

Quentin D. Read

Using big open data to understand how humans influence the natural world

Contact information

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Postdoctoral research

National Socio-Environmental Synthesis Center (SESYNC), Annapolis, MD *2018-present*
NSF-funded Socio-Environmental Immersion Postdoctoral Fellowship
“Food waste and the Environment”
Mentor: Dr. Mary Muth (RTI International, Research Triangle Park, NC)

Michigan State University, East Lansing, MI *2016-2018*
Department of Forestry; Ecology, Evolutionary Biology, & Behavior Program
Funded by NSF EAGER grant: “Intraspecific trait variation and community structure at a continental scale”
Advisors: Dr. Phoebe Zarnetske (MSU) and Dr. Sydne Record (Bryn Mawr College)

Education

University of Tennessee, Knoxville, TN *2011-2016*
Ph.D., Ecology and Evolutionary Biology
Dissertation: “Individual variation in plant traits drives species interactions, ecosystem functioning, and responses to global change”
Advisor: Dr. Nathan Sanders

University of North Carolina, Chapel Hill, NC *2005-2009*
B.S. with highest distinction, Environmental Science

Skills

Data processing, visualizing, and analysis in R, including tidyverse and Rmarkdown
Bayesian modeling with STAN and Jags
Spatial analysis and modeling with GDAL, QGIS, and GIS libraries in R
Working knowledge of Python
High-performance parallel computing using Linux server
Using GitHub for version control and remote collaborations
Synthesizing data and theory, both in ecology and beyond
Fluent in spoken and written German; communicate effectively in spoken and written Spanish

Grants

Macrosystems Biology, NEON-Enabled Science (National Science Foundation; \$536,800)
Role: senior personnel, co-writer of grant *2019-2024*

Publications

- Zarnetske, P. L., **Q. D. Read**, S. Record, K. Gaddis, S. Pau, M. Hobi, S. L. Malone, J. K. Costanza, K. M. Dahlin, A. Latimer, A. M. Wilson, J. M. Grady, S. Ollinger, A. O. Finley. 2019. Towards connecting biodiversity and geodiversity across scales with satellite remote sensing. *Global Ecology and Biogeography*. DOI: 10.1111/geb.12887.
- Henning, J. A., **Q. D. Read**, N. J. Sanders, and A. T. Classen. 2019. Fungal colonization of plant roots is resistant to nitrogen addition and resilient to dominant species losses. *Ecosphere*. DOI: 10.1002/ecs2.2640.
- Grady, J. M., **Q. D. Read**, S. Record, P. L. Zarnetske., B. Baiser, K. Thorne, and J. Belmaker. 2018. Size, niches, and the latitudinal diversity gradient. *Teaching Issues and Experiments in Ecology*, Vol. 14, Figure Set 1. http://tiee.esa.org/vol/v14/issues/figure_sets/grady/abstract.html
- Read, Q. D.**, J. M. Grady, P. L. Zarnetske, S. Record, B. Baiser, J. Belmaker, M.-N. Tuanmu, A. Strecker, L. Beaudrot, and K. M. Thibault. 2018. Among-species overlap in rodent body size distributions predicts species richness along a temperature gradient. *Ecography*. DOI: 10.1111/ecog.03641
- Read, Q. D.**, B. Baiser, J. M. Grady, P. L. Zarnetske, S. Record, and J. Belmaker. 2018. Tropical bird species have less variable body sizes. *Biology Letters* 20170453. DOI: 10.1098/rsbl.2017.0453
- Read, Q. D.**, J. A. Henning, A. T. Classen, and N. J. Sanders. 2018. Aboveground resilience to species loss but belowground resistance to nitrogen addition in a montane plant community. *Journal of Plant Ecology*. DOI: 10.1093/jpe/rtx015
- Welshofer, K. B., P. L. Zarnetske, N. K. Lany, and **Q. D. Read**. 2018. Short-term responses to warming vary between native vs. exotic species and with latitude in an early successional plant community. *Oecologia*. DOI: 10.1007/s00442-018-4111-9
- Read, Q. D.**, J. A. Henning, and N. J. Sanders. 2017. Intraspecific variation in traits reduces ability of trait-based models to predict community structure. *Journal of Vegetation Science*. DOI: 10.1111/jvs.12555
- Hendershot, J. N.*, **Q. D. Read**, J. A. Henning, N. J. Sanders, and A. T. Classen. 2017. Consistently inconsistent drivers of patterns of microbial diversity and abundance at macroecological scales. *Ecology*. DOI: 10.1002/ecs2.1829
- Butler, E. E., A. Datta, ..., **Q. D. Read**, ..., and P. B. Reich. 2017. Mapping local and global variability in plant trait distributions. *Proceedings of the National Academy of Sciences*. DOI:10.1073/pnas.1708984114
- Read, Q. D.**, S. M. Hoban, M. B. Eppinga, J. A. Schweitzer, and J. K. Bailey. 2016. Accounting for the nested nature of genetic variation across levels of organization improves our understanding of biodiversity and community ecology. *Oikos* 125:895-904. DOI: 10.1111/oik.02760 *Editor's Choice*.
- Van Nuland, M. E., R. C. Wooliver, A. A. Pfennigwerth, **Q. D. Read**, I. M. Ware, L. Mueller, J. A. Fordyce, J. A. Schweitzer, and J. K. Bailey. 2016. Plant-soil feedbacks: connecting ecosystem ecology and evolution. *Functional Ecology*. DOI: 10.1111/1365-2435.12690
- Yoon, S. A.* and **Q. D. Read**. 2016. Consequences of exotic host use: impacts on Lepidoptera and a test of the ecological trap hypothesis. *Oecologia*. DOI: 10.1007/s00442-016-3560-2
- Schussler, E. E., **Q. D. Read**, G. Marbach-Ad, K. Miller, and M. Ferzli. 2015. Preparing biology graduate teaching assistants for their roles as instructors: an assessment of institutional approaches. *CBE-Life Sciences Education* 14:1-11. DOI: 10.1187/cbe.14-11-0196
- Read, Q. D.**, L. C. Moorhead, N. G. Swenson, J. K. Bailey, and N. J. Sanders. 2014. Convergent effects of elevation on functional leaf traits within and among species. *Functional Ecology* 28:37-45. DOI: 10.1111/1365-2435.12162 *nominated for the British Ecological*

Society's Haldane Prize for Young Investigators

- Gorman, C. E., **Q. D. Read**, M. E. Van Nuland, and others. 2013. Species identity influences belowground arthropod assemblages via functional traits. *Annals of Botany Plants* plt049. DOI: 10.1093/aobpla/plt049 *Editor's Choice*.
- Van Nuland, M. E., E. N. Haag, J. A. Bryant, **Q. D. Read**, and others. 2013. Fire promotes pollinator visitation: implications for ameliorating declines of pollination services. *PloS One* 8:e79853. DOI: 10.1371/journal.pone.0079853
- Clark, J. S., B. D. Soltoff, A. S. Powell, and **Q. D. Read**. 2012. Evidence from individual inference for high-dimensional coexistence: long term experiments on recruitment response. *PLoS One* 7:e30050. DOI: 10.1371/journal.pone.0030050

* first author is an undergraduate whom I mentored

In review/revision/accepted

- Muth, M. K., C. Birney, A. Cuéllar, S. M. Finn, M. Freeman, J. N. Galloway, I. Gee, J. A. Gephart, K. Jones, L. Low, E. Meyer, **Q. D. Read**, T. Smith, K. A. Weitz, and S. Zoubek. A framework for assessing food loss and waste interventions in the United States. *Science of the Total Environment*, accepted.
- Record, S., K. M. Dahlin, P. L. Zarnetske, **Q. D. Read**, S. L. Malone, K. Gaddis, J. M. Grady, J. Costanza, M. Hobi, A. Latimer, S. Pau, A. M. Wilson, A. O. Finley, and S. Ollinger. Remote sensing of geodiversity and biodiversity. Book chapter *in* Remote Sensing of Biodiversity: Using spectral signals to understand the biology and biodiversity of plants, communities, ecosystems and the tree of life. J. Cavender-Bares, J. Gamon, and P. Townsend, eds. Accepted.
- Dahlin, K. M., P. L. Zarnetske, **Q. D. Read**, L. Twardochleb, A. Kamoske, K. S. Cheruvellil, and P. Soranno. Interactions between biodiversity and ecosystem function among terrestrial and aquatic realms. *Frontiers in Ecology and the Environment*, in revision.
- Read, Q. D.**, P. L. Zarnetske, S. Record, J. M. Grady, A. M. Wilson, A. O. Finley, A. Latimer, J. K. Costanza, K. Gaddis, K. M. Dahlin, M. Hobi, S. Ollinger, S. Malone, and S. Pau. Beyond counts and averages: relating geodiversity to dimensions of biodiversity. *Global Ecology and Biogeography*, in revision.

In preparation

- Read, Q. D.**, J. A. Gephart, A. Cuéllar, S. Finn, E. Meyer, K. A. Weitz, J. N. Galloway, and M. K. Muth. The effect of interventions to reduce food loss and waste in the United States. MS in prep.
- Prager, C. M., J. A. Henning, X. Jing, **Q. D. Read**, N. J. Sanders, and A. T. Classen. The interaction between climate and multiple dimensions of plant diversity regulates ecosystem carbon exchange along an elevational gradient. *Journal of Ecology*, in prep.
- Chisholm, C., **Q. D. Read**, D. Dimitrov, C. Antón-Fernández, R. Astrup, C. Rahbek, and N. J. Sanders. Functional traits predict growth response and competition in Norwegian boreal forests. MS in prep.
- Grady, J. M., **Q. D. Read**, N. Rüger, P. L. Zarnetske, and S. Record. Asymmetric competition and energy equivalence in forests. MS in prep.

Teaching, curriculum development, and mentoring

Co-Instructor, Michigan State University

Fisheries & Wildlife 893: Metacommunity Ecology

Spring 2017

Graduate Teaching Assistant, University of Tennessee

Ecology & Evolutionary Biology 406: Models in Biology

Ecology & Evolutionary Biology 484: Conservation Biology

Spring 2016

Spring 2015, Spring 2016

Biology 250: General Ecology
Biology 130: Introduction to Biodiversity

Fall 2012, Spring 2013, Spring 2014
Fall 2011, Spring 2012

Guest lectures and workshops

Michigan State University

Designed graduate teaching module: *Spring 2018*
“Using NEON data to test macroecological hypotheses.”

Rocky Mountain Biological Laboratory

Designed and led workshop on graphing with R and ggplot2 *July 2015*
Co-led panel discussion on writing scientific papers *July 2015*
Designed and led workshops on advanced topics in statistics with R *July 2014*

University of Tennessee

Guest lecture (led a mock trial), Conservation Biology *Spring 2015*
Guest lecture on biogeochemistry, General Ecology *Fall 2012 and Spring 2014*
Guest lecture on climate change and communities, General Ecology *Spring 2013*

Curriculum development

Research assistantship, University of Tennessee

Fall 2013

Assisted Dr. Elisabeth Schussler creating recommendations to improve training and professional development for graduate teaching assistants, leading to a publication.

Curriculum Reform in Undergraduate Biology Education, University of Tennessee 2013-2014

Member of panel developing and reforming curriculum of undergraduate introductory biology courses

Mentoring

Michigan State University

Mentored 4 undergraduates through Summer Research Opportunities Program and High Performance Computing Center *Summer 2017 & 2018*

Rocky Mountain Biological Laboratory

Mentored 8 undergraduates through RMBL and NSF programs *2012-2015*

University of Tennessee

Mentored 3 undergraduate laboratory assistants *2013-2015*

Honors and awards

University of Tennessee Science Alliance graduate award *2015 (\$3000)*

Outstanding Outreach and Community Service award, UT-Knoxville Department of Ecology and Evolutionary Biology (awarded for leadership of Darwin Day) *2014*

Dr. Jean H. Langenheim Endowed Graduate Fellowship in the Ecology and Evolution of Plants, Rocky Mountain Biological Laboratory *2013-2014 (\$6000)*

Honorable Mention, National Science Foundation Graduate Fellowship *2013*

Dr. Lee R. G. Snyder Memorial Fellowship, Rocky Mountain Biological Laboratory *2012 (\$700)*

Travel awards

NSF travel grant to deliver biology education seminar at Notre Dame *2015 (\$500)*

UTK Graduate Student Senate and EEB departmental travel awards to attend short course in Sweden *2013 (\$500)*

Conference presentations

Read, Q. D., S. Record, K. M. Dahlin, P. L. Zarnetske, and others. 2018. “Measuring geodiversity to explain biodiversity: what is the effect of spatial grain and spatial ‘consciousness?’” US-International Association of Landscape Ecology, Chicago, IL.

Read, Q. D., J. M. Grady, P. L. Zarnetske, S. Record, and others. 2017. “Intraspecific variation reflects drivers of rodent community assembly across the National Ecological Observatory Network.” Ecological Society of America, Portland, OR.

“Challenges and opportunities for investigating ecological communities across space and time: insights from coordinated research networks.” 2017. Organized Oral Session, Ecological Society of America, Portland, OR (served as co-organizer of session).

Read, Q. D., N. J. Sanders, and A. T. Classen. 2015. “A globally replicated experiment shows that long-term environmental filters constrain plant response to increased temperature and loss of foundation species.” Ecological Society of America, Baltimore, MD.

Invited talks

“Food waste impacts on biodiversity.” Commission on Environmental Cooperation Food Loss and Waste Measurement Experts Group Meeting, Arlington, VA, October 2018.

“Intraspecific variation and community assembly.” National Ecological Observatory Network, Boulder, CO, January 2017. (talk co-delivered with John Grady)

“Individual variation in organismal traits: predicting patterns in space and time from local to global scales.” Michigan State University Department of Forestry, Hanover Forest Science Seminar Series, East Lansing, MI, September 2016.

“C3UBE undergraduate biology curriculum reform.” University of Notre Dame, Biology Education Seminar, Notre Dame, IN, March 2015.

“Roots, leaves, and soils facing global change.” Rocky Mountain Biological Laboratory Seminar, Gothic, CO, June 2014.

“Plant traits & interactions altered by warming at different elevations.” Oak Ridge National Laboratory, Environmental Sciences Division, Oak Ridge, TN, January 2014.

Short courses

Boreal Forest Ecology, Swedish University of Agricultural Sciences, Umeå, Sweden **June 2013**
Fundamentals of Ecosystem Ecology, Cary Institute of Ecosystem Studies, **January 2012**
Millbrook, NY

Reviewer experience

Review panelist, SESYNC immersion postdoctoral fellowship program **February 2019**

Peer reviewer for the following journals: *Molecular Ecology*, *Energies*, *Nature Climate Change*, *Journal of Biogeography*, *Oikos*, *Ecological Applications*, *Ecology*, *Journal of Ecology*, *Global Ecology and Biogeography*, *Plant Ecology*, *Ecological Monographs*, *Ecology Letters*, *Annals of Botany* *Plants*, *Methods in Ecology and Evolution*, *Ecography*, *Biotropica*, *Functional Ecology* (3 times), *Journal of Plant Ecology*, *PeerJ* (2 times), *Ecology and Evolution*, *PLoS One* (2 times), *Ecosphere*, *New Phytologist* (2 times), *Global Change Biology* (3 times)

Volunteering and outreach

Michigan State University

Organized event and gave presentation on citizen science opportunities for MSU Science Festival 2018

Gave public research talk, Biology On Tap 2017

Rocky Mountain Biological Laboratory

Volunteered at Kids Nature Camp 2015

University of Tennessee

Volunteered at Tennessee State Science Olympiad 2015

Led Darwin Day, student-run science education event 2014

Coordinated advertising for Darwin Day 2013

Discussed my research and assisted 7th-grade students with climate change research projects 2012, 2013

Volunteered at Boo at the Zoo, a public outreach event 2011, 2012

Created a field guide with 2nd-grade students 2011

Relevant work experience

Wildlife Office, Kaibab National Forest, USDA Forest Service, Williams, AZ

Wildlife intern May 2011-July 2011

Institute for Tropical Ecosystem Studies, UPR-Rio Piedras, Puerto Rico

Seedling census volunteer January 2011-April 2011

Jim Clark Lab, Duke University, Durham, NC

Research technician Summer 2008 and May 2010-January 2011

Smithsonian Conservation Biology Institute, Front Royal, VA

Ecology intern January-April 2010

North Carolina Botanical Garden, Chapel Hill, NC

Conservation and Land Management intern June-November 2009

Morehead Planetarium and Science Center, UNC-Chapel Hill, Chapel Hill, NC

Summer camp counselor, educator, exhibit staffer May 2006-May 2008

Undergraduate research

Biology Department, University of North Carolina

Spring 2009

“Morphological and anatomical characteristics of a *Pertica*-like plant of the Lower Devonian of northern New Brunswick, Canada,” with Dr. Patricia Gensel

Coweeta Hydrologic Laboratory, U.S. Forest Service LTER site

Fall 2008

project conducted for undergraduate field site program at Highlands Biological Station

“Soil and tree ring chemistry changes in an oak forest,” with Dr. Jennifer Knoepp

Undergraduate honors and awards

LeClair Award for excellence in plant studies, May 2009

Phi Beta Kappa, Spring 2008