Shan A. Kothari

Contact Information

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Research Interests

Community assembly, plant ecophysiology, macroecology, hyperspectral imaging, remote sensing

Education

University of Minnesota—Twin Cities, Falcon Heights, MN 2014—present
Ph.D. student, Plant Biology
Committee: Jeannine Cavender-Bares (advisor), George Weiblen, Rebecca Montgomery, Yaniv Brandvain, Phil Townsend (UW-Madison)
Thesis topic: Variation in light use and light interception-related traits among trees and prairie plants

Michigan State University, East Lansing, MI 2010—2014
B.S., Zoology, Spec. in Ecology, Evolution, and Organismal Biology
B.S., Anthropology
Minor, Mathematics
3.97/4.0 overall GPA, Honors College

Previous Research Experience

Undergraduate Researcher 2012—2014
Department of English, Michigan State University
Supervisor: Natalie Phillips, Ph.D.

Undergraduate Researcher 2010—2014
Department of Plant Biology, Michigan State University
Supervisor: Nathan G. Swenson, Ph.D.

REU Intern/Fieldworker 2013
Department of Forestry, University of Washington/H.J. Andrews Forest
Supervisor: Charles Halpern, Ph.D.

REU Intern 2012
Department of Plant Pathology, Kansas State University
Supervisor: Chris Toomajian, Ph.D.

REU Intern 2011
Department of Ornithology, American Museum of Natural History
Supervisor: Joel Cracraft, Ph.D.

Teaching Experience

Volunteer Teaching Assistant Spring 2016
EEB 4068/5068: Plant Physiological Ecology
University of Minnesota
Jeannine Cavender-Bares

Publications and Manuscripts

Kothari, S. A., Montgomery, R. A., and J. M. Cavender-Bares. Interspecific facilitation of carbon gain in a tree diversity experiment. (in prep, manuscript available on request)

Runquist, R. B.*, Gorton, A.*, Yoder, J. B.*, Deacon, N. J., Grossman, J. J., **Kothari, S. A.**, Lyons, M., Sheth, S., Tiffin, P., and D. A. Moeller. Context dependence of local adaptation to abioticand biotic environments: a quantitative and qualitative synthesis. (submitted to *American Naturalist*) (*equal contributors)

Halpern, C., Antos, J., **Kothari, S. A.**, and A. Olson. Past tree influence and prescribed fire exert strong controls on reassembly of mountain grasslands after tree removal. *Ecological Applications* 29 (2019): e01860.

Cavender-Bares, J., **Kothari, S. A.**, and W. Pearse. Evolutionary Ecology of Communities. *Oxford Bibliographies in Evolutionary Biology* (2018).

Cavender-Bares, J.*, **Kothari, S. A.***, Meireles, J. E.*, Hipp, A., Kaproth, M., and P. Manos. The role of diversification in the continental scale community assembly of the American oaks (*Quercus*). *American Journal of Botany* 105 (2018): 565-586. (*co-corresponding authors)

Wang, R., Gamon, J. A., Schweiger, A. K., Cavender-Bares, J., Townsend, P. A., Zygielbaum, A. I., and **S. A. Kothari**. Influence of species richness, evenness, and composition on spectral diversity: a simulation study. *Remote Sensing of Environment* 211 (2018): 218–228.

Kothari, S. A.*, Cavender-Bares, J.*, Bitan, K., Verhoeven, A., Wang, R., Montgomery, R., and J. Gamon. Community-wide consequences of variation in photoprotective physiology among prairie plants. *Photosynthetica* 56 (2018): 455–467. (*co-corresponding authors)

Kothari, S. A. Characterization of a Family of Cubic Dynamical Systems. *Ball State Undergraduate Mathematics Exchange* (2011), 8(1): 25–36, 201.

Presentations

Kothari, S. A., Montgomery, R., Hobbie, S. E., Reich, P., and J. Cavender-Bares. *The physiological underpinnings of facilitation in a tree diversity experiment*. Long-Term Ecological Research All-Scientists Meeting 2018. Poster. October 2018.

Kothari, S. A., Montgomery, R., Hobbie, S. E., Reich, P., and J. Cavender-Bares. *The physiological underpinnings of facilitation in a tree diversity experiment*. Ecological Society of America 2018. Invited talk. August 2018.

Kothari, S. A., Cavender-Bares, J., Bitan, K., Verhoeven, A., Wang, R., Montgomery, R., and J. Gamon. *Community-wide consequences of variation in photoprotective physiology among prairie plants*. Botanical Society of America 2018. Talk. July 2018.

Kothari, S. A. (substitute for J. Cavender-Bares) *Linking remotely sensed spectral diversity to genetic, phylogenetic and functional diversity to predict ecosystem processes*. Ecological Society of America 2017. Ignite talk. August 2017.

Kothari, S. A., Cavender-Bares, J., Schweiger, A. K., Townsend, P. A., Hobbie, S. E., and R. Montgomery. *Nitrogen uptake and crown-level allocation across an experimental tree diversity gradient*. Ecological Society of America 2017. Talk. August 2017.

Kothari, S. A., Cavender-Bares, J., Verhoeven, A., Bitan, K., Wang, R., Montgomery, R., and J. Gamon. *Seasonal variation in xanthophyll cycle pigments among species with contrasting water use strategies*. Ecological Society of America 2016. Talk. August 2016.

Kothari, S. A., Cavender-Bares, J., Verhoeven, A., Bitan, K., Montgomery, R., and J. Gamon. *Seasonal variation in xanthophyll cycle pigments among species with contrasting water use strategies*. Long-Term Ecological Research All-Scientists Meeting. Poster. August 2015.

Phillips, N., Mayfield, K., Pearson, C., **Kothari, S. A.**, Garzaniti, I., Hakun, J., Silvasi, T., Gupta, M., Greulich, K., Zuchora, A., Pathak, A., and R. Dougherty. *Functional Regions Activated by Literary Reading: An fMRI Study*. Michigan Chapter, Society for Neuroscience. Poster. May 2014.

Kothari, S. A., Pearson, C., Mayfield, K., Zuchora, A., and S. Smith. *Your Brain on Jane Austen*. Michigan State University Science Festival. Demonstration / Seminar. April 2014.

Phillips, N., Pearson, C., Silvasi, T., Mayfield, K., **Kothari, S. A.**, Fouty, P., and Dougherty, R. *Literature, Attention, and the Neuroscience of Reading: fMRI Shows Heightened Brain Activation in Close Reading of Jane Austen*. Michigan Chapter, Society for Neuroscience. Poster. May 2013.

Gorsuch, A., Zdziarska, P., **Kothari, S. A.**, Pearson, C., and Phillips, N. *Measuring the Impact of Poetic End-Line Structures on Attention and Memory*. Workshop on New Frontiers in Cognitive, Evolutionary, and Computational Models of the Mind at MSU. Dec 2012.

Kothari, S. A. and Cracraft, J. *Phylogeography of the King of Saxony Bird-of-Paradise*. American Museum of Natural History Summer Symposium Aug 2011.

Kothari, S. A. *Characterization of a Family of Cubic Dynamical Systems*. Michigan Section, Mathematical Association of America. Talk. May 2011.

Symposia and Workshops Organized

Interactions Between Leaf-Level and Canopy Physiology, with Z. Carter Berry. Ecological Society of America 2018. Organized Oral Session.

Spectral Detection of Plant Stress in a Changing Global Environment, with Jeannine Cavender-Bares. Ecological Society of America 2018. Symposium.

Workshops Attended

- RCN: Cross-Scale Processes Impacting Biodiversity. Cedar Creek Ecosystem Science Reserve, University of Minnesota, East Bethel, Minnesota. June 2018.
- PHYS-Fest. Konza Prairie, Kansas State University, Manhattan, Kansas. June 2016.
- Synthesizing Trait Evolution in Plants (sTEP). German Centre for Integrative Biodiversity Research (iDiv), Leipzig, Germany. May 2015.
- Open Tree of Life Hackathon. University of Michigan, Ann Arbor, Michigan. September 2014.

Funding

- Alexander & Lydia Anderson Grant ($3000) 2019
- Travel Mini-Grant, NSF Cross-Scale Biodiversity RCN ($2000) 2019
- Cedar Creek Graduate Research Fellowship ($2000) 2018
- UMN Plant Biological Sciences Travel Grant ($1000) 2018
- UMN Plant Biological Sciences Travel Grant ($760) 2017
- Cedar Creek Graduate Research Fellowship ($2000) 2017
- Carolyn Crosby Research Grant ($3000) 2016
- UMN Plant Biological Sciences Travel Grant ($1000) 2016
- Cedar Creek Graduate Research Fellowship ($2000) 2016
- G. H. Lauff Tuition Scholarship, Kellogg Biological Station ($500) 2014
- National Science Foundation Graduate Research Fellowship ($138,000) 2014
- UMN College of Biological Sciences Excellence Fellowship ($45,000) 2014
- College of Arts and Letters Undergraduate Research Grant ($750) 2013
- MSU Professorial Assistantship ($4,000) 2010

Awards

- AAAS/Science Program for Excellence in Science 2016
- Goldwater Scholarship Honorable Mention 2012
- MSU Alumni Distinguished Scholarship (full ride) 2010
- Intel Science Talent Search Semifinalist 2010

Mentoring

Andrew Landsem, Cedar Creek Intern 2018
Project title: Raspberry abundance and soil salinity levels along road edges

Daav Sannerud and Ingrid Holstrom, Cedar Creek Interns 2018
Project title: Interaction between tree productivity and mycorrhizal communities in relation to varying levels of tree diversity

Jacob Becker and Valerie Gehn, Cedar Creek Interns (co-mentored with Kaitlin Kimmel) 2017
Project title: Quantifying nitrogen's impact on C3 and C4 grass on the aniso- / isohydric continuum.

Emily Geary, Cedar Creek Intern 2016
Project title: Mapping migration corridors and land use of Northern Saw-whet

owls in Minnesota

Ella Johnson, Cedar Creek Intern (co-mentored with Jake Grossman) 2016-2017
Project title: Changes in the mean and variation of percentage light transmission in relation to relative abundance of needle-leaf and broad-leaf trees in forest ecosystems

Service

- Representative, Minnesota Student Legislative Committee
- Representative, UMN Council of Graduate Students
- Officer, Phytograds (UMN Plant Biology student association)
- Representative, UMN College of Biological Sciences Diversity & Initiatives Committee
- Student Liaison, Physiological Ecology Section, Ecological Society of America
- Reviewer for *Proceedings of the Royal Society of London: B* (1), *Global Ecology and Biogeography* (1), *Nature Ecology and Evolution* (1)
- Market Science (2015-8) – led sessions on Plant Chemistry, Remote Sensing, and the Biology of Sunscreen
- Judge at Minnesota State Science Fair (2015, 2017), Winchell Undergraduate Research Symposium (2015)
- Coordinating presenter at Michigan State University Science Festival (2014)
- Michigan Science Olympiad volunteer (2011, 2012, 2014)