jackson, RB. (2022) Fire effects on the persistence of soil organic matter and long-term carbon storage. **Nature Geoscience**, 15: 5-13.
25. Harrison, SP, Prentice, IC, (16 authors including **AFA Pellegrini**). (2021) Understanding and modelling wildfire regimes: an ecological perspective. **Environmental Research Letters** 16: 125008.
24. Terrer, C, Phillips, RP, Hungate, BA, Rosende, J, Pett-Ridge, J, Craig, ME, van Groenigen, KJ, Keenan, TF, Sulman, BN, Stocker, BD, Reich, PB, **Pellegrini, AFA**, Pendall, E, Zhang, H, Evans, RD, Carrillo, Y, Fisher, JB, Van Sundert, K, Vicca, S, Jackson, RB. (2021). A trade-off between plant and soil carbon storage under elevated CO₂. **Nature**, 591: 599-603.
23. **Pellegrini, AFA**, Caprio, A, Georgiou, K, Finnegan, C, Hobbie, SE, Hatten, J, Jackson, RB. (2021) Low-intensity frequent fires in coniferous forests transform soil organic matter in ways that may offset ecosystem carbon losses. **Global Change Biology**, 27:3810-3823
22. **Pellegrini, AFA**, Hein, A, Cavender-Bares, J, Montgomery, R, Staver, AC, Silla, F, Hobbie, SE, Reich, PB. (2021) Disease and fire interact to influence transitions between savanna-forest ecosystems over a multi-decadal experiment. **Ecology Letters**, 24: 1007-1017, doi.org/10.1111/ele.13719
21. **Pellegrini, AFA**, Refsland, T, Averill, C, Terrer, C, Staver, AC, Brockway, DG, Caprio, A, Clatterbuck, W, Coetsee, C, Haywood, JD, Hobbie, SE, Hoffmann, WA, Kush, J, Lewis, T, Moser, WK, Overby, ST, Patterson, B, Peay, KG, Reich, PB, Ryan, C, Sayer, MAS, Scharenbroch, BC, Schoennagel, T, Smith, GR,

- Stephan, K, Swanston, C, Turner, MG, Varner, TM, Jackson, RB. (2021) Decadal changes in fire frequencies shift tree communities and functional traits. **Nature Ecology and Evolution**, 5: 504-512 doi.org/10.1038/s41559-021-01401-7
20. **Pellegrini, AFA**, Hobbie, SE, Reich, PB, Jumpponen, A, Brookshire, ENJ, Caprio, AC, Coetsee, C, Jackson, RB. (2020) Repeated fire shifts carbon and nitrogen cycling by changing plant inputs and soil decomposition across ecosystems. **Ecological Monographs**, 90: e01409, doi.org 10.1002/ecm.1409
 19. **Pellegrini, AFA** & Jackson, RB. (2020) The long and short of it: the timescales of how fire affects soils using the pulse-pressure framework. **Advances in Ecological Research**, 62:147-171
 18. **Pellegrini, AFA**, McLauchlan, K, Hobbie, SE, Mack, M, Marcotte, A, Nelson, D, Perakis, S, Reich, P, Whittinghill, K. (2020) Frequent burning causes large losses of carbon from deep soil layers in a temperate savanna. **Journal of Ecology**, 108: 1426-1441, doi.org/10.1111/1365-2745.13351
 17. Future of Fire Consortium (44 authors including **Pellegrini, AFA**). (2020) Fire as a fundamental ecological process: research advances and frontiers. **Journal of Ecology**, 108: 2047-2069, doi.org/10.1111/1365-2745.13403
 16. Du, E, Terrer, C, **Pellegrini, AFA**, Ahlström, A, Zhao, X, Xia, N, Wu, X., Jackson, R. (2020) Global patterns in terrestrial nitrogen and phosphorus limitation. **Nature Geoscience**, 13: 221-226, doi.org/10.1038/s41561-019-0530-4
 15. Wooliver, R, **Pellegrini, AFA**, Waring, B, Houlton, B, Averill, C, Schimel, J, Hedin, L, Bailey, J, Schweitzer. (2019) Changing perspectives on terrestrial nitrogen cycling: the importance of weather and feedbacks from evolved resource-use traits for natural gradients of soil nitrogen. **Functional Ecology**, 33: 1818-1829
 14. Hebert-Dufresne, L, **Pellegrini, AFA**, Bhat, U, Redner, S, Pacala SW, Berdahl, A. (2018) Edge fires drive the shape and stability of tropical forests. **Ecology Letters**, 21: 233-243
 13. Trugman, AT*, Medvigy, D., Hoffmann, WA, **Pellegrini, AFA***. (2018) Sensitivity of woody carbon stocks to bark investment strategy in Neotropical savannas and forests. **Biogeosciences**, 15: 233-243
 12. **Pellegrini, AFA**, Ahlström, A, Hobbie, S, Reich, P, Nieradzic, L, Staver, AC, Scharenbroch, B, Jumpponen, A, Anderegg, W, Randerson, J, Jackson, R. (2018) Fire frequency drives decadal changes in soil carbon and nitrogen and ecosystem productivity. **Nature**, 553: 194–198
 11. **Pellegrini, AFA**, Anderegg, WRL, Paine, CET, Hoffmann WA, Kartzinel, T, Rabin, S, Paine, CET, Sheil, D, Franco, A & Pacala, SW. (2017) Convergence of bark investment according to fire and climate structures ecosystem vulnerability to future change. **Ecology Letters**, 20: 307-316
 10. **Pellegrini, AFA**, Pringle, RM, Govender, N, & Hedin, LO. (2017) Woody plant biomass and carbon exchange depend on elephant-fire interactions across a productivity gradient in African savanna. **Journal of Ecology**, 105: 111-121 **Editor's choice
 9. **Pellegrini, AFA**, Staver, AC, Hedin, LO, Charles-Dominique, T & Tourgee, A. (2016) Aridity, not fire, favors nitrogen-fixing plants across tropical savanna and forest biomes. **Ecology**, 97:2177-2183
 8. **Pellegrini, AFA**, Socolar, S, Elsen, P & Giam, X. (2016) Tradeoffs between savanna woody plant diversity and carbon storage in the Brazilian Cerrado. **Global Change Biology**, 22:3373-3382
 7. Anderegg, WRL, Klein, T, Bartlett, M, Sack, L, **Pellegrini, AFA**, Choat, B, & Jansen, S. (2016) Meta-analysis reveals that hydraulic traits explain cross-species patterns of drought-induced tree mortality across the globe. **PNAS**, 113: 5024-5029
 6. **Pellegrini, AFA**, Hoffmann, WA, & Franco, A. (2016) Shifts in functional traits elevate risk of fire-driven

tree dieback in tropical savanna and forest biomes. **Global Change Biology**, 22: 1235-1243

5. **Pellegrini, AFA.** (2016) Nutrient limitation in tropical savannas across multiple scales and mechanisms. **Ecology, Concepts & Synthesis**, 97: 313-324
4. **Pellegrini, AFA, Hedin, LO, Staver, AC, & Govender, N** (2015) Fire alters ecosystem carbon and nutrients but not plant nutrient stoichiometry or composition in tropical savanna. **Ecology**, 96: 1275-1285
3. **Pellegrini, AFA, Hoffmann, WA & Franco, A** (2014) Carbon accumulation and nitrogen pool recovery during transitions from savanna to forest in Central Brazil. **Ecology**, 95: 342-352
2. **Pellegrini, AFA & Soja, C** (2012) Post-tectonic limitations on Early Devonian (Emsian) reef development in the Gobi-Altai region, Mongolia. **Lethaia**, 45:46-61
1. **Pellegrini, AFA, Wisenden, BD & Sorensen, PW** (2010) Bold minnows consistently approach danger in the field and lab in response to either chemical or visual indicators of predation risk. **Behavioural Ecology and Sociobiology**, 64: 381-387

Papers in review and revision

Pellegrini, AFA et al. (19 co-authors). Determinants of the capacity of dryland ecosystems to store soil carbon under altered fire regimes. **Nature Climate Change**, *In revision*.

Georgiou, K, Koven, C, Wieder, W, Riley, W, Pett-Ridge, J, Bouskill, N, Abramoff, R, Slessarev, E, Ahlstrom, A, Hartmann, M, **Pellegrini, AFA**, Pierson, D, Sulman, B, Zhu, Q, Jackson, R. Mineral protection drives emergent soil carbon temperature sensitivity. **Nature Geoscience**, *In revision*.

Coetsee, C, February, E, Wigley, B, Klein, L, Strydom, T, Hedin, L, Watson, H, Fabio, A, **Pellegrini, AFA**. Soil carbon is stabilized by grass biomass inputs when savanna fires become more frequent. **Journal of Ecology** *In revision*.

Simpson, KJ, Staver AC, King, J, Bond, WJ, Botha, J, Coetsee, C, **Pellegrini AFA**, Raubenheimer, S, Ripley, BS, Martin, MV, Osborne, CP. CO2 fertilization of C4 grasses across experiments, field observations, and models.

Contribution to diversity, equity, and inclusion

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| NERC grant in climate science for a female PhD student (University of Cambridge) | 2021 |
| Cambridge Trust research fellowship for a female PhD student (University of Cambridge) | 2020 |
| NERC grant in climate science for a female PhD student (University of Cambridge) | 2020 |
| Panel member on promoting diversity in research fellowships (University of Cambridge) | 2019-present |
| Workshop for research opportunities for women in science (Newnham College) | 2019 |
| SURGE Research Diversity Program (Stanford University) | 2018-2019 |

Academic Honors and Awards

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| European Research Council Starter Grant (€1,497,190) | 2022 |
| USDA National Institute of Food and Agriculture Postdoctoral Fellowship (\$165,000, USDA) | 2017 |
| NOAA Climate and Global Change Postdoctoral Fellowship (\$146,900, NOAA) | 2016 |
| USDA National Institute of Food and Agriculture Postdoctoral Fellowship (\$151,800, USDA) | 2016 |
| Recommended for award but recipient declined | |
| William Ebenstein Student Research Grant (\$3,475, Princeton Univ.) | 2016 |
| INTERFACE ecological modelling scholarship (~\$1,500, NSF) | 2015 |
| Department of Ecology and Evolutionary Biology symposium grant (\$2,750, Princeton Univ.) | 2015 |

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| National Geographic Society Young Explorer (\$4,930, NGS) | 2013 |
| Latin American Studies Research Grant (\$1,800, Princeton Univ.) | 2012 |
| National Science Foundation-Graduate Research Fellowship Program (~\$150,000, NSF) | 2012 |
| Lassen Graduate Student Fellowship (\$72,484, Princeton Univ.) | 2011 |
| Oswald T. Avery Award for excellence in biology (Colgate Univ.) | 2010 |
| Natural Sciences Research Grant (\$3,800, Colgate Univ.) | 2010 |
| George E. Stevenson Award for outstanding research (\$1,100, Colgate Univ.) | 2010 |
| Douglas Rankin '53 Geology Research Fellowship (\$5,000, Colgate Univ.) | 2009 |
| International Research Experience Fellowship (\$6,500, Univ. of Connecticut) | 2009 |
| National Science Foundation REU in Global Change Ecology (\$7,400, Univ of Minnesota) | 2007 |
| International Baccalaureate Diploma Highschool | 2006 |
| Al Halley Athlete-Scholar Award | 2006 |

Advisory activities

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| External Advisor for McKinsey Sustainability (McKinsey & Company) | 2022 |
| External Advisor for Zulu Forest (Zulu Forest, Inc) | 2021 |

Service and other professional activities

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| Associate Editor, Journal of Ecology | 2023 |
| Academic Representative for Climate Change Ecology Special Interest Group (British Ecological Society) | 2022 |
| Leverhulme Wildfire Centre Workshop (Imperial College, London) Invited workshop on novel fire research and model development | 2021 |
| Wildfire and Biosphere Workshop (NSF) | 2021 |
| Global Rainforest Convening Workshop (National Geographic Society) Invited workshop to evaluate funding priorities in rainforest research | 2019 |
| Future of Fire workshop (NSF) Invited workshop funded by the National Science Foundation. | 2017 |
| INTERFACE workshop on Earth system models (NSF) Invited workshop funded by the National Science Foundation. | 2016 |
| Workshop on trait methods for representing ecosystem change (DoE) Invited workshop funded by the Department of Energy | 2015 |
| Leading department statistics assistance (Princeton Univ.) Organize and teach statistics to undergraduates | 2015-2016 |
| Mentor-mentee pairing of graduate students (Princeton Univ.) Mentored younger graduate students on research design and theory | 2012-2016 |
| Graduate student representative (Princeton Univ.) Liaison between the department of Ecology and Evolutionary Biology and the Graduate Student Government | 2012 |
| Freshman orientation leader (Colgate University) Led freshman orientation and the first-year experience of incoming students; organized social events and evaluated academic stability of students; served as a professional resource | 2007-2010 |
| Ad hoc reviewer for: Nature, Nature Ecology and Evolution, Proceedings of the National Academy of Sciences, Ecology Letters; Ecology; Ecological Monographs; Ecosystems; Ecological Applications; New Phytologist; J. Applied Ecology; J. Functional Ecology; J. Geophysical Research; American J. Botany; Nature Communications; PLoS One | |

Teaching and supervision training

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| Bias and Discrimination in Natural Sciences (University of Cambridge) | 2021 |
| Undergraduate Supervisions (University of Cambridge) | 2020 |
| Bias in Teaching and Mentoring (University of Cambridge) | 2020 |

Invited Seminars

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| Oxford University, Invited seminar | 2022 |
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| Leverhulme Wildfire Centre, Invited seminar | 2021 |
| University of Aberdeen, Invited seminar | 2020 |
| University of California, Santa Cruz, Invited seminar | 2020 |
| Stanford University, Invited seminar | 2020 |
| University of Cambridge, Invited seminar | 2019 |
| Massachusetts Institute of Technology, Invited seminar | 2019 |
| University of California, Los Angeles, Invited seminar | 2019 |
| University of Chicago, Invited seminar | 2019 |
| University of Oregon, Invited seminar | 2019 |
| Harvard University, Invited seminar | 2018 |
| University of Montana, Invited seminar | 2017 |
| United States Geological Survey, Menlo Park, Invited seminar | 2017 |
| Lawrence Berkeley National Lab, Invited seminar | 2017 |
| University of Utah, Invited seminar | 2017 |
| University of Minnesota, Invited seminar | 2016 |
| Colgate University, Invited seminar | 2016 |
| University of Michigan, Invited seminar | 2016 |
| Princeton University, Invited seminar | 2016 |
| Santa Fe Institute, Invited seminar | 2015 |

Colloquia

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| Nature-based solutions in savanna-grasslands are neither stable nor predictable | 2023 |
| Oral presentation, European Geophysical Union | |
| Compound disturbances create a tradeoff between the potential for and persistence of carbon storage in savanna and forest ecosystems | 2022 |
| Oral presentation, Ecological Society of America Conference | |
| Soil carbon storage is most limited by fire in semi-arid ecosystems | 2021 |
| Invited talk, Ecological Society of America | |
| Shifting focus from a top-down to a bottom-up understanding of fire effects on soils | 2021 |
| Invited talk, Leverhulme Centre for Wildfire Research | |
| Frequent burning filters for conservative nutrient use strategies and dampens nitrogen cycling across temperate ecosystems | 2020 |
| Oral presentation, British Ecological Society | |
| Limited carbon cost of fire management in Californian forests: compensatory responses may buffer against long-term soil carbon losses | 2019 |
| Oral presentation, American Geophysical Union | |
| Frequent fires and potential feedbacks with ecosystem carbon cycling | 2019 |
| Invited talk, Chapman Conference, American Geophysical Union | |
| The role of plant-soil interactions in structuring the resilience of ecosystems to repeated burning | 2019 |
| Invited talk, Ecological Society of America Conference | |
| Frequent burning alters the composition and activity of microbial communities in soils by changing soil chemistry and plant traits | 2019 |
| Invited talk, Soil Science Society of America Conference | |
| The role of plant-microbe-soil interactions in determining the biogeochemical response of ecosystems to fire | 2018 |
| Oral presentation, American Geophysical Union Conference | |
| The role of plant-microbe-soil interactions in determining the biogeochemical response of ecosystems to fire | 2018 |
| Oral presentation, Ecological Society of America Conference | |
| Shifting fire regimes alter soil carbon and nutrient storage at the global scale | 2017 |
| Oral presentation, American Geophysical Union Conference | |
| Nitrogen losses during fire and the emergence of fire-plant-soil feedbacks across individual community, and ecosystem scales | 2017 |
| Invited talk, Ecological Society of America Conference | |

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| Large long-term effects of fire on soil carbon and nutrients across ecosystems: A meta-analysis | 2016 |
| Oral presentation, American Geophysical Union Conference | |
| Global adaptability and vulnerability of ecosystems to changing fire regimes | 2016 |
| Oral presentation, Ecological Society of America Conference | |
| Long-term interactive effects of elephants, fire and rainfall determine woody plant biomass in African savanna | 2015 |
| Oral presentation, Ecological Society of America Conference | |
| Long-term interactive effects of elephants, fire and rainfall determine woody plant biomass in African savanna | 2015 |
| Oral presentation, Association for Tropical Biology Conference | |
| Carbon accumulation and nitrogen pool recovery during transitions from savanna to forest | 2014 |
| Oral presentation, American Geophysical Union Conference | |