

Alexandra M. Huddell

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EDUCATION

Ph.D., Ecology, Evolution, and Environmental Biology, Columbia University, New York, NY, 2021

B.A., Economics and B.A. in International Studies, American University, Washington, DC, 2011

PROFESSIONAL EXPERIENCE

ORISE Postdoc Fellow at U.S. Environmental Protection Agency May 2021- present

- Implementing “open science” data analysis, visualization, and online data dashboards in the Long Island Sound Study

Research Assistant, University of Vermont, Dr. Gillian Galford Jan.- Aug. 2016

Research Assistant, Columbia University, Dr. Duncan Menge May-Aug. 2015

TechnoServe, Cost Analyst, West and Southern Africa, Washington D.C. Jan.-Nov. 2014

Economic Growth Program Specialist, May 2011 – Jan. 2014

Sudan and South Sudan Program Office, Bureau for Africa,

U.S. Agency for International Development (USAID), Washington D.C.

GRANTS AND FELLOWSHIPS

Fellowships:

- EPA ORISE Postdoc Fellowship 2021-2022
- National Science Foundation Graduate Research Fellowship 2016-2020 **\$138,000**
- Columbia University Dean’s Fellow 2015-2021

Grants:

- Malone Family Land Preservation Foundation and the Land Institute 2019 **\$20,973**
- National Science Foundation Graduate Research Opportunities Worldwide 2019 **\$5,000**
- National Science Foundation Graduate Research Opportunities Worldwide 2018 **\$5,000**
- Vetenskapsrådet Graduate Research Opportunities Worldwide 2018 **\$17,000**
- USDA Northeast SARE Graduate Student Research Grant (*declined*) **\$14,813**
- USAID Brazil Research and Innovation Fellowship for Agriculture 2017 **\$6,500**
- Earth Institute Travel Award Fall 2016, 2017 and 2018 **\$2,250 total**
- Columbia University Ecology and Evolutionary Biology Dissertation Grant 2016 **\$3,000**

PUBLICATIONS

Huddell, Alexandra M., Maria Ernfors, Timothy Crews, Giulia Vico, and Duncan Menge. Near elimination of N leaching by a perennial grain vs. annual wheat—a field study. (*In prep*).

Helms, Alexa, Alexandra M. Huddell, Wenying Liao, Anika P. Staccone, Brendan M. Buckley, William S. F. Schuster, and Duncan N. L. Menge. *Robinia pseudoacacia*, a nitrogen-fixing tree, facilitates the future growth of neighboring trees in Black Rock Forest. *In prep*.

Menge, Duncan N. L., Amelia A. Wolf, Thomas A. Bytnerowicz, Sian Kou-Giesbrecht, Palani R.

Akana, Kathleen A. C. Pereira, Rachel Arkebauer, **Alexandra M. Huddell**, Jennifer L. Funk, and Steven S. Perakis. Field experiments reveal sustained nitrogen fixation despite excess soil nitrogen supply in six tree symbioses. *In prep*.

Liao, Wenyang, Adefunke Sonaike, **Alexandra M. Huddell**, Matthew I. Palmer, Kevin L. Griffin. “Symbiotic nitrogen-fixing tree species *Robinia pseudoacacia* maintain similar photosynthesis but re-absorb less foliar nitrogen during leaf senescence in a temperate deciduous forest.” (*In prep*).

Huddell, Alexandra M., Christopher Neill, Cheryl A. Palm, and Duncan Menge. “Anion exchange capacity explains increased soil nitrate from Brazilian forest to croplands.” (*In revisions, Ecosystems*).

Huddell, Alexandra M., Christopher Neill, Leonardo Maracahipes-Santos, and Duncan N. L. Menge. Nitric and nitrous oxide fluxes from intensifying crop agriculture in the seasonally dry tropical Amazon-Cerrado border region. *Agrosyst Geosci Environ*. 2021; 4:e20169. <https://doi.org/10.1002/agg2.20169>

Huddell, Alexandra M., Gillian L. Galford, Katherine L. Tully, Cynthia Crowley, Cheryl A. Palm, Christopher Neill, Jonathan E. Hickman, and Duncan N. L. Menge. “Meta-Analysis on the Potential for Increasing Nitrogen Losses from Intensifying Tropical Agriculture.” *Global Change Biology* 26, no. 3 (2020): 1668–80. <https://doi.org/10.1111/gcb.14951>. (Related popular article [here](#)).

SELECTED PRESENTATIONS

- “The fate of ^{15}N fertilizer and nitrate leaching losses in perennial wheat (*Thinopyrum intermedium*) versus annual wheat (*Triticum aestivum*).” *American Geophysical Union meeting*, virtual, December 2020
- “Nitrate accumulation, nitrate sorption capacity, and anion exchange capacity in Oxisol soils across native forest to intensive cropping gradient in the southeast Amazon.” *Ecological Society of America meeting*, virtual, August 2020
- Field experiment tour. *Is the Future of Agriculture Perennial?* meeting, Lund, Sweden, May 2019
- “Nitrogen losses from tropical agroecosystems.” *Ecological Society of America meeting*, Portland, OR, August 2017
- “NO emissions from maize fields in Mato Grosso, Brazil.” *Intensification of the world’s largest agriculture frontier: reconciling agricultural production and environmental integrity in a changing climate meeting*, Brasília, Brazil, May 2017
- “The N-fixing Tree *Robinia pseudoacacia* maintains higher physiological activity and chlorophyll content at the end of growing season compared to neighboring non-fixers in a northeastern deciduous forest.” *Black Rock Forest Research Symposium*, New York, NY, June 2015

TEACHING EXPERIENCE

- Led water quality research project with nine high school students for 2021 Environmental Justice and Urban Ecology Summer Research Program
- Conservation Policy, *Spring 2020*, Dr. Sara Kross, Columbia University, NY
Graded assignments and provided feedback on oral assignments and participation in class
- Statistical Modeling, *Spring 2019*, Dr. Evan Eskew, Columbia University, NY
Provided one-on-one instruction for students during lab section and graded assignments
- Ecosystem Ecology and Global Change, *Fall 2017*, Dr. Duncan Menge, Columbia University, NY
Developed curriculum for and led discussion sections; lectured on nitrogen losses from ecosystems, graded assignments

MENTORSHIP EXPERIENCE

- Mentored undergraduate, Sharothy Mahmud, Fall 2020, in research project on water quality and forest degradation
- Mentored undergraduate student, Eleanor Pressman, Spring 2017, in research internship doing a literature review, funded by the Earth Institute at Columbia University
- Hired and mentored three interns, 2013-2014, at the USAID Sudan and South Sudan Program Office

SERVICE, OUTREACH, AND SCIENCE COMMUNICATION

- Co-founder of “Environmental Justice and Urban Ecology Summer Research Program” where we raised funds, planned, and managed a six-week research program alongside partners at the New York Restoration Project and the Washington Heights Expeditionary School in Highbridge and Sherman Creek Parks. See the final presentations here:
<https://www.youtube.com/watch?v=QrT4AlpcmL4>
- Reviewer for *Global Change Biology*
- Volunteer, Columbia University, Department of Ecology, Evolution, and Environmental Biology committee on scientific outreach to the community; 2020-2021
- Helped Carla Cantor with the article: “Growing Nitrogen Footprint Threatens Our Air, Water and Climate,” March 2020, Columbia News: <https://news.columbia.edu/news/nitrogen-pollution-industrial-agriculture-air-water-climate-change>
- Volunteer mentor to high school student on college readiness, iMentor, 2016-2019
- Volunteer for “Girls Science Day,” Columbia University, 2016

TECHNICAL COMPETENCIES

- **Field skills:** Stable isotope techniques, soil greenhouse gas flux measurement, quantifying plant

and soil carbon and nitrogen pools, nitrate leaching measurements, soil extraction for ammonium and nitrate concentrations

- **Laboratory skills:** wet chemistry with a discrete analyzer, ion chromatography, gas chromatography, and spectrophotometry
- **Programming skills:** advanced in *R*; basic in Python
- **Language skills:** Advanced proficiency in Spanish and Portuguese

REFERENCES

Dr. Duncan N. L. Menge (Ph.D. adviser)
Department of Ecology, Evolution, and Environmental Biology, Columbia University
Phone: (212) 854-6889
Email: dm2972@columbia.edu

Dr. Christopher Neill (Ph.D. committee member)
Woods Hole Research Center
Phone: (508) 444-1559
Email: cneill@whrc.org

Dr. Cheryl Palm (Ph.D. committee member)
Soil Biological and Ecological Processes, Institute for Sustainable Food System, University of Florida
Phone: (352) 392-1864
Email: cpalm@ufl.edu

Dr. Timothy Crews (Ph.D. committee member)
The Land Institute
Phone: (785) 376-0596
Email: crews@landinstitute.org

Dr. Ruth DeFries (Ph.D. committee member)
Department of Ecology, Evolution, and Environmental Biology, Columbia University
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