Michelle Y. Wong

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EDUCATION

2013 – 2019 **Ph.D.**, *Cornell University*, Ecology and Evolutionary Biology.

2006 – 2010 **B.S.**, *University of California, Berkeley*, Molecular Environmental Biology.

2006 – 2010 **B.A.**, *University of California, Berkeley*, Sociology, *High Honors*.

PROFESSIONAL APPOINTMENTS

Sep 2019 – Present **Postdoctoral Scientist**, *S. Batterman Lab*, Cary Institute of Ecosystem Studies.
Ecosystem Ecology and Biogeochemistry

Spring 2018 **NSF GROW Visiting Student**, *M. Bustamante Lab*, University of Brasilia, Brazil.
Ecosystem and Microbial Ecology

2011 – 2013 **Environmental Scientist**, *California EPA*, Sacramento, CA.
Department of Pesticide Regulation

2010 – 2011 **Lab/Field Technician**, *W. Silver Lab*, University of California, Berkeley.
Biogeochemistry and Ecosystem Ecology

PUBLICATIONS

Cusack, D.F., Addo-Danso, S. Agee, E.A., Andersen, K.M., Arnaud, M., Batterman, S.A., Brearley, F.Q., Ciochina, M., Cordeiro, A.L., Diaz-Toribio, M.H., Dietterich, L.H., Fisher, J.B., Fleischer, K., Fortunel, C., Fuchslueger, L., Guerrero-Ramirez, N., Kotowska, M., Lugli, L.F., Marin, C., McCullock, L.A., Maeght, J.-L., Metcalfe, D., Norby, R.J., Oliveira, R.S., Powers, J.S., Reichert, T., Smith, S.W., Smith-Martin, C., Soper F., Toro, L., Umana, M.N., Valverde-Barrantes, O., Weemstra, M., Werden, L., **Wong, M.**, Wright, S.J., and Yaffar, D. Tradeoffs and Synergies in Tropical Forest Root Traits for Nutrient and Water Acquisition. *Frontiers in Forests and Global Change*, in press.

Almaraz, M., **Wong, M.**, Geoghegan, E., and Houlton, B.Z. 2021. A review of carbon farming impacts on nitrogen cycling and losses. *Annals of the New York Academy of Sciences*, 1-16, doi: 10.1111/nyas.14690

Fork, M.L., Anderson, E.C., Castellanos, A.A., Fischhoff, I.R., Matsler, A.M., Nieman, C.L., Oleksy, I.A., and **Wong, M.Y.** 2021. Creating community: How we collectively built an adaptable postdoctoral program to develop skills and overcome isolation. *Ecosphere*, 12(10), 1-8, doi:10.1002/ecs2.3767

Soper, F., Taylor, B., Winbourne, J., **Wong, M.**, Dynarski, K., Reiss, C., Peoples, M., Cleveland, C., Reed, S., Menge, D., and Perakis, S. 2021. A roadmap for sampling and scaling biological nitrogen fixation in terrestrial ecosystems. *Methods in Ecology and Evolution*, 12, 1122–1137, doi: 10.1111/2041-210X.13586

Wong, M., Rathod, S., Howarth, R.W., Marino, R., Alastuey, A., Alaimo, M., Barraza, F., Carneiro, M., Chellam, S., Chen Y.C., Chen, Y., Cohen, D., Connelly, D., Dongarra, G., Gomez, D., Hand, J., Harrison, R.M., Hopke, P., Hueglin, C., Kuang, Y.W., Lambert, F., Maenhaut, W., Milando, C., Monteiro, M.I.C., Morera-Gómez, Y., Querol, X., Rodriguez, S., Smichowski, P., Varrica, D., Xu, Y., and Mahowald, N.M. 2021. Anthropogenic Perturbations to the Atmospheric Molybdenum Cycle. *Global Biogeochemical Cycles*, 35(2), 1-25, doi: 10.1029/2020GB006787

Wong, M., Neill, C., Marino, R., Silvério, D., and Howarth, R.W. 2021. Molybdenum, phosphorus, and pH do not constrain nitrogen fixation in a tropical forest in the southeastern Amazon. *Ecology*, 102(1), 1-13, doi:10.1002/ecy.3211.

- Lamont C. Cole Award for an outstanding paper by a graduate student in the Department of Ecology and Evolutionary Biology, Cornell University

Wong, M., Neill, C., Marino, R., Silvério, D., Brando, P., D., and Howarth, R.W. 2020. Biological nitrogen (N) fixation does not replace N losses after forest fires in the southeastern Amazon. *Ecosystems*, 23, 1037–1055, doi: 10.1007/s10021-019-00453-y

Wong, M., Mahowald, N.M., Marino, R., Williams, E., Chellam, S. and Howarth, R.W. 2020. Atmospheric deposition of molybdenum: a global model and implications for tropical forests. *Biogeochemistry*, 149, 159–174, doi: 10.1007/s10533-020-00671-w

Almaraz, M., **Wong, M.**, and Yang, W. 2020. Looking back to look ahead: A vision for soil denitrification research. *Ecology*, 101(1), 1-10, doi: 10.1002/ecy.2917

Larson. E.I., **Wong, M.**. 2019. Using Structured Decision Making to Explore Complex Environmental Issues. *CourseSource*, doi: 10.24918/cs.2019.18

Winbourne, J., Harrison, M., Sullivan, B., Alvarez-Clare, S., Lins, S.R., Martinelli, L., Nasto, M., Piotto, D., Rolim, S., **Wong, M.**, and Porder, S. 2018. A new framework for evaluating estimates of symbiotic nitrogen fixation in forests. *The American Naturalist*, 192(5), 618-629, doi: 10.1086/699828

GRANTS

RESEARCH

2020 Lang Assael Science Innovation Fund Award, $100,000

Symbiotic nitrogen fixation in a world of global change: Is the dominant temperate fixer Robinia pseudoacacia shifting function. Batterman, S., **Wong, M.**, Canham, C., Fargione, M., Hansen, W., Lovett, G., Hannam, P., and Wurzburger, N.

2017 NSF GROW, $5000

Shifts in diversity and activity of free-living nitrogen-fixing bacteria after molybdenum and phosphorus additions in the Southeastern Amazon

2017 NSF Dissertation Improvement Grant, $20,000

Interactions of pH on molybdenum and phosphorus limitation of nitrogen fixation in the Amazon Basin

2016 Paul P. Feeny Graduate Student Research, $1000

2016 Orenstein Endowment Fund, $1000

2014, 2016 Sigma Xi, Cornell Chapter, $1200

2016 Andrew W. Mellon Student Research Grant, $1000

2014 – 2016 Cornell Cross-Scale Biogeochemistry and Climate Program Small Grant, $12,000

TRAVEL

2019 Ecological Society of America Biogeosciences Section Travel Grant, $455

2017 NSF IGERT International Travel Grant, $10,000

2016 – 2017 Mario Eunadi Center for International Studies Travel Grant, $2000

2014 – 2019 Cornell University Conference Grant, $2095

2016 Cornell University Research Travel Grant, $1891

FELLOWSHIPS

2015 NSF Graduate Research Fellowship, $138,000

2013 NSF IGERT Fellowship, Cross-Scale Biogeochemistry and Climate, $105,200, *declined one year*

2013 SUNY Diversity Fellowship, $109,220, *declined one year*

TEACHING

Summer 2018 **Co-Instructor of Record**, *NTRES 2010 Environmental Conservation*, Cornell Prison Education Program.

Fall 2016 **Co-Instructor of Record**, *BioG 1130 Fundamentals of Biology*, Cornell Prison Education Program.

Fall 2015 **Guest Lecturer**, *BioEE 6680 Principles of Biogeochemistry*, Cornell University.

Spring 2015 **Teaching Assistant**, *BioEE 1610 Ecology and the Environment*, Cornell University.

Fall 2014 **Teaching Assistant**, *BioEE 1610 Ecology and the Environment*, Cornell University.

PRESENTATIONS

INVITED TALKS

Dec 2020 Almaraz, M., **Wong, M.**, Yang, W., Groffman, P. Denitrification from terrestrial ecosystems: accounting for underrepresented sources and identifying paths forward, American Geophysical Union, *virtual*.

Aug 2020 Almaraz, M., **Wong, M.**, and Wang, C. Mapping global nitrogen in deep pools. Ecological Society of America, *virtual*.

Dec 2019 Mahowald, N.M. **Wong, M.**, Hamilton, D.S., Barkley, A., Rathod, S.D., Conway, T.M., Connelly, D.S., Bond, T.C., Gaston, C., Howarth, R.W., Moore, J.K., Mackey, K., Letelier, R.M., John, P.S., Losno, R. Aerosol impacts on biogeochemical cycles: new insights for ocean and land systems, American Geophysical Union, San Francisco, CA.

Sept 2019 **Wong, M.** Drivers of fire and deforestation in the Amazon and management strategies, Tropical Biology and Conservation, Cornell Chapter, Ithaca, N.Y.

Aug 2019 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Silvério, D., Neill, C. Low nitrogen fixation rates in the southeastern Amazon reveal heterogeneity across the tropics, Ecological Society of America, Louisville, K.Y.

June 2019 **Wong, M.** Aerosol deposition of molybdenum and implications for nitrogen fixation, Institut de Physique du Globe de Paris, France.

CONTRIBUTED TALKS

Aug 2021 **Wong, M.**, Wurzburger, N., Hall, J.S., Wright, S.J., Saltonstall, K., Hedin, L.O., van Breugel, M., Batterman, S.A. Plants adjust nutrient acquisition strategies to nutrient availability over tropical forest succession. Ecological Society of America, *virtual*.

Jul 2021 Maracahipes-Santos, L., Silvério, D.V., Lenza, E., Macedo, M., **Wong, M.**, Antônio Carlos Silva, A.C., Neill, C., Rattis, L., Durigan, G., Trumbore, S., Brando, P., Maracahipes, L. Response of functional traits of preserved and fragmented riparian forests in the southern Amazon. Association for Tropical Biology and Conservation, *virtual*.

Aug 2018 Almaraz, M., **Wong, M.**, and Yang, Y. Misery loves company: a meta-analysis of denitrification. Ecological Society of America, New Orleans, LA.

Dec 2018 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Silvério, D., Neill, C. Low nitrogen fixation rates in the southeastern Amazon reveal heterogeneity across the tropics. EEB Annual Symposium, Ithaca, NY.

Aug 2018 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Silvério, D., Neill, C. The role of nitrogen fixation in forest regrowth after tropical forest fire. Ecological Society of America, New Orleans, LA.

Aug 2018 Almaraz, M., **Wong, M.**, and Yang, Y. Misery loves company: a meta-analysis of denitrification. Ecological Society of America, New Orleans, LA.

Dec 2017 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Silvério, D., Neill, C. The role of nitrogen fixation in forest regrowth after tropical forest fires. EEB Annual Symposium, Ithaca, NY.

Oct 2017 **Wong, M.** Nitrogen Fixation in Secondary Forests. Tropical Biology and Conservation, Ithaca, NY.

Feb 2015 **Wong, M.**, Howarth, R.W., Marino, R. Mahowald, N.M. Atmospheric dust and sea-salt aerosol spray as sources of molybdenum, a control on tropical forest function. Cornell Sigma Xi, Ithaca, NY.

Jan 2015 **Wong, M.**, Howarth, R.W., Marino, R. Mahowald, N.M. Atmospheric dust and sea-salt aerosol spray as sources of molybdenum, a control on tropical forest function? Cornell Biogeochemistry, Environmental Science, and Sustainability, Ithaca, NY.

Dec 2013 **Wong, M.**, Howarth, R.W., Marino, R. Mahowald, N.M. Sea-salt spray and dust as sources of molybdenum, a control on tropical forest function, EEB Annual Symposium, Ithaca, NY.

- Book Award for Outstanding Presentation by a beginning graduate student

CONTRIBUTED POSTERS

Dec 2018 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Neill, C. Molybdenum, phosphorus, and pH do not constrain free-living nitrogen fixation in a tropical forest in the southeastern Amazon, American Geophysical Union, Washington D.C.

Dec 2017 Wiedinmyer, C., Lihavainen, H., Mahowald, N.M., Alastuey, A., Albani, S., Artaxo, P., Bergametti, G., Batterman, S., Brahney, J., Duce, R.A., Feng, Y., Buck, C., Ginoux, P.A., Chen, Y., Guieu, C., Cohen, D., Hand, J.L., Harrison, R. M.; Herut, B., Ito, A.; Losno, R., Gomez, D., Kanakidou, M., Landing, W.M., Laurent, B., Mihalopoulos, N., Mackey, K., Maenhaut, W., Hueglin, C., Milando, C., Miller, R.L., Myriokefaitakis, S., Neff, J.C., Pandolfi, M., Paytan, A., Perez Garcia-Pando, C., Prank, M., Prospero, J.M., Tamburo, E., Varrica, D., **Wong, M.**, Zhang, Y. COARSEMAP: synthesis of observations and models for coarse-mode aerosols, American Geophysical Union, New Orleans, LA.

Jul 2017 Larson, E.I., **Wong, M.** Flipping the Prison Classroom: A Case Study from Teaching Introductory Biology in a Correctional Facility, Society for the Advancement of Biology Education Research, Minneapolis, MN.

Dec 2016 **Wong, M.**, Howarth, R.W., Marino, R. Brando, P., Neill, C. The effects of fire on soil molybdenum and phosphorus and their potential role in nitrogen fixation in the southeastern Amazon, American Geophysical Union, San Francisco, CA.

Dec 2015 **Wong, M.**, Howarth, R.W., Marino, Williams, E., Mahowald, N.M. Aerosol deposition of molybdenum: a control on nitrogen fixation and tropical forest function, American Geophyiscal Union, San Francisco, CA.

Aug 2014 **Wong, M.**, Howarth, R.W., Marino, R. Mahowald, N.M. Atmospheric dust and sea-salt aerosol spray as sources of molybdenum, a control on tropical forest function? Ecological Society of America, Sacramento, CA.

OUTREACH AND SERVICE

REVIEW WORK

Ambio; Agriculture, Ecosystems, and Environment; Ecology; Ecosystems; Geoderma; Global Change Biology; Journal of Ecology; Plant and Soil; New Phytologist

Guest Editor, Frontiers in Forests and Global Change

WORKING GROUPS

TropiRoot, Tropical Root Trait Initiative

INCyTE, Investigating nutrient cycling in terrestrial ecosystems: integrating observations, experiments, and models

SERVICE

2021	Lead organizer and moderator, Ecological Society of America, Organized Oral Session: Nutrient acquisition strategies and ecosystem consequences in tropical forests
2020 – 2021	Workshop on Graduate School Applications, Cary Institute for Ecosystem Studies REU Program
2019, 2021	Reviewer, 500 Women Scientists, Fellowship for the Future
2020	Judge, Data Jam, Cary Institute for Ecosystem Studies
2018	Presider, Ecological Society of America, COS 112 - Biogeochemistry: New Paradigms In Biogeochem Cycling I
2018	Responsible Conduct of Research Facilitator, Cornell Office of Undergraduate Biology
2017	NSF GRFP Peer Review, Cornell Graduate School
2014 – 2017	Lead Organizer, Ecology and Evolutionary Biology Annual Symposium
2016 – 2017	Admissions Committee, Diversity Recruitment Weekend
2017	Workshop on Application Timeline for Graduate School, Diversity Recruitment Weekend
2014 – 2017	Officer, Sigma Xi, Cornell Chapter
2014 – 2017	Judge, Annual Sigma Xi Undergraduate Poster Competition
2014 – 2016	Co-President, Treasurer, and Seminar Committee member for Biogeochemistry, Environmental Science, and Sustainability, Cornell University
2015	Reviewer, Cross-Scale Biogeochemistry and Climate Small Grant

RELATED TRAINING

Aug 2016	FAPESP International Nitrogen School, São Paulo, Brazil
Feb 2014	NCAR Community Land Model (CLM) Tutorial, Boulder, CO

PROFESSIONAL MEMBERSHIPS

Ecological Society of America

Sigma Xi

American Geophysical Union

SKILLS

English (Native), Brazilian Portuguese (Conversational), Mandarin (Conversational), Shanghainese (Proficient)

R, Matlab, GIS, Gas Chromatography, Inductively Coupled Plasma (ICP), Optical Emission Spectrometry, ICP Mass Spectrometry, Ion Chromatography