

## Shan A. Kothari (he/him)

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Contact Information	E-mail: shan.kothari@umontreal.ca	
Research Interests	Plant physiological ecology, remote sensing, phenology, nutrient economics, community assembly	
Professional Appointments	<b>Université du Québec à Montréal</b> , Montréal, QC <b>Postdoctoral researcher</b> Supervisor: Alain Paquette	2022–present
	<b>Université de Montréal</b> , Montréal, QC <b>Postdoctoral researcher</b> , Institut de recherche en biologie végétale Supervisor: Etienne Laliberté	2020–2022
Education	<b>University of Minnesota–Twin Cities</b> , Falcon Heights, MN <b>Ph.D.</b> , Plant and Microbial Biology <i>Blinded by the Light: The Functional Ecology of Plant-Light Interactions</i> Committee: Jeannine Cavender-Bares (advisor), Daniel Stanton, Rebecca Montgomery, Yaniv Brandvain, Phil Townsend (UW-Madison)	2014–2020
	<b>Michigan State University</b> , East Lansing, MI <b>B.S.</b> , Zoology, Spec. in Ecology, Evolution, and Organismal Biology <b>B.S.</b> , Anthropology Minor, Mathematics 3.97/4.0 overall GPA, Honors College	2010–2014
Teaching Experience	<b>Teaching Assistant</b> PMB 3005W: Plant Function Lab University of Minnesota Lead instructor: David Marks	Spring 2019
	<b>Volunteer Teaching Assistant</b> EEB 4068/5068: Plant Physiological Ecology University of Minnesota Lead instructor: Jeannine Cavender-Bares	Spring 2016
Publications	<b>S. A. Kothari.</b> When and how does photoinhibition matter for plant fitness? <i>EcoEvoRxiv</i> DOI: <a href="https://ecoevorxiv.org/zcv2r">https://ecoevorxiv.org/zcv2r</a> (in revision, invited at <i>American Journal of Botany</i> )	
	<b>S. A. Kothari,</b> R. Beauchamp-Rioux, F. Blanchard, A. Crofts, A. Girard, X. Guilbeault-Mayers, P. Hacker, M. J. Pardo Losada, A. K. Schweiger, S. Demers-Thibeault, A. Bruneau, N. Coops, M. Kalacska, M. Vellend and E. Laliberté. Predicting leaf traits across functional groups using reflectance spectroscopy. <i>New Phytologist</i> (early view).	

**S. A. Kothari**, R. Beauchamp-Rioux, E. Laliberté and J. Cavender-Bares. Reflectance spectroscopy allows rapid, accurate, and non-destructive estimates of functional traits from pressed leaves. *Methods in Ecology and Evolution* 14 (2023): 385-401.

**S. A. Kothari\*** and A. K. Schweiger\*. Plant spectra as integrative measures of plant phenotypes. *Journal of Ecology* 110 (2022): 2536-2554. (\*equal contributors)

A. K. Schweiger, J. Cavender-Bares, **S. A. Kothari**, P. A. Townsend, M. D. Madritch, J. J. Grossman, H. Gholizadeh, R. Wang and J. A. Gamon. Coupling spectral and resource-use complementarity in experimental grassland and forest communities. *Proceedings of the Royal Society B* 288 (2021): 20211290.

P. L. Zarnetske\*, J. Gurevitch\*, J. Franklin, P. Groffman, C. Harrison, J. Hellmann, F. M. Hoffman, **S. A. Kothari**, A. Robock, S. Tilmes, D. Visioni, J. Wu, L. Xia and C.-E. Yang. Potential ecological impacts of climate intervention by reflecting sunlight to cool Earth. *PNAS* 118 (2021): e1921854118. (\*equal contributors)

**S. A. Kothari**, R. A. Montgomery and J. Cavender-Bares. Physiological responses to light explain facilitation and competition in a tree diversity experiment. *Journal of Ecology* 109 (2021): 2000-2018.

R. D. Briscoe Runquist\*, A. Gorton\*, J. B. Yoder\*, N. J. Deacon, J. J. Grossman, **S. A. Kothari**, M. Lyons, S. Sheth, P. Tiffin and D. A. Moeller. Context dependence of local adaptation to abiotic and biotic environments: a quantitative and qualitative synthesis. *The American Naturalist* 195 (2020): 412-431. (\*equal contributors)

C. Halpern, J. Antos, **S. A. Kothari**, 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.

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

J. Cavender-Bares, **S. A. Kothari**, J. E. Meireles, A. Hipp, M. Kaproth 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.

R. Wang, J. A. Gamon, A. K. Schweiger, J. Cavender-Bares, P. A. Townsend, A. I. Zyguelbaum 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.

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

455–467.

- Manuscripts in Preparation **S. A. Kothari**, S. E. Hobbie and J. Cavender-Bares. Rapid estimates of leaf litter chemistry using reflectance spectroscopy. (in preparation; full manuscript available upon request)
- R. L. Bryant, **S. A. Kothari**, J. Cavender-Bares, S. J. Curran, J. J. Grossman, S. E. Hobbie, C. Nash, G. C. Neumiller, and C. R. See. Drivers of above and belowground carbon sequestration after six years of afforestation in a tree biodiversity experiment. (in preparation)
- S. A. Kothari**, F. Blanchard, S. Demers-Thibeault, and E. Laliberté. Edaphic control of leaf senescence in winter-deciduous trees. (in preparation)
- R. Ranjan\* and **S. A. Kothari\***. How the Type IV functional response got its hump—and why it matters. (in preparation; \*equal contributors)
- Invited Research Presentations **S. A. Kothari**. *Blinded by the light: How physiological responses to light influence forest ecosystem function*. University of Calgary. Invited seminar. February 2023 (forthcoming).
- S. A. Kothari**, R. Beauchamp-Rioux, E. Laliberté and J. Cavender-Bares. *Reflectance spectroscopy allows rapid, accurate, and non-destructive estimates of functional traits from pressed leaves*. Leveraging natural history collections to understand global change, Natural History Museum, London. Talk. February 2023.
- S. A. Kothari**. *Blinded by the light: Putting photoinhibition in an ecological context*. University of Kansas. Invited seminar. January 2023.
- S. A. Kothari**. *Too much of a good thing? Light stress, plant economics, and carbon storage in tree communities*. Ohio State University. Invited seminar. January 2023.
- S. A. Kothari**. *Blinded by the light: Putting photoinhibition in an ecological context*. Duke University. Invited seminar. November 2022.
- S. A. Kothari**. *A spectrum of spectra? Describing the major dimensions of plant hyperspectral variation*. Ecological Society of America/Canadian Society of Ecology and Evolution. Inspire talk. August 2022.
- S. A. Kothari**. *Have we reached a limit to accuracy in estimating traits from leaf spectra?* Remote Sensing Laboratories, University of Zurich. Invited seminar. May 2022.
- S. A. Kothari**, R. Beauchamp-Rioux, E. Laliberté and J. Cavender-Bares.

*Reflectance spectroscopy allows rapid, accurate, and non-destructive estimates of functional traits from pressed leaves.* ASCEND Biological Integration Institute. Invited seminar. April 2021.

**S. A. Kothari.** *Plant Physiological Responses to Solar Geoengineering: Knowns and (Mostly) Unknowns.* UMN Ecosystem Consequences of Solar Geoengineering Symposium. Talk. November 2019.

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

**S. A. Kothari** (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.

Contributed  
Research  
Presentations

**S. A. Kothari,** F. Blanchard, S. Demers-Thibeault, and E. Laliberté. *Fine-scale edaphic control of leaf senescence in winter-deciduous trees.* Ecological Society of America/Canadian Society of Ecology and Evolution. Talk. August 2022.

**S. A. Kothari** and E. Laliberté. *Predicting leaf traits across functional groups using reflectance spectroscopy.* Quebec Centre for Biodiversity Science 2021. Long poster. December 2021.

**S. A. Kothari,** R. Beauchamp-Rioux, E. Laliberté and J. Cavender-Bares. *Reflectance spectroscopy allows rapid, accurate, and non-destructive estimates of functional traits from pressed leaves.* Botanical Society of America 2021. Talk. July 2021.

**S. A. Kothari,** S. E. Hobbie and J. Cavender-Bares. *Rapid estimates of leaf litter chemistry and decomposition using reflectance spectroscopy.* Ecological Society of America 2020. Talk. August 2020.

**S. A. Kothari,** R. Montgomery and J. Cavender-Bares. *Throwing shade: Light-mediated facilitation and competition in a tree diversity experiment.* Ecological Society of America 2019. Talk. August 2019.

**S. A. Kothari,** R. Montgomery, S. E. Hobbie, P. Reich 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.

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

**S. A. Kothari,** J. Cavender-Bares, A. K. Schweiger, P. A. Townsend, S. E. Hobbie

and R. Montgomery. *Nitrogen uptake and crown-level allocation across an experimental tree diversity gradient*. Ecological Society of America 2017. Talk. August 2017.

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

Educational  
Presentations

**S. A. Kothari**. *Light, soil, action! Drivers of carbon storage in the Forests and Biodiversity (FAB) experiment*. Cedar Creek Ecosystem Science Reserve, Lunch with a Scientist. Invited lecture. March 2023 (forthcoming).

**S. A. Kothari**. *Competition and Facilitation*. University of Minnesota–Duluth, Dr. Jessica Savage’s Plant Physiology Class. Guest lecture. February 2022.

**S. A. Kothari**. *Biodiversity and Ecosystem Function*. University of Minnesota, Dr. Jesus Pinto-Ledezma’s Biodiversity Science Class. Guest lecture. March 2020.

**S. A. Kothari**. *Spectral Properties of Leaves and Plants*. University of Minnesota, Dr. Jen Teshera-Levy’s Plant Physiological Ecology Class. Guest lecture. February 2020.

**S. A. Kothari**. *How Much Light Does a Plant Need?* Macalester College, Dr. Mary Heskell’s Plant Ecophysiology Class. Guest lecture. November 2019.

**S. A. Kothari**. *The Other Darwin*. University of Minnesota Darwin Day. Invited lecture. February 2018.

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

Symposia and  
Workshops  
Organized

*Ecosystem Consequences of Solar Geoengineering*, with Sumil Thakrar. University of Minnesota, 2019. Day-long symposium.

*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.

Awards and  
Funding

- Harvard Arnold Arboretum Putnam Fellowship (\$106,000; declined) 2022
- UMN Hamm Award for Outstanding Plant Science Student (\$1500) 2020
- Fulbright/Swiss Government Excellence Scholarship (\$30,000; declined) 2019
- UMN Doctoral Dissertation Fellowship (\$25,000) 2019

- UMN Plant Biological Sciences Travel Grants (\$3760) 2015-9
- UMN International Thesis Research Travel Grant (\$3300) 2019
- Alexander & Lydia Anderson Grant (\$3000) 2019
- Travel Mini-Grant, NSF Cross-Scale Biodiversity RCN (\$2000) 2019
- Cedar Creek Graduate Research Fellowships (\$6000) 2016-8
- Carolyn Crosby Research Grant (\$3000) 2016
- AAAS/Science Program for Excellence in Science 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
- Goldwater Scholarship Honorable Mention 2012
- MSU Professorial Assistantship (\$4,000) 2010
- MSU Alumni Distinguished Scholarship (full ride) 2010

- Mentoring
- Britney Millman, Cedar Creek Intern 2018  
Project title: Dimming the light: the effects of CO<sub>2</sub> on photosynthetic light-use efficiency
- 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 2017  
Project title: Quantifying nitrogen's impact on C<sub>3</sub> and C<sub>4</sub> grass on the aniso- / isohydric continuum (co-mentored with Kaitlin Kimmel)
- 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 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 (co-mentored with Jake Grossman)

- Service
- Associate Editor, *AoB PLANTS* (2022-)
  - Advisory Board, *New Phytologist* (2021-2024)
  - Co-founder and lead organizer, UMN Physiological Ecology Group
  - Representative, UMN College of Biological Sciences Graduate Student Board
  - Representative, UMN Council of Graduate Students
  - Representative, UMN College of Biological Sciences Diversity & Initiatives Committee
  - Officer, Phytograds (UMN Plant Biology student association)

- Student Liaison, Physiological Ecology Section, Ecological Society of America
- Organizer, Jackson Middle School Eco-Extravaganza
- Reviewer for *Global Ecology and Biogeography* (5), *New Phytologist* (4), *Ecography* (3), *Biotropica* (2), *Oikos* (2), *Ecology and Evolution* (2), *Journal of Ecology* (1), *Ecology* (1), *American Naturalist* (1), *Annals of Botany* (1), *Functional Ecology* (1), *Oecologia* (1), *Ecosphere* (1), *PeerJ* (1), *AoB PLANTS* (1), *Northwest Science* (1)
- Market Science (2015-20)—created and led sessions on Plant Chemistry, Remote Sensing, the Biology of Sunscreen, and Counting Nature
- Judge at Minnesota State Science Fair (2015, 2017), Winchell Undergraduate Research Symposium (2015)