

Shan A. Kothari (he/him)

Contact Information	Phone: (734) 502-2817 E-mail: shan.kothari@umontreal.ca	
Research Interests	Plant physiological ecology, remote sensing, phenology, nutrient economics, community assembly	
Professional Appointments	Université du Québec à Montréal, Montréal, QC Postdoctoral researcher Supervisor: Alain Paquette Université de Montréal, Montréal, QC Postdoctoral researcher , Institut de recherche en biologie végétale Supervisor: Etienne Laliberté	2022—present 2020—2022
Education	University of Minnesota—Twin Cities, Falcon Heights, MN Ph.D. , 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) Michigan State University, East Lansing, MI B.S. , Zoology, Spec. in Ecology, Evolution, and Organismal Biology B.S. , Anthropology Minor, Mathematics 3.97/4.0 overall GPA, Honors College	2014—2020 2010—2014
Teaching Experience	Teaching Assistant PMB 3005W: Plant Function Lab University of Minnesota Lead instructor: David Marks Volunteer Teaching Assistant EEB 4068/5068: Plant Physiological Ecology University of Minnesota Lead instructor: Jeannine Cavender-Bares	Spring 2019 Spring 2016
Publications	S. A. Kothari. When and how does photoinhibition matter for plant fitness? <i>EcoEvoRxiv</i> DOI: https://ecoevorxiv.org/zcv2r (in revision, invited at <i>American Journal of Botany</i>) S. A. Kothari, 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. Zygielbaum 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; *equal contributors)
- 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

	<ul style="list-style-type: none"> • 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	<p>Britney Millman, Cedar Creek Intern 2018 Project title: Dimming the light: the effects of CO₂ on photosynthetic light-use efficiency</p> <p>Andrew Landsem, Cedar Creek Intern 2018 Project title: Raspberry abundance and soil salinity levels along road edges</p> <p>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</p> <p>Jacob Becker and Valerie Gehn, Cedar Creek Interns 2017 Project title: Quantifying nitrogen's impact on C₃ and C₄ grass on the aniso- / isohydric continuum (co-mentored with Kaitlin Kimmel)</p> <p>Emily Geary, Cedar Creek Intern 2016 Project title: Mapping migration corridors and land use of Northern Saw-whet owls in Minnesota</p> <p>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)</p>
Service	<ul style="list-style-type: none"> • Associate Editor, <i>AoB PLANTS</i> (2022-) • Advisory Board, <i>New Phytologist</i> (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)