

# Megan K. Nasto

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## EDUCATION

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- Ph.D. Forest and Conservation Sciences, 2017  
W.A. Franke College of Forestry and Conservation, University of Montana, Missoula, MT  
Dissertation: Nutrient acquisition strategies in tropical rain forests: interactions among nitrogen and phosphorus through plant-microbial mutualisms
- B.S. Environmental Science: Applied Geology, 2011  
Northern Arizona University, Flagstaff, AZ  
Thesis: Methane flux response in the presence of nitrogen and phosphorus fertilization across a retrogressive semiarid chronosequence

## EXPERIENCE

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### **RESEARCH**

- 2017 – **Postdoctoral Fellow**, Department of Biology & Ecology Center, Utah State University
- 2012 – 2017 **Graduate Research Assistant**, W.A. Franke College of Forestry & Conservation, University of Montana
- 2012 **Laboratory Technician**, Terrestrial Ecosystem Ecology Laboratory, University of Montana
- 2011 **Undergraduate Laboratory Assistant**, Sedimentary Records of Environmental Change Laboratory, Northern Arizona University
- 2011 **Undergraduate Laboratory Assistant**, Amino Acid Geochronology Laboratory, Northern Arizona University
- 2009 – 2011 **Undergraduate Research Assistant/Assistant Crew Leader**, Ecological Restoration Institute, Northern Arizona University

### **PROFESSIONAL**

- 2011 **Forestry Technician**, Ouray Ranger District, USDA Forest Service

### **TEACHING & MENTORING**

- 2017 – **Mentor**, Clayton Watts\* & Soli Velez\*\*, Utah State University  
\*Undergraduate research thesis  
\*\*Underrepresented and at-risk high school student
- 2017 **Guest Lecturer**, “NRS594 Soil Ecology: Biological Nitrogen Fixation,” University of Montana

- 2017           **Guest Lecturer**, “NRSM 594 Soil Ecology: Stable Isotope Ecology,” University of Montana
- 2012 – 2017   **Mentor**, Alexandra Ginter, Stacia Hill, & Burgess Munyer, University of Montana
- 2015           **Guest Lecturer**, “NRSM 210 Climate, Hydrology, & Soils: Soil Physical Properties,” University of Montana
- 2014 – 2015   **Graduate Teaching Assistant**, “NRSM 210 Climate, Hydrology, & Soils,” University of Montana
- 2014           **Guest Lecturer**, “BIOO 433 Plant Physiology: Nutrient Acquisition Strategies,” University of Montana

## PUBLICATIONS

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### *In Preparation*

**Nasto MK**, JM Stark. The effects of soil moisture on microbial carbon-use efficiency across soil textures.

**Nasto MK**, M Luce McLeod, JM Stark, Y Lekberg. The effect of plant invasion on soil microbial carbon-use efficiency in semiarid grasslands of western MT.

Sullivan BW, SC Castle, R Jones, **MK Nasto**, A Ballantyne, A Hursch, CC Cleveland. Land-use determines soil microbial community resistance and resilience to global change in the lowland tropics.

Watts CG, **MK Nasto**, JM Stark. A test of a new extraction method for measuring soil microbial biomass carbon and nitrogen.

### *In Review/Revision*

Osborne BB, **MK Nasto**, FM Soper, GP Asner, CS Balzotti, CC Cleveland, PG Taylor, AR Townsend, S Porder. Leaf litter inputs reinforce islands of nitrogen fertility in a lowland tropical forest. *Biogeochemistry*.

11. Sullivan BW, RL Nifong, **MK Nasto**, S Alvarez-Clare, C Dencker, FM Soper, KT Shoemaker, Y Ishida, J Zaragoza-Castells, EA Davidson, CC Cleveland. 2019. Biogeochemical recuperation is common in secondary lowland tropical forest. *Ecology* (Accepted).
10. **Nasto MK**, K Winter, BL Turner, CC Cleveland. 2019. Nutrient acquisition strategies augment growth in tropical N<sub>2</sub> fixing trees in nutrient poor soil and under elevated CO<sub>2</sub>. *Ecology* (Accepted).
9. Soper FM, **MK Nasto**, BB Osborne, CC Cleveland. 2018. Nitrogen fixation and foliar nitrogen do not predict phosphorus acquisition in tropical trees. *Journal of Ecology* doi: 10.1111/1365-2745.13044.
8. Soper FM, BW Sullivan, **MK Nasto**, BB Osborne, D Bru, CS Balzotti, PG Taylor, GP Asner, AR Townsend, L Philippot, S Porder, CC Cleveland. 2018. Remotely-sensed canopy nitrogen correlates with nitrous oxide emissions in a lowland tropical rainforest. *Ecology* 99(9): 2080–2089.

7. Winbourne J, M Harrison, BW Sullivan, S Alvarez-Clare, S Rafaela Lins, L Martinelli, **MK Nasto**, D Piotto, S Rolim, M Wong, S Porder. 2018. A framework for evaluating estimates of symbiotic nitrogen fixation in forests. *American Naturalist* 192(5).
6. **Nasto MK**, BB Osborne, Y Lekberg, GP Asner, CS Balzotti, S Porder, PG Taylor, AR Townsend, CC Cleveland. 2017. Nutrient acquisition, soil phosphorus partitioning, and competition among trees in a lowland tropical rain forest. *New Phytologist* 214(4): 1506—1517.
5. Osborne BB, **MK Nasto**, GP Asner, CS Balzotti, CC Cleveland, BW Sullivan, PG Taylor, AR Townsend, S Porder. 2017. Climate, topography, and canopy chemistry exert hierarchical control over soil N cycling in a Neotropical lowland forest. *Ecosystems* 25: 637—652.
4. Balzotti CS, GP Asner, PG Taylor, CC Cleveland, R Cole, RE Martin, **MK Nasto**, BB Osborne, S Porder, AR Townsend. 2016. Environmental controls on canopy foliar N distributions in a Neotropical lowland forest. *Ecological Applications* 26(8): 2451—2464.
3. Sullivan BW, **MK Nasto**, SC Hart, BA Hungate. 2015. Proximate controls on semiarid soil greenhouse gas fluxes across 3 million years of soil development. *Biogeochemistry* 125(3): 375—391.
2. **Nasto MK**, S Alvarez-Clare, Y Lekberg, BW Sullivan, AR Townsend, CC Cleveland. 2014. Interactions among nitrogen fixation and soil phosphorus acquisition in lowland tropical rain forests. *Ecology Letters* 17(10): 1282—1289.
1. Sullivan BW, WK Smith, AR Townsend, **MK Nasto**, SC Reed, R Chazdon, CC Cleveland. 2014. Spatially robust estimates of biological nitrogen (N) fixation imply substantial human alteration of the tropical N cycle. *Proceedings of the National Academy of Sciences, USA* 111(22): 8101—8106.

## GRANTS, FELLOWSHIPS, SCHOLARSHIPS, & AWARDS

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### RESEARCH GRANTS

2016 National Science Foundation Doctoral Dissertation Improvement Grant \$18,850

### FELLOWSHIPS

2016 Smithsonian Tropical Research Institute Short-Term Fellowship \$3,000

2010 Northern Arizona University Hooper Undergraduate Research Fellowship \$2,880

### SCHOLARSHIPS

2016 George E. Bright Memorial Scholarship, University of Montana \$2,100

2015 Bertha Morton Scholarship, University of Montana \$3,000

2015 George E. Bright Memorial Scholarship, University of Montana \$2,125

2014 George E. Bright Memorial Scholarship, University of Montana \$2,700

2013 Danny On Memorial Scholarship, University of Montana \$500

## **AWARDS**

- 2016 INTERFACE Travel Award \$896
- 2014 Winner of the University of Montana 13<sup>th</sup> Annual Graduate Student Research Conference

## **RESEARCH PRESENTATIONS**

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### **INVITED PAPERS**

- 2018 “Microbial life in dry soils: effects of drought on processes and communities.” Interdisciplinary Research Forum, Climate Adaptation Science & Ecology Center, Utah State University, Logan, UT.
- 2017 “Microbial carbon-use efficiency in agroecosystems: the effects of drought and N availability on soil microbial production and respiration.” USDA-NIFA AFRI Bioeconomy Agroecosystems Annual Project Director Meeting, Tampa, FL.
- 2017 “Nutrient acquisition strategies in tropical rain forests: interactions among nitrogen and phosphorus through plant-microbial mutualisms.” Ecology Center, Utah State University, Logan, UT.
- 2016 “Nutrient acquisition strategies in tropical rain forests: interactions among nitrogen and phosphorus through plant-microbial mutualisms.” Symposium: The Carbon Sequestration Potential of Restoration, Piro Biological Station, Osa Conservation, Costa Rica.
- 2016 “Nutrient acquisition strategies in tropical rain forests: interactions among nitrogen and phosphorus through plant-microbial mutualisms.” Piro Biological Station, Osa Conservation, Costa Rica.

### **CONTRIBUTED PAPERS**

- 2018 **Nasto MK**, JM Stark. “The effects of soil moisture on microbial carbon-use efficiency across soil textures.” Ecological Society of America, New Orleans, LA.
- 2017 **Nasto MK**, K Winter, BL Turner, CC Cleveland. “Nutrient acquisition strategies promote high growth in tropical nitrogen fixing trees under elevated CO<sub>2</sub>.” Ecological Society of America, Portland, OR.
- 2016 **Nasto MK**, BB Osborne, M Lopez Morales, Y Lekberg, CC Cleveland. “Soil phosphorus partitioning reduces competition among nitrogen fixing and non-nitrogen fixing trees in tropical rain forests.” INTERFACE Workshop: Phosphorus Cycling in Terrestrial Ecosystems, Townsend, TN. (poster)
- 2015 **Nasto MK**, S Alvarez-Clare, Y Lekberg, BW Sullivan, AR Townsend, CC Cleveland. “Symbiotic dinitrogen fixation enhances soil phosphorus acquisition strategies in tropical forests.” Soil Ecology Society, Colorado Springs, CO.
- 2014 **Nasto MK**, S Alvarez-Clare, Y Lekberg, BW Sullivan, AR Townsend, CC Cleveland. “Interactions among nitrogen fixation and soil phosphorus acquisition in lowland tropical rain forests.” Ecological Society of America, Sacramento, CA.

- 2014 **Nasto MK**, S Alvarez-Claire, Y Lekberg, BW Sullivan, AR Townsend, CC Cleveland. "Symbiotic dinitrogen fixation enhances phosphorus acquisition in lowland tropical rain forests." University of Montana Graduate Research Symposium, Missoula, MT.  
\*Winner of the University of Montana 13<sup>th</sup> Annual Graduate Student Research Conference
- 2013 **Nasto MK**, BW Sullivan, CC Cleveland. "Does biological nitrogen fixation enhance phosphorus acquisition in lowland tropical rainforests?" University of Montana Graduate Research Symposium, Missoula, MT.
- 2011 **Nasto MK**, BW Sullivan. "Methane flux response in the presence of nitrogen and phosphorus fertilization across a retrogressive semiarid chronosequence." Northern Arizona University Undergraduate Research Symposium, Flagstaff, AZ.

#### ***COAUTHORED CONTRIBUTED PAPERS***

- 2018 Cleveland CC, **MK Nasto**, SC Reed, AN Shaw, FM Soper. "Overcoming nutrient limitation: will phosphorus availability constrain global plant production under elevated CO<sub>2</sub>." American Geophysical Union, Washington D.C.
- 2018 Watts CG\*, **MK Nasto**, JM Stark. "A test of a new extraction method for measuring soil microbial biomass carbon." Utah State University Undergraduate Research Symposium, Logan, UT. (poster)  
\*Undergraduate mentee
- 2018 Soper FM, **MK Nasto**, BB Osborne, CC Cleveland. "Nitrogen status does not predict phosphorus acquisition strategies in tropical trees." Ecological Society of America, New Orleans, LA.
- 2017 Cleveland CC, **MK Nasto**, BL Turner, N Fierer, AN Shaw. "How do diverse ecosystems overcome low soil phosphorus? Mechanisms, implications, and meditations." Ecological Society of America, Portland, OR.
- 2017 Osborne BB, **MK Nasto**, GP Asner, CS Balzotti, CC Cleveland, PG Taylor, AR Townsend, S Porder. "Canopy nitrogen is correlated with litter and soil nitrogen in a lowland tropical forest." Ecological Society of America, Portland, OR.
- 2017 Soper FM, **MK Nasto**, BW Sullivan, BB Osborne, S Porder, CC Cleveland. "Canopy nitrogen heterogeneity influences denitrification rates in a lowland tropical forest." Ecological Society of American, Portland, OR.
- 2016 Osborne BB, **MK Nasto**, GP Asner, CS Balzotti, CC Cleveland, BW Sullivan, PG Taylor, AR Townsend, S Porder. "Canopy tree species drive local heterogeneity in soil nitrogen availability." American Geophysical Union, San Francisco, CA.
- 2015 Castle SC, BW Sullivan, R Jones, **MK Nasto**, A Ballantyne, A Hursh, CC Cleveland. "Landuse determines soil microbial community resistance and resilience to climate change in the lowland tropics." Ecological Society of America, Baltimore, MD.

- 2015 Marklein AR, **MK Nasto**, BW Sullivan, CC Cleveland. "Interactions among plants, symbiotic N-fixing bacteria, and arbuscular mycorrhizal fungi in tropical rain forest: Results from a theoretical model." Ecological Society of America, Baltimore, MD.
- 2015 Osborne BB, **MK Nasto**, GP Asner, CC Cleveland, BW Sullivan, PG Taylor, AR Townsend, S Porder. "Geomorphology and canopy chemistry influence soil nitrogen availability on variable time scales in a lowland tropical forest." Ecological Society of America, Baltimore, MD.
- 2015 Sullivan BW, **MK Nasto**, S Alvarez-Clare, RJ Cole, SC Reed, R Chazdon, EA Davidson, CC Cleveland. "Trends in nitrogen and phosphorus cycling are consistent and constrained during tropical secondary forest succession: is secondary forest young primary forest from a nutrient perspective?" American Geophysical Union, San Francisco, CA. (poster)
- 2015 Sullivan BW, **MK Nasto**, S Alvarez-Clare, SC Reed, CC Cleveland. "Nitrogen and phosphorus fertilization alters biological nitrogen fixation in lowland tropical rainforest." Ecological Society of America, Baltimore, MD.
- 2015 Townsend AR, CC Cleveland, GP Asner, PG Taylor, BB Osborne, **MK Nasto**, WR Wieder, BW Sullivan. "One size does not fit all: Multi-scale heterogeneity in the lowland tropical N cycle." Ecological Society of America, Baltimore, MD.
- 2013 Cleveland CC, BW Sullivan, **MK Nasto**. "Nutrient constraints on carbon cycling in tropical forests." Invited Seminar, Department of Integrative Biology, University of Texas, Austin, TX.
- 2013 Sullivan BW, **MK Nasto**, SC Reed, RL Chazdon, CC Cleveland. "Patterns and rates of biological nitrogen fixation during secondary succession in a lowland tropical rain forest." Ecological Society of America, Minneapolis, MN.
- 2013 Sullivan BW, **MK Nasto**, SC Reed, E Ortis, B Vilchez, R Chazdon, CC Cleveland. "Rates and patterns of biological nitrogen fixation during secondary succession in a lowland tropical rain forest." Association for Tropical Biology and Conservation, San Jose, Costa Rica.
- 2011 Sullivan BW, **MK Nasto**, SC Hart, BA Hungate, RA Parnell. "Soil fluxes of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O after fertilization across a three million year old soil age gradient." Ecological Society of America, Austin, TX.

## SERVICE

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### **JOURNAL REFEREE**

*Biogeochemistry*

*Ecology Letters*

*Global Change Biology*

*Oecologia*

*Ecology*

*Frontiers in Plant Science*

*Nutrient Cycling in Agroecosystems*

*Plant and Soil*

### **PROFESSIONAL SERVICE**

2017 – Webmaster, Ecological Society of America Biogeosciences section

- 2016 Invited participant, "INTERFACE Workshop: Phosphorus Cycling in Terrestrial Ecosystems," Townsend, TN
- 2016 Symposium co-organizer, "The Carbon Sequestration Potential of Restoration," Piro Biological Station, Osa Conservation, Costa Rica

**INSTITUTIONAL SERVICE**

- 2014 – 2017 Executive Board Member, Interdisciplinary Collaborative Network, University of Montana | [www.montanaicn.com](http://www.montanaicn.com)
- 2014 – 2016 Senator, Graduate and Professional Student Association, University of Montana
- 2013 – 2016 Organizer, W.A. Franke College of Forestry & Conservation Graduate Student Seminar, University of Montana

**EDUCATIONAL SERVICE**

- 2018 Scientist, Skype a Scientist | [www.skypeascientist.com](http://www.skypeascientist.com)
- 2014 – 2017 Blogger, Interdisciplinary Collaborative Network, University of Montana
- 2014 – 2017 Science Educator, spectrUM Discovery Area, University of Montana
- 2013 – 2017 Judge, Montana State Science Fair

**PROFESSIONAL SOCIETIES**

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|---|---------------------------------------|
| American Geophysical Union              | Association for Women Soil Scientists |
| Earth Science Women’s Network           | Ecological Society of America         |
| Interdisciplinary Collaborative Network | International Mycorrhiza Society      |
| Soil Ecology Society                    | Soil Science Society of America       |

**ADVISORS & REFERENCES**

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**ADVISOR**

- Postdoctoral Dr. John Stark, Utah State University | [jstark@biology.usu.edu](mailto:jstark@biology.usu.edu)
- PhD Dr. Cory Cleveland, University of Montana | [cory.cleveland@umontana.edu](mailto:cory.cleveland@umontana.edu)

**ADDITIONAL REFERENCES**

- Dr. Benjamin Sullivan, University of Nevada, Reno | [bsullivan@cabnr.unr.edu](mailto:bsullivan@cabnr.unr.edu)
- Dr. Ylva Lekberg, MPG Ranch | [ylekberg@mpgranch.com](mailto:ylekberg@mpgranch.com)
- Dr. Stephen Porder | [stephen\\_porder@brown.edu](mailto:stephen_porder@brown.edu)