Clarice R. Perryman
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she/her/her

Professional Appointments

Research Scientist | *Department of Earth System Science, Stanford University* 2026-present

NSF Earth Sciences Postdoctoral Fellow | *Stanford University* 2024-2025
EAR-PF: Assessing the net climate impact of tropical peatland restoration: the role of methane

Postdoctoral Scholar, Earth System Science | *Stanford University* 2023
Faculty Advisor: Dr. Alison M. Hoyt

Education

Ph.D., Earth & Environmental Science | *University of New Hampshire* 2022
Dissertation: Influence of Permafrost Thaw, Microtopography, and Precipitation on Methane Cycling in Northern Peatlands
Advisor: Dr. Ruth K. Varner

M.S., Earth Science – Geochemical Systems | *University of New Hampshire* 2017
Thesis: Illuminating Geochemical Controls of Methane Oxidation Across a Gradient of Permafrost Thaw
Advisor: Dr. Ruth K. Varner

B.A., Geology | *Earlham College* 2016
Minor in Environmental Studies
Phi Beta Kappa; College and Departmental Honors

Research Experience

Postdoctoral Scholar | *Stanford University* 2023–2025

- Awarded NSF Earth Sciences Postdoctoral Fellowship for 2024-2025
- Designed and led research on the impact on natural climate solutions and greenhouse gas emissions from tropical wetlands
- Conducted international field campaigns in Indonesia, Costa Rica, and Ecuador
- Mentored 6 student and/or post-baccalaureate researchers from the United States and Indonesia
- Helped procure funding for new stable isotope instrumentation at Stanford University
- Performed lab inspections, managed chemical inventory, oversaw safety training of new group members, and wrote fieldwork safety plans in role as Lab Safety Coordinator

Graduate Research Fellow | *University of New Hampshire* 2016–2022

- Awarded NSF, NASA, and university funded graduate research fellowships
- Designed and led research projects on the impact of climate change on methane cycling and emissions in northern peatlands across the USA, Europe, and Canada

- Implemented diverse methods, including field-based emissions measurements, laboratory soil incubations, stable isotope analyses, and microbiome sequencing
- Collaborated on methane-focused projects across terrestrial and aquatic ecosystems
- Mentored 8 undergraduate student researchers (7 UNH students, 1 REU student)

Northern Ecosystems Research for Undergraduates NSF REU 2015

- Conducted research at the University of New Hampshire and Abisko Scientific Research Station in Sweden
- Designed and implemented an incubation experiment measuring the potential for microbial methane uptake in peat soils across a permafrost thaw gradient
- Assisted other REU participants with projects involving soil carbon stocks, remote sensing, and greenhouse gas emissions from wetlands and lakes

Undergraduate Research Assistant | *Earlham College* 2014–2016

- Participated in fieldwork sampling soils on archaeological sites in the Colorado Plateau
- Conducted laboratory measurements of soils, including loss on ignition, x-ray diffraction, colorimetric determination of nutrient content, and pH and conductivity measurements

Publications (*indicates student mentees)

Perryman, C.R., Bowen, J.C., *Silviani P.A.B., D., *Dayanti, E., *Andriyani, Y., Gates, *R.L., Novita, N., Anshari, G.Z., Hoyt, A.M. (2026). Methane Emissions from Canals Draining Tropical Peatlands: Constraining Temporal Variability and Emissions Pathways. *Limnology and Oceanography Letters*, 11: e70150. https://doi.org/10.1002/lol2.70150

Watts, J.D., Ordway, E., Malone, S.L., Zhu, Q. …. **Perryman, C.R.**, et al. (2026). A global methane observation system to track climate feedbacks for verifiable climate impact. *Science, 391*(6792),1324-1327 https://doi.org/10.1126/science.aef0459

Perryman, C.R., Baysinger, M.R., Cobb, A.R., Gandois, L., Chanton, J.P., Evans, T., Chua, A., Eri, J., bin Haji Idi, H.B., Incham, J.M., Pu, J.P., Teo, A., Zulkiflee, R.A., Harvey, C.F., Hoyt. A.M. (2026). Insights into the Persistence and Vulnerability of Tropical Peat Carbon Stocks from a Long-Term Field Decomposition Experiment. *Global Biogeochemical Cycles.* https://doi.org/10.1029/2025GB008821

Davidson, S.J., Malhotra, A., Jassey, V.E.J., Strack, M. …. **Perryman, C.R.**, et al. (2025). The PeatPic Project: Predicting plot-scale peatland green leaf phenology across global peatlands. *Environmental Research Letters.* https://doi.org/10.1088/1748-9326/ae0658

Perryman, C.R., Bowen, J.C., Shahan, J., *Silviani P.A.B., D., *Dayanti, E., *Andriyani, Y., Ayshari, A., Gangga, A., Novita, N., Anshari, G.Z., Hoyt, A.M. (2024). Fate of methane in canals draining tropical peatlands. *Nature Communications*, 15, 9766. https://doi.org/10.1038/s41467-024-54063-x

Novita, N., … **Perryman, C.R.** et al. (2024) Strong climate mitigation potential of rewetting oil palm plantations on tropical peatlands. *Science of the Total Environment.* https://doi.org/10.1016/j.scitotenv.2024.175829

Kuhn, M.A. Varner, R.K., McCalley, C.K, **Perryman, C.R.**, et al. Controls on Stable Methane Isotope Values in Northern Peatlands and Potential Shifts in Values Under Permafrost Thaw Scenarios (2024). *Journal of Geophysical Research: Biogeosciences*, 129, e2023JG007837. https://doi.org/10.1029/2023JG007837

Asyhari, A., Gangga, A., Putra, C.A.S., Ritonga, R.P., Candra,.A., Anshari, G.Z., Bowen, J.C., **Perryman, C.R.,** Novita, N. (2024) Quantifying the fluxes of carbon loss from an undrained tropical peatland ecosystem in Indonesia. *Scientific Reports*, 14, 11459. https://doi.org/10.1038/s41598-024-62233-6

Perryman, C.R., McCalley, C.K., Shorter, J.H., Perry, A.L., *White, N., *Dziurzynski, A. & Varner, R.K. (2023). Effect of Drought and Heavy Precipitation on CH_4 Emissions and $\delta^{13}C$-CH_4 in a Northern Temperate Peatland. *Ecosystems*. https://doi.org/10.1007/s10021-023-00868-8

Perryman, C.R., McCalley, C.K., Ernakovich, J.G., Lamit, L. J., Shorter, J.H., Lilleskov, E., & Varner, R.K. (2022). Microtopography matters: Belowground CH_4 cycling regulated by differing microbial processes in peatland hummocks and lawns. *Journal of Geophysical Research: Biogeosciences*, 127, e2022JG006948. https://doi.org/10.1029/2022JG006948

Robison, A.L., Wollheim, W. M., **Perryman, C.R**., Cotter, A.R., Mackay, J.E., Varner, R.K., Clarizia, P., Ernakovich, J.G. (2022). Dominance of diffusive methane emissions from lowland headwater streams promotes oxidation and isotopic enrichment. *Frontiers in Environmental Science*, 9:791305. https://doi.org/10.3389/fenvs.2021.791305

Perryman, C.R., McCalley, C.K., Malhotra, A., Fahnestock, M.F., Kashi, N.N., Bryce, J.G., Reiner, G., Varner, R.K. (2020). Thaw transitions and redox conditions drive methane oxidation in a permafrost peatland. *Journal of Geophysical Research: Biogeosciences*, 124: e2019JG005526. https://doi.org/10.1029/2019JG005526

Perryman, C.R., Wirsing J., Bennett K.A., Brennick O., Perry A.L., Williamson N., Ernakovich, J.G. (2020) Heavy metals in the Arctic: Distribution and enrichment of five metals in Alaskan soils. *PLoS ONE*, 15(6): e0233297. https://doi.org/10.1371/journal.pone.0233297

Publications in Review or Preparation (*indicates student mentees)

Savage, K., Gewirtzman, J., Watts, J., Cadillo-Quiroz, H. … **Perryman, C.R.**, et al. Terrestrial methane oxidation: climate implications and research priorities. *In review at Nature Reviews Earth & Environment.*

Fellowships, Grants, and Awards

Fellowships:

NSF Earth Sciences Postdoctoral Fellowship ($180,000)	2024-2025
University of New Hampshire Dissertation Year Fellowship ($25,310)	2021–2022
NASA Grant Consortium Graduate Fellow	2019–2021
American-Scandinavian Foundation Graduate Research Fellowship ($5,000)	2017
NSF Graduate Research Fellowship ($138,000)	2016–2019

Grants:

Society of Wetland Scientists NE Chapter Student Research Grant ($2,000)	2021
DOE Joint Genome Institute New Investigator Award	2020
UNH Earth Science Student Research Grant (2 awards of $2,000)	2018, 2019
Geological Society of America Graduate Research Grant (2 awards of $2,500)	2017, 2021
American Geosciences Institute Harriet Evelyn Wallace Award ($5,000)	2017

Awards:

Department of Earth System Science Award for Community-Engaged Science, Stanford Doerr School of Sustainability	2024
AGU Outstanding Student Presentation Award	2017
Earlham College Thomas Clarkson Grave and Anna Hubbard Grave Graduate Scholarship	2016
Earlham College Charles A. Frueauff Award (for achievement in research)	2016

Earlham College Presidential Honors Merit Scholarship 2012–2016

Research Mentorship

Sophia Bonanno, Stanford King Center Undergraduate Research Fellow	2025-2026
Conner Breyer, Kansas State University, Stanford SURGE REU	2025
Yuting Guo, High School Student Summer Volunteer	2025
Ruby Gates, Co-terminal B.S./M.S. Student, Stanford University	2024-present
Asiah Giuntoni, UC Berkeley, GEMS Program	2023-2024
Desi Silviani P.A.B., Tanjungpura University, Post-baccalaureate Researcher	2023–present
Yulita Andryani, Tanjungpura University, Post-baccalaureate Researcher	2023–present
Erindayanti, Tanjungpura University, MSc. Thesis Research	2023–2025
Kenneth R. De León Colón, EMERGE BII REU Program	2022
Cynthia Bova, UNH Undergraduate Research Assistant	2021
Natalie White, UNH Undergraduate Research Fellowship and Honors Thesis	2021–2022
Angelica Dziurzynski, UNH Undergraduate Research Fellowship	2020–2021
Samuel Main, UNH Senior Capstone	2019-2020
Heidi Simoneau, UNH Senior Capstone	2019
Madeline Juffras, UNH Summer Undergraduate Research Fellowship	2018
Michael Zampini, UNH Summer Undergraduate Research Fellowship	2018

Teaching Experience

***Guest Lecturer**, Biogeography & Global Change* | *University of British Columbia*, Winter 2026

- Led lecture on carbon cycling, land use change, and restoration in tropical peatlands; provided reading materials and a homework assignment relevant to lecture content

***Guest Lecturer**, Mitigating Climate Change through Soil Managemen*t | *Stanford*, Winter 2025

- Led lecture on wetland restoration as a natural climate solution

***Co-Instructor,** Biogeosciences in the Earth System* | *University of New Hampshire,* Spring 2021

- Co-taught lectures with instructor of record (R. Varner) on systems thinking in earth science and biogeochemical cycles
- Developed problem sets and a semester-long group project, materials still in use

***Guest Instructor**, Arctic Ecology and Society* | *University of New Hampshire*, Spring 2021

- Developed and delivered content for 3 laboratory sessions on environmental data analysis in R

***Teaching Assistant,** Our Solar System* | *University of New Hampshire*, Spring 2020

- Led weekly 3-hour laboratory sessions for a total of ~60 undergraduate students covering introductory concepts in planetary science
- Laboratory sessions included review of online lecture content, presenting new materials relevant to laboratory exercises, and guiding students through assigned materials
- Guided students through the transition to remote learning at onset of COVID-19 pandemic

Workshop Instructor | *CLOSES-GAP (NSF-GEO1801420)*, Summers 2019–2021

- Developed content for and delivered a 3-day workshop introducing students to the R coding language for analysis of environmental data
- Workshop covered data cleaning, basic statistics, and data visualization

***Teaching Assistant**, Earth & the Environment | Earlham College*, 2014–2016

- Assisted with weekly 3-hour laboratory sessions covering introductory concepts in geology and environmental earth science

Invited Seminars and Presentations (*indicates student mentees)

Seminars:

Institut de Ciència i Tecnologia Ambientals, Universitat Autònoma de Barcelona, May 2026.
Silver Research Group Meeting, UC Berkeley Department of Environmental Science, Policy, and Management, November 2025

Conference Presentations:

Perryman, C. R., McCalley, C.K., Perry, A.L., Shorter, J. H., *White, N. A., *Dziurzynski, A.M., Varner, R.K. Come Rain, Come Shine: Methane Cycling and Emissions in a New Hampshire Peatland Under Drought and Heavy Rain. Society of Wetland Sciences New England Chapter Annual Meeting. October 2022.

Perryman, C. R., Palace, M. W., DelGreco, J., Malhotra, A., Varner, R. K. Rapid Permafrost Collapse Spurs Changes in Methane Oxidation. AGU Fall Meeting. December 2018.

Selected Posters and Presentations (*indicates student mentees)

Perryman, C.R., Baysinger, M.R., Cobb, A.R., Gandois, L., Chanton, J.P., Evans, T., Chua, A., Eri, J., bin Haji Idi, H.B., Incham, J.M., Pu, J.P., Teo, A., Zulkiflee, R.A., Harvey, C.F., Hoyt. A.M. Insights into the Persistence and Vulnerability of Tropical Peat Carbon Stocks from a Long-Term Field Decomposition Experiment. AGU Fall Meeting, December 2025.

Perryman, C.R., Bowen, J.C., Shahan, J., *Erindayanti, S.Pi, *Silviani, D.,* Andriyani, Y., Gangga, A., Novita, N., Anshari, G.Z., Alison Hoyt, A.M. Canals: Gateways or gatekeepers of methane emissions from drained tropical peatlands? AGU Fall Meeting, December 2024.

Perryman, C.R., Bowen, J.C., Shahan, J., *Erindayanti, S.Pi, *Silviani, D., *Andriyani, Y., Lamb, J., Asyhari, A., Gangga, A., Novita, N., Anshari, G.Z., Alison Hoyt, A.M. Constraining Methane Cycling and Emissions in Tropical Peatland Drainage Canals. AGU Fall Meeting, December 2023.

Perryman, C.R., Kuhn, M.A., Mohssen, M., Tian, F., McCalley, Carmody, K., Malhotra, A., Li, Y., Burke, S.A., Cory, A.N., Fahnestock, M.F., Fonner, B.A., Hodgkins, S.B., O'Brien, J.M., Perry, A.L., Rich, V.I., Varner, R.K. Redox-Driven Shifts in Methane Oxidizing Bacteria Control Methane Oxidation Rates in Thawing Permafrost Peatlands. AGU Fall Meeting, December 2022.

Perryman, C.R., *White, N.A., *Dziurzynski, A.M., McCalley, C.K., Shorter, J.H., Varner. R.K. Influence of Temperature on Rates and Carbon Isotopic Fractionation of Methane Oxidation in Northern Peatlands. AGU Fall Meeting, December 2021.

Perryman, C. R., McCalley, C. K., Ernakovich, J. G., Lamit, L. J., Shorter, J. H., Lilleskov, E., Varner, R. K. Shrub encroachment enhances methanotrophy in a minerotrophic fen. American Geophysical Union Fall Meeting. December 2020.

Perryman, C. R., McCalley, C. K., Lamit, L. J., Varner, R. K. Insights from Methanotrophy to Methane Emissions Patterns in a Temperate Fen. AGU Fall Meeting. December 2018. (Poster)

Perryman, C. R., Kashi, N. N., Malhotra, A., McCalley, C. K., Varner, R. K. Permafrost Thaw Induces CH_4 Oxidation in a Subarctic Peatland. AGU Fall Meeting. December 2017. (Poster)

Outreach and Leadership

Organizer, Wetland Restoration for Climate Change Mitigation Workshop, Stanford University (~50 attendees)	2025
Co-founder and Organizer, Peatland ECR Action Team (www.peatecr.com)	2020–2022
"Social Media for Scientists" – EMERGE BII Summer Institute	2021, 2022
Organizer, UNH Communicating with Policy Makers Training	2021
UNH Department of Earth Science DEI Committee	2020–2022
American Geophysical Union Voices for Science – Policy Track	2020–2021
American Geophysical Union DEI Congressional Advocacy Campaign	2020
Organizer and Facilitator, NH Youth Climate Gubernatorial Town Hall	2020
Panelist, NH Youth Climate and Clean Energy Presidential Town Hall	2020
Panelist, Working with Your Mentor: Student Perspectives (UNH Grad School)	2020
Facilitator, UNH Sustainability Institute Communications Training	2019, 2020
AGU Climate Change Congressional Advocacy Campaign	2018, 2020
Women in Science (student organization) co-coordinator, UNH	2017–2021

Academic Service

Reviewer, DOE Terrestrial Ecosystems Science Scientific Focus Area	2023
Session Convener, American Geophysical Union Meeting	2022–26
AGU Biogeosciences Section Sulzman Award Committee	2019–2021
Miniseries Organizer, UNH Earth & Environmental Science Fall Seminar	Fall 2020-21
UNH CEPS Dean's Graduate Student Advisory Board	2019–2022
Student Network co-coordinator, UNH NRESS PhD Program	2018–2020

Ad Hoc Reviewer: Wetlands Ecology and Management, Ecosystems, Limnology and Oceanography, Mires and Peat, Plant and Soil, Biogeochemistry, JGR Biogeosciences, Ecosphere, Global Change Biology, Agricultural and Forest Meteorology, PNAS

Workshops and Other Professional Development

Carbon in Peat on Earth Through Time (C-PEAT) Workshop, UNR-Lake Tahoe	2024
C-PEAT Workshop, Pontianak, Indonesia	2023
EMERGE BII Summer Institute	2021
DOE JGI Microbial Genomics & Metagenomics Workshop; Berkeley, CA	2019
NSF Transdisciplinary Arctic Research Workshop; UC Irvine	2019
Reclaiming STEM East Coast Workshop	2019
Alda Center for Communicating Science Training	2019
Research Communications Academy; UNH	2019
São Paulo School of Advanced Methane Science; Ilhabela, Brazil	2018
Arctic Science Integration Quest (ASIAQ) Workshop; Stockholm University	2018
Social Justice Educator Training; UNH	2018
Communication Across Disciplines Workshop; UNH Graduate School	2017
Responsible Conduct of Research Training; UNH	2015, 2017