

JULIANA S. MEDEIROS

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EDUCATION

PhD Biology. 2009. Physiological Plant Ecology. *The University of New Mexico.*

MS Biology. 2003. *The University of New Mexico.*

BS Biology cum laude. 2000. *The University of New Mexico.*

PROFESSIONAL POSITIONS

Plant Biologist. March 2013 – Present. *Holden Forests & Gardens.*

Committee Chair. April 2019 – Present. *Research Committee of the American Rhododendron Society Rhododendron Research Foundation.*

Committee member. April 2018 – April 2019. *Research Committee of the American Rhododendron Society Rhododendron Research Foundation.*

Board of Directors. October 2017 – Present. *Great Lakes Chapter of the American Rhododendron Society.*

Committee co-chair. July 2017 – Present. *American Rhododendron Society Rhododendron Research Network.*

Adjunct Assistant Professor. August 2015 – Present. *Case Western Reserve University.*

Adjunct Assistant Professor. May 2013 – Present. *Kent State University.*

Postdoctoral Fellow. 2010 – 2013. *The University of Kansas.*

Adjunct Faculty. 2011 – 2012. *Haskell Indian Nations University.*

Director. 2008 – 2009. *Sevilleta LTER/GK12 Summer Internship Program.*

Research Intern. 2001. *The New York Botanical Garden.*

PEER REVIEWED PUBLICATIONS

- (25) Kattge J, G Bonisch, S Diaz, ...**JS Medeiros**..., et al. *In press*. TRY plant trait database – enhanced coverage and open access. *Global Change Biology*.
- (24) Caruso CM, CM Mason and JS Medeiros. *In press*. The evolution of functional traits in plants: is the giant still sleeping? *International Journal of Plant Sciences*.
- (23) **Medeiros JS**, CR Hewins, AW Baumgardner and JH Burns. *In press*. Shifts in phenology and plant architecture across genus *Rhododendron* highlight different ways to become more acquisitive despite universally conservative xylem anatomy. *International Journal of Plant Sciences*.
- (22) Liu B, Y-P Xia, SL Krebs, **J Medeiros** and R Arora. 2019. Seasonal response to cold and light stresses by two elevational ecotypes of *Rhododendron catawbiense*: a comparative study of overwintering strategies. *Environmental and Experimental Botany* 163: 86-96.
- (21) **Medeiros JS**, Y Liu and JH Burns. 2019. The unique value of genus *Rhododendron* for investigating the evolutionary ecology of root-microbe interactions. *Rhododendrons International* 3: 66-81.
- (20) **Medeiros JS** and E Nilsen. 2019. The *Rhododendron* Research Network: Promoting and enhancing *Rhododendron* research through interdisciplinary collaboration and public engagement. *Rhododendrons International* 3: 1-7.
- (19) **Medeiros JS**, F Lens, S Jansen and H Maherali. 2019. Vestured pits and scalariform perforation plate morphology modify the relationships between angiosperm vessel traits, climate and maximum plant height. *New Phytologist*.
- (18) Burke DJ, MK Klenkar and **JS Medeiros**. 2018. The effects of mycorrhizal colonization, water reduction, and neighboring plant species on seedling growth and physiological performance of two forest wildflowers. *International Journal of Plant Sciences* 179: 314–324.
- (17) **Medeiros JS** and SC Danielson. 2018. Renewed interest in whole-plant physiology sheds light on the complexity of plant stress response architecture. *Tree Physiology* 38: 503–506.

- (16) **Medeiros JS**, JH Burns, J Nicholson, L Rogers and O Valverde-Barrantes. 2017. Decoupled leaf and root carbon economics is a key component in the ecological diversity and evolutionary divergence of deciduous and evergreen lineages of genus *Rhododendron*. *American Journal of Botany* 104: 1-14.
Editor's Choice, featured in "Highlights: A quick glance at noteworthy articles in this month's issue" 10.3732/ajb.1700970
- (15) **Medeiros JS**, NJ Tomeo, CR Hewins and DM Rosenthal. 2016. Fast-growing *Acer rubrum* differs from slow-growing *Quercus alba* in leaf, xylem and hydraulic trait coordination responses to simulated acid rain. *Tree Physiology* 36: 1032-1044.
- (14) **Medeiros JS**, A Begaye, DT Hanson, B Logan and WT Pockman. 2015. Photoprotective response to chilling differs among high and low latitude *Larrea divaricata* grown in a common garden. *Journal of Arid Environments* 120: 51-54.
- (13) Westerband A, M Dovciak, G La Quay-Velasquez and **JS Medeiros**. 2015. Aspect reduces soil moisture and tree cover, but not nitrogen mineralization or grass cover in semi-arid pinyon-juniper woodlands of the southwestern United States. *Southwestern Naturalist* 60: 21-29.
- (12) **Medeiros JS** and WT Pockman. 2014. Freezing regime and trade-offs with water transport efficiency generate variation in xylem structure across diploid populations of *Larrea sp.* *American Journal of Botany* 101: 598-607.
- (11) Becklin KM*, **JS Medeiros***, KR Sale and JK Ward. 2014. Evolutionary history underlies plant physiological responses to global change since the Last Glacial Maximum. *Ecology Letters* 17: 691-699. *Co-first authors
- (10) **Medeiros JS** and JK Ward. 2013. Increasing atmospheric [CO₂] from glacial through future levels affects drought tolerance via impacts on leaves, xylem and their integrated function. *New Phytologist* 199: 738-748.
- (9) **Medeiros JS**, DL Marshall, H Maherali and WT Pockman. 2012. Variation in seedling freezing response is associated with climate in *Larrea*. *Oecologia* 169: 73-84.
- (8) **Medeiros JS** and WT Pockman. 2011. Drought increases freezing tolerance in both leaves and xylem of *Larrea tridentata*. *Plant, Cell and Environment* 34: 43-51.

- (7) D'Odorico P, JD Fuentes, WT Pockman, SL Collins, Y He, **JS Medeiros**, S DeWekker and ME Litvak. 2010. Positive feedback between microclimate and shrub encroachment in the northern Chihuahuan desert. *EcoSphere* 1: 1-11.
- (6) Marshall DL, AP Tyler, MGM Shaner, NJ Abrahamson, JJ Avritt, MG Barnes, LL Larkin, **JS Medeiros**, J Reynolds, HL Simpson and S Maliakal-Witt. 2010. Pollen performance of *Raphanus sativus* (Brassicaceae) declines over time in response to elevated [CO₂]. *Sexual Plant Reproduction* 23: 325-336.
- (5) Diggle P, NJ Abrahamson, RL Baker, MG Barnes, TL Koontz, CR Lay, **JS Medeiros**, JL Murgel, MGM Shaner, HL Simpson, CC Wu and DL Marshall. 2010. Dynamics of maternal and paternal effects on embryo and seed development in wild radish (*Raphanus sativus*). *Annals of Botany* 106: 309-319.
- (4) **Medeiros JS** and WT Pockman. 2010. Carbon gain and hydraulic limits on water use differ between size classes of *Larrea tridentata*. *Journal of Arid Environments* 74: 1121-1129.
- (3) Marshall DL, J. Avritt, S Maliakal-Witt, **JS Medeiros** and MGM Shaner. 2010. The impact of plant and flower age on mating patterns. *Annals of Botany* 105: 7-22.
- (2) Marshall DL, J Reynolds, NJ Abrahamson, HL Simpson, MG Barnes, **JS Medeiros**, S Walsh, DM Oliveras and JJ Avritt. 2007. Do differences in plant and flower age change mating patterns and alter offspring fitness in *Raphanus sativus* (Brassicaceae)? *American Journal of Botany* 94: 409-418.
- (1) Marshall DL, NJ Abrahamson, JJ Avritt, PM Hall, **JS Medeiros**, J Reynolds, MGM Shaner, HL Simpson, AN Trafton, AP Tyler and S Walsh. 2004. Differences in plastic responses to defoliation due to variation in the timing of treatments for two species of *Sesbania* (Fabaceae). *Annals of Botany* 95: 1049-1058.

MANUSCRIPTS IN PREPARATION

- (4) **Medeiros JS**, JH Burns, A Case and A Roddy. The carbon economy of *Rhododendron* flowers in relation to leaf economics. For submission to *Functional Ecology*.

- (3) Duong F and **JS Medeiros**. Comparative leaf anatomy of *Rhododendron* in relation to leaf function and other plant traits. For submission to *Functional Plant Biology*.
- (2) Danielson SD, L Sack and **JS Medeiros**. Variation in leaf economics and leaf functional traits among *Rhododendron* species. For submission to *Plant, Cell and Environment*.
- (1) **Medeiros JS**, M Mann, JH Burns and DJ Burke. Leaf and rhizosphere microbial communities are phylogenetically structured in genus *Rhododendron* with implications for pathogenic and symbiotic microbial associations. For submission to *Oecologia*.

TEACHING AND OUTREACH PUBLICATIONS

- (11) **Medeiros JS** and ET Nilsen. 2018. An overview of some current scientific research utilizing the collections at the RSBG. *Rhododendron Species Foundation Yearbook* 13:107-113.
- (10) Danielson SC and **JS Medeiros**. 2017. You Can't "Leaf Out" the Importance of Water. *Journal of the American Rhododendron Society*.
- (9) **Medeiros JS**. 2017. Rhododendron Research Network: Fostering collaboration in a model study system to promote innovation. *Holden Forests & Gardens*.
- (8) **Medeiros JS**. 2017. *Rhododendron minus*. *American Rhododendron Society Great Lakes Chapter Newsletter* 58: 5.
- (7) **Medeiros JS**. 2016. Pretty plus: living collections for research and conservation. *Holden Forests & Gardens* 1.
- (6) **Medeiros JS**. 2016. Azalea Research Foundation Progress Report. *The Azalean* 38.
- (5) **Medeiros JS**. 2015. What Holden's collections can tell us about climate change. *Leaves* 13.
- (4) **Medeiros JS**. 2011. University of New Mexico GK12 project description. *In The NSF GK12 Program: A decade of innovation in graduate STEM training and K12 learning. American Association for the Advancement of Science* 87.
- (3) Mygatt J and **JS Medeiros**. 2009. Lab Manual to the Flora of New Mexico: UNM Biol 463L-563L.

- (2) **Medeiros JS.** 2002. Hidden Symbiosis: a match made underfoot. *Native Plant Society of New Mexico Newsletter* 27: 8-9.
- (1) **Medeiros JS** and D Stevenson. 2001. Coralloid roots and nitrogen fixation. *The Cycad Pages*. <http://plantnet.rbgsyd.nsw.gov.au/PlantNet/cycad/nitrogen/nfixcontents.html>

GRANTS, AWARDS AND HONORS

- (18) **Research Grant.** 2019. Co-PI. National Science Foundation Division of Biological Sciences: Collaborative Research: Scale-dependent processes as the drivers for understanding range- and niche-expansion in a widespread native species. Total award: \$914,000, award to Co-PI Medeiros \$234,005.
- (17) **Conference Grant.** 2017. Collaborator (PI J Nippert). National Science Foundation Division of Biological Sciences: Phys-Fest2. \$49,000.
- (16) **Research Grant.** 2015. PI. Azalea Society of America Research Fund: Leaf hydraulic conductance of deciduous, evergreen and semi-evergreen Rhododendrons: diverse solutions to the problems presented by evaporative demand. \$4988.
- (15) **Research Grant.** 2015. PI. American Rhododendron Society Research Fund: Leaf hydraulic conductance of deciduous, evergreen and semi-evergreen Rhododendrons: diverse solutions to the problems presented by evaporative demand. \$5194.
- (14) **Conference Grant.** 2014. Co-PI. Gordon Research Conference “Multiscale Plant Vascular Biology”. \$19,500.
- (13) **Featured scientist.** 2011. “Where are our scientists now?” New York Botanical Garden News.
- (12) **Fellowship.** 2011. Gordon Conference Carl Storm Underrepresented Minority Travel Fund. \$500.
- (11) **Fellowship.** 2010 – 2013. University of Kansas (KU) Institutional Research and Academic Career Development Award (IRACDA).
- (10) **Stipend.** 2009. Sevilleta Long Term Ecological Research (LTER) Graduate Student Summer Research Fund.

- (9) **Best Graduate Student Oral Presentation.** 2009. University of New Mexico (UNM) Department of Biology Research Day.
- (8) **Research Grant.** 2008. PI. UNM Graduate Research Development Fund. \$3000.
- (7) **Research Grant.** 2008. PI. UNM Specialized Travel Grant. \$1000.
- (6) **Fellowship.** 2006 – 2008. NSF Graduate STEM Fellowship in K12 Education (GK12).
- (5) **Research Grant.** 2006. PI. UNM Department of Biology Graduate Research Grant Fund. \$250.
- (4) **Research Grant.** 2006. PI. UNM Graduate and Professional Student Association Student Research Fund. *Award amount:* \$500.
- (3) **Research Grant.** 2006. PI. UNM Research Project and Travel Fund. \$800.
- (2) **Research Grant.** 2006. PI. UNM Latin American Iberian Institute Field Research Fund. \$1200.
- (1) **Stipend.** 2001 & 2002. Sevilleta LTER Summer Research Fund.

PROPOSALS SUBMITTED

- (13) Ryan Martin (PI), Sarah Diamond (Co-PI) and **JS Medeiros (Co-PI)**. 2019 National Science Foundation Rules of Life FELS EAGER: Uncovering the rules that structure city life: how physiological plasticity determines urban success. Pre-proposal, no budget required.
- (12) David Ward (PI), **JS Medeiros (Co-PI)** and Oscar Rocha (Co-PI). 2018. National Science Foundation Division of Biological Sciences Population and Community Ecology: Collaborative Research: Scale-dependent processes as the drivers for understanding range- and niche-expansion in a widespread native species. *Requested amount:* \$253,027 apportioned to Holden, \$1,047,390 Total. *Funded amount* \$914,000, award to Co-PI Medeiros \$234,005.

- (11) Burns JH (PI) and **JS Medeiros (Co-PI)**. 2018. Horticultural Research Institute: Understanding disease resistance to root rot disease (*Phytophthora cinnamomi*) across species of Rhododendrons. *Requested amount*: \$35,698.
- (10) Nippert J (PI) and **JS Medeiros (Collaborator)**. 2017. National Science Foundation Division of Biological Sciences: Phys-Fest2. *Requested amount*: \$49,000.
- (9) **Medeiros JS (Co-PI)**, D Burke and JH Burns. 2016. National Science Foundation, Division of Integrated Organismal Systems Plant-Biotic Interactions: Comparative Microbiomics: Host plant evolutionary history, plant traits and microbiome composition determine leaf and root disease resistance. *Requested amount*: \$792,771.
- (8) **Medeiros JS (PI)**. 2015. Azalea Society of America Research Proposal: Leaf hydraulic conductance of deciduous, evergreen and semi-evergreen Rhododendrons: diverse solutions to the problems presented by evaporative demand. *Requested amount*: \$4988.
- (7) **Medeiros JS (PI)**. 2015. American Rhododendron Society Research Proposal: Leaf hydraulic conductance of deciduous, evergreen and semi-evergreen Rhododendrons: diverse solutions to the problems presented by evaporative demand. *Requested amount*: \$5194.
- (6) **Medeiros JS (PI)** and JH Burns. 2015. National Science Foundation, Division of Integrated Organismal Systems Preliminary Proposal: Collaborative Research: Uncovering the relative roles of phylogenetic constraints and physiological trait integration in the evolution of the niche. *Requested amount*: not applicable for pre-proposals.
- (5) **Medeiros JS (PI)**, D Burke, B Mulvey and B Morris. 2014. National Science Foundation, Advancing Informal STEM Learning: Collaborative Research: SEARCH: an innovative tool for K12 inquiry teaching, training and learning at Public Gardens. *Requested amount*: \$1,043,710 appropriated to Holden; \$1,849,307 Total.
- (4) **Medeiros JS (Co-PI)**, WT Pockman (Co-PI) and B Lachenbruch. 2014. New Gordon Conference Proposal: Plant Water Transport. *Requested amount*: funding rate at the discretion of the sponsor.
- (3) **Medeiros JS (PI)** and JH Burns. 2014. National Science Foundation, Division of Integrated Organismal Systems Preliminary Proposal: Collaborative Research: Phylogenetic

perspectives on functional trait integration: uncovering the mechanistic basis of the stress/growth trade-off in genus *Rhododendron*. *Requested amount*: not applicable for pre-proposals.

- (2) **Medeiros JS (Co-PI)**, WT Pockman (Co-PI) and B Lachenbruch. 2013. New Gordon Conference Proposal: Plant Water Transport. *Requested amount*: funding rate at the discretion of the sponsor.
- (1) **Medeiros JS (PI)**. 2011. National Science Foundation Polar Programs Postdoctoral Fellowship: Evolution of Climate Tolerance in Antarctic Plants Over a Glacial/Interglacial Transition: Modeling Hydraulic Function of Fossil Xylem. *Requested amount*: \$143,710.

INVITED SEMINARS

- (15) **Medeiros JS**. 2019. Outreach, Alt-Ac and the Leaky Pipeline. *Texas A&M 2019-2020 Seminar Series*, College Station, Texas.
- (14) **Medeiros JS**. 2019. Drinking the ocean through a straw: *Rhododendron* strategies for rapid growth under water limitation. *American Rhododendron Society Fall Meeting*, Parksville, Canada.
- (13) **Medeiros JS**. 2018. The Secret Life of *Rhododendron* Roots. *Niagara Chapter of the American Rhododendron Society Fall Meeting*, Niagara-on-the-Lake, Canada.
- (12) **Medeiros JS**. 2018. Variable trait coordination across deciduous and evergreen lineages of genus *Rhododendron*. *Botanical Society of American Annual Meeting Ericaceae Colloquium*, Rochester, MN.
- (11) **Medeiros JS**. 2018. Living within your means: matching the right leaves and roots for fast growth in *Rhododendron*. *Cleveland Museum of Natural History: Inside Science*. Cleveland, OH.
- (10) **Medeiros JS**. 2017. When going slow makes you go fast: matching the right roots to fast-growing leaves in *Rhododendron*. *Cleveland State University*, Cleveland, OH.

- (9) **Medeiros JS.** 2016. When going slow makes you go fast: matching the right roots to fast-growing leaves in *Rhododendron*. *Bowling Green State University*, Bowling Green, OH.
- (8) **Medeiros JS.** 2015. Roots and wings: ancestry and climate determine root morphology in genus *Rhododendron* with implications for ecological interactions in a changing world. *The Holden Arboretum*, Kirtland, OH.
- (7) **Medeiros JS.** 2014. Natural History Collections: a key to understanding the ecological and evolutionary consequences of climate change. *Kent State University*, Kent, OH.
- (6) **Medeiros JS.** 2013. Natural History Collections: a key to understanding the ecological and evolutionary consequences of climate change. *Case Western Reserve University*, Cleveland, OH.
- (5) **Medeiros JS.** 2012. Variation in plant structure and function: linking physiology to ecology and evolution in a changing world. *The Holden Arboretum*, Kirtland, OH.
- (4) **Medeiros JS.** 2012. Plant physiological responses to changing [CO₂]: looking back to the past to predict the future. *Haskell Indian Nations University*, Lawrence, KS.
- (3) **Medeiros JS.** 2011. Evolutionary constraints and plasticity in plant form and function: a climate change story. *Kansas State University*, Manhattan, KS.
- (2) **Medeiros JS.** 2011. Evolutionary constraints and plasticity in plant form and function: a climate change story. *University of Richmond*, Richmond, VA.
- (1) **Medeiros JS.** 2011. Causes and consequences of functional trait variation: a key to understanding plant population responses to past and future climate change. *Smith College*, Northampton, MA.

PRESENTATIONS AT SCIENTIFIC MEETINGS

- (24) **Medeiros JS, F Duong.** 2019. Oral presentation: Keep expecting the unexpected: functional Trait coordination in genus *Rhododendron* *Botanical Society of America Annual Meeting*, Tucson, AZ.

- (23) **Medeiros JS**, C Hewins, A Baumgardner and JH Burns. 2018. Oral presentation: Variable trait coordination across deciduous and evergreen lineages of genus *Rhododendron*. *Botanical Society of America Annual Meeting*, Rochester, MN.
- (22) **Medeiros JS**, C Hewins, A Baumgardner and JH Burns. 2018. Poster presentation: Leaf-xylem coordination across the leaf economic spectrum in *Rhododendron*. *Gordon Research Conference on Multiscale Plant Vascular Biology*, West Dover, VT.
- (21) **Medeiros JS**, C Hewins and JH Burns. 2017. Oral presentation: Living within your means: low variability in *Rhododendron* wood traits constrains hydraulic supply but some clades mitigate through increased leaf variability or face increased hydraulic risk. *Society for the Study of Evolution Annual Meeting*, Portland, OR.
- (20) **Medeiros JS**, JH Burns, J Nicolson, L Rogers and OJ Valverde-Barrantes. 2016. Poster presentation: Decoupled leaf and root carbon economics is a key component in the ecological diversity and evolutionary divergence of deciduous and evergreen lineages of genus *Rhododendron*. *Kent State Land-Water Symposium*, Kent, OH.
- (19) **Medeiros JS**. 2014. Poster presentation: *Larrea* populations exhibit multiple solutions to freezing stress with contrasting implications for persistence in a warming world. *Society for the Study of Evolution Annual Meeting*, Raleigh, NC.
- (18) **Medeiros JS**, C Hewins, R Serbet, EL Taylor, TN Taylor and JK Ward. 2013. Oral presentation: Evidence for xylem adaptations to drought in ancient *Cordaites* of the Carboniferous. *American Geophysical Union Annual Meeting*, San Francisco, CA.
- (17) **Medeiros JS**, CR Hewins, R Serbet, EL Taylor, TN Taylor and JK Ward. 2013. Oral presentation: Evidence for xylem adaptations to drought in ancient *Cordaites* of the Carboniferous. *Ecological Society of America Annual Meeting*, Minneapolis, MN.
- (16) **Medeiros JS** and JK Ward. 2012. Oral presentation: Hydraulic adjustments alter limits on transpiration at glacial vs. current and future predicted atmospheric [CO₂]. *ESA Annual Meeting*, Portland, OR.
- (15) **Medeiros JS**, KM Becklin and JK Ward. 2012. Oral presentation: Plant physiological responses to rising atmospheric [CO₂] since the Last Glacial Maxima. *Botanical Society of America Annual Meeting*, Columbus, OH.

- (14) **Medeiros JS**, KM Becklin and JK Ward. 2012. Poster presentation: Leaves from ancient packrat middens reveal differences between plant families in physiological response to rising atmospheric [CO₂] since the Pleistocene. *IRACDA Annual Conference*, Philadelphia, PA.
- (13) **Medeiros JS** and JK Ward. 2011. Poster presentation: Hydraulic adjustments alter limits on transpiration at glacial versus future [CO₂]. *IRACDA Annual Conference*, Houston, TX.
- (12) **Medeiros JS** and JK Ward. 2011. Poster presentation: Hydraulic adjustments alter limits on transpiration at glacial versus future [CO₂]. *Gordon Research Conference, CO₂ assimilation in plants: Genome to Biome*, Les Diablerets, Switzerland.
- (11) **Medeiros JS** and WT Pockman. 2010. Oral presentation: Plastic and genetic variation in xylem vessel diameter and wood structure among high and low latitude populations of diploid *Larrea sp.* in North and South America. *ESA Annual Meeting*, Pittsburgh, PA.
- (10) **Medeiros JS** and WT Pockman. 2009. Poster presentation: Local adaptation and the potential for the evolution of higher freezing tolerance of *Larrea tridentata* and *L. divaricata* seedlings from three field sites differing in mean annual temperature. *ESA Annual Meeting*, Albuquerque, NM.
- (9) **Medeiros JS** and WT Pockman. 2009. Oral and poster presentations: Drought increases freezing tolerance in leaves and xylem of *Larrea tridentata*. *American Society of Plant Biologists Western Section Meeting*, Tucson, AZ.
- (8) **Medeiros JS** and WT Pockman. 2009. Oral presentation: Drought increases freezing tolerance in leaves and xylem of *Larrea tridentata*. *University of New Mexico Research Day*, Albuquerque, NM.
- (7) **Medeiros JS** and WT Pockman. 2008. Poster presentation: Variation in physiological responses to freezing in a high latitude population of *Larrea tridentata*. *ESA Annual Meeting*, Milwaukee, WI.
- (6) **Medeiros JS** and K Meathenia. 2008. Oral presentation: A Critical Thinking Approach to Teaching Scientific Inquiry. *ESA Annual Meeting*, Milwaukee, WI.
- (5) **Medeiros JS** and WT Pockman. 2007. Oral presentation: Freezing tolerance in high and low latitude populations of *Larrea tridentata*: Evidence for local adaptation to long-term

minimum temperature. *Greater Rocky Mountain Population Biologists Annual Meeting*, Abiquiu, NM.

- (4) **Medeiros JS** and WT Pockman. 2007. Poster presentation: Freezing tolerance in high and low latitude populations of *Larrea tridentata*: Evidence for local adaptation to long-term minimum temperature. *ESA Annual Meeting*, San Jose, CA.
- (3) **Medeiros JS** and WT Pockman. 2005. Oral presentation: Hydraulic constraints on transpiration in two size classes of *Larrea tridentata*. *ESA Annual Meeting*, Montreal, Canada.
- (2) **Medeiros JS** and WT Pockman. 2004. Poster presentation: Hydraulic constraints on two size classes of *Larrea tridentata*. *ESA Annual Meeting*, Portland, OR.
- (1) **Medeiros JS** and WT Pockman. 2003. Poster presentation: Hydraulic constraints in two size classes of *Larrea tridentata*. *LTERR All Scientists Meeting*, Seattle, WA.

INVITED WORKSHOPS

Plant Hydraulics Techniques. September 17-19, 2014. University of Ulm, Germany.

GRADUATE STUDENT MENTORSHIP

Weijia Xie. Fall 2019 – Fall 2020. One-year visiting PhD Scholar from the Yunnan Flower Research Institute and the Yunnan Agricultural University, The relationship between heat tolerance and floral traits in *Rhododendron*.

Yu “Grant” Liu. Fall 2018. CWRU independent study course reader: Biology 599, The role of seasonal changes of photochemistry in plant energy dissipation given light differences and CO₂ elevation.

Andy Lance. Spring 2018 – Present. Dissertation committee member. Case Western Reserve University.

Anna Osvoldsson. Spring 2018 – Summer 2019. Dissertation committee member. Case Western Reserve University.

Sharon Danielson. Fall 2017 – Present. Primary advisor: Case Western Reserve University.
Physiological and evolutionary ecology of urban and rural trees.

Samia Hamati. Fall 2017 – Present. Primary co-advisor with Dr. David Ward, Kent State University. Frost physiology of *Juniperus virginiana*, a grassland invasive, at the northern limits of the species distribution.

Yu “Grant” Liu. Spring 2017. CWRU independent study course reader: Biology 599,
Estimating a phylogeny of 24 *Rhododendron* species from both nuclear DNA regions RPB2I, ITS and chloroplast DNA regions matK, trnL-trnF.

Sharon Danielson. Fall 2015 – 2017. Project mentor: Leaf hydraulic conductance in deciduous, evergreen and semi-evergreen *Rhododendrons*. *Holden Arboretum Norweb Fellowship Intern Program.*

Jennifer Murphy. Fall 2014. CWRU independent study course reader: Biology 599, The effect of negative and positive intraspecific interactions on the performance of the highly invasive shrub, *Rosa multiflora* across a soil moisture gradient.

UNDERGRADUATE MENTORSHIP

Raphaella Mascia. Summer 2019. Project mentor: Plant functional traits in urban and rural tree communities. *Holden Arboretum Undergraduate Intern Program.*

Madison Metzger. Summer 2019. Project mentor: Plant functional traits in urban and rural tree communities. *Holden Arboretum Undergraduate Intern Program.*

Fiona Duong. Summer 2018. Project mentor: Leaf anatomical variation in genus *Rhododendron*. *Holden Arboretum Undergraduate Intern Program.*

Bryce O’Brien. Summer 2018. Project mentor: Photoprotective pigment response to cold acclimation across populations of *Rhododendron minus*. *Holden Arboretum Undergraduate Intern Program.*

Madison Proctor. Summer 2017. Project mentor: Effects of Inkharo rootstock on the performance and morphology of *Rhododendron* cultivars. *Holden Arboretum Undergraduate Intern Program.*

Aaron Baumgardner. Summer 2016. Project mentor: Leaf venation patterns of deciduous, evergreen and semi-evergreen *Rhododendron* species from different climates. *Holden Arboretum Undergraduate Intern Program.*

Michael Mann. Summer 2016. Project mentor: The leaf and root microbiome of *Rhododendron* species differing in *Phytophthora* root rot resistance. *Holden Arboretum Undergraduate Intern Program.*

Conor Heffer. Summer 2016. Project mentor: Leaf anatomical variation in genus *Rhododendron.* *Holden Arboretum Undergraduate Intern Program.*

Louisa Rogers. Summer 2015. Project mentor: Root morphological variation in genus *Rhododendron.* *Kent State/Holden Arboretum Research Experiences for Undergraduates (REU).*

Rahne McIntire. Summer 2015. Project mentor: Photosynthesis in genus *Rhododendron.* *Holden Arboretum Summer Internship.*

Callie Dowrey. Summer 2015. Project mentor: Leaf anatomical variation in genus *Rhododendron.* *Holden Arboretum Summer Internship.*

Jaynell Nicholson. Summer 2014. Project mentor: Root morphological variation in genus *Rhododendron.* *Kent State/Holden Arboretum Research Experiences for Undergraduates (REU).*

Callie Dowrey. Summer 2014. Project mentor: Physiological evolution in genus *Rhododendron.* *Holden Arboretum Summer Internship.*

Katiuska Hernandez. Summer 2013. Project mentor: Physiological evolution in genus *Rhododendron.* *Kent State/Holden Arboretum Research Experiences for Undergraduates (REU).*

Dan Volk. Summer 2013. Project mentor: Ecological impacts of acid rain in NE temperate forests. *Holden Arboretum Summer Internship.*

Kayla Sale. 2011 – 2013. Project mentor: Modeling changes in plants gas exchange in response to changing [CO₂] and water availability since the last ice age. *University of Kansas (KU) Initiative to Maximize Student Development (IMSD).*

Zulondo Curley. Summer 2011. Project mentor: Plant responses to the interactive effects of low [CO₂] and water availability during the last ice age using ancient plant material from pack rat middens. *Haskell Indian Nations University BRIDGE*.

Charley Lewis. 2011 – 2013. Project mentor: Plant responses to the interactive effects of low [CO₂] and water availability during the last ice age using ancient plant material from pack rat middens. *Haskell Indian Nations University BRIDGE and KU Post-baccalaureate Research Education Program (PREP)*.

Susannah Tysor. Summer 2009. Meeting mentor: Ecological Society of America Annual Meeting in Albuquerque New Mexico. *ESA Strategies for Ecology Education, Diversity and Sustainability (SEEDS)*

Ashlee Begaye. 2009. Project mentor: Quantification of plant photo-protective pigments in high and low latitude populations of the genus *Larrea* from North and South America. *UNM PREP*.

Andrea Westerband. Summer 2009. Project mentor: The Physical and Chemical properties of soils under Piñon, Juniper and grass on the North and South-facing slopes of Los Piños Mountains. *Sevilleta LTER REU*.

Giomara La Quay. Summer 2009. Project mentor: The Physical and Chemical properties of soils under Piñon, Juniper and grass on the North and South-facing slopes of Los Piños Mountains. *Sevilleta LTER REU*.

Julie Glaser. 2008 – 2009. Undergraduate Senior Honors Thesis mentor: Quantification of plant photo-protective pigments in high and low latitude populations of the genus *Larrea* from North and South America. *UNM Department of Biology*.

K12 MENTORSHIP

Sara Ramaiah. Fall 2019. Project mentor: Leaf venation of *Rhododendron* species and hybrids. *Holden Arboretum Junior Volunteer, Mentor High School Senior Internship Program*.

Ava Fabian. Summer 2018. Project mentor: Effects of Inkharo rootstock on the performance and morphology of *Rhododendron* cultivars. *Holden Arboretum Junior Volunteer, Magnificat High School Senior Internship Program.*

John Love. Summer 2018. Project mentor: Rhododendron propagation and physiology. *Holden Arboretum Junior Volunteer, Mentor High School Senior Internship Program.*

Elsbeth Weiss. Summer 2017. Project mentor: Effects of Inkharo rootstock on the performance and morphology of *Rhododendron* cultivars. *Holden Arboretum Junior Volunteer, Hawken School Senior Internship Program.*

Sean Mullee. Summer 2015 – Spring 2016. Project mentor: Associations between flower color and cold hardiness in genus *Rhododendron*. *Holden Arboretum Junior Volunteer, Mentor High School Senior Internship Program.*

Amanda Leuty. May 2014. Project mentor: Ecological impacts of acid rain in NE temperate forests. *Holden Arboretum Junior Volunteer, Mentor High School Senior Internship Program.*

HOLDEN VOLUNTEER SUPERVISION

Anastasiya Karaivanova. July 2019. Project mentor: Leaf venation in genus *Rhododendron*. *Holden Arboretum Volunteer Program.*

Sarah Speroff. January – August 2017. Project mentor: Leaf anatomical variation in genus *Rhododendron*. *Holden Arboretum Volunteer Program.*

McKenzie Brizes. Summer 2017. Project mentor: Flower carbon economics. *Holden Arboretum Volunteer Program.*

Donna Kautz. Summer 2017. Project mentor: Flower carbon economics. *Holden Arboretum Volunteer Program.*

Susanne Earle. Fall 2016 – Present. Project mentor: Holden Research Archive. *Holden Arboretum Volunteer Program.*

JB Dunn. Fall 2017. Project mentor: Big data proof of concept website. *Holden Arboretum Volunteer Program.*

Kate DeFranco. Summer 2015 – 2016. Project mentor: Leaf morphological variation in genus *Rhododendron*. *Holden Arboretum Volunteer Program*.

Ron Mauk. September 2013 – Present. Project mentor: Eighty years of plant growth and survival in relation to climate at the Holden Arboretum. *Holden Arboretum Volunteer Program*.

Sandra Cobb. July 2013 – Present. Project mentor: Eighty years of plant growth and survival in relation to climate at the Holden Arboretum and Holden Arboretum Historic Archive. *Holden Arboretum Volunteer Program*.

Laurie Kalan. 2013. Project mentor: Eighty years of plant growth and survival in relation to climate at the Holden Arboretum. *Holden Arboretum Volunteer Program*.

PROFESSIONAL SERVICE

Guest Editor. International Journal of Plant Sciences Special Issue, The Evolution of Plant Functional Traits.

Reviewer and Assistant Editor. *Rhododendrons International* Volume 3.

Conference Co-Chair. 2018. Phys-Fest2.

Conference Co-Chair. 2014 – 2016. Gordon Research Conference “Multiscale Plant Vascular Biology 2016”

National Meeting Session Organizer. 2009. Organized Oral Session: Plant regulation of xylem hydraulic conductivity at multiple scales: Recent advances, future directions and ecological implications. *ESA Annual Meeting*.

National Meeting Session Organizer. 2008. Special Session: Pedagogical frameworks for teaching scientific inquiry: Lessons from GK12. *ESA Annual Meeting*.

Journal Review Board. 2016 – Present. *Tree Physiology*.

Journal Review Editor. 2016 – Present. *Frontiers Plant Abiotic Stress*.

Manuscript Reviewer. 2008 – Present. *American Naturalist*, *Annals of Botany*, *Ecological Monographs*, *Ecology and Evolution*, *Ecosphere*, *Evolutionary Ecology*, *Frontiers*,

Global Change Biology, International Journal of Plant Sciences, Journal of Arid Environments, Journal of the Torrey Botanical Club, Methods in Ecology and Evolution, New Forest, New Phytologist, Oecologia, Proceedings of the Royal Society B, Perspectives in Plant Ecology and Evolution, Plant Ecology, Plant Ecology and Diversity, Protoplasma, Tree Physiology.

HOLDEN SERVICE

Organizer. 2019. Rhododendron Weekend. *Holden Forests & Gardens.*

Committee Member. 2019 – Present. BioAlliance. *Holden Forests & Gardens.*

Committee Member. 2018 – Present. Internet Technology Committee. *Holden Forests & Gardens.*

Project Lead. 2017-Present. Holden Arboretum Historic Archive: archiving historic documents stored in the rare book room at *Holden Forests & Gardens.*

Scientist Lecture Series Organizer. 2016, 2017 & 2019.

Committee Member. 2013 – Present. Research Advisory Committee. *Holden Forests & Gardens.*

Project Lead. 2013 – Present. Big Data: archiving and managing scientific data collected at *Holden Forests & Gardens.*

Committee Member. 2013 – 2015. Natural Areas Management Committee. *The Holden Arboretum.*

Committee Member. 2013 – 2016. Holden/Kent State University Memorandum of Understanding Steering Committee. *The Holden Arboretum.*

Committee Member. 2009. Graduate Research Allocations Committee Research and Travel Grants review committee. *The University of New Mexico.*

COMMUNITY OUTREACH

- Outreach Coordinator.** 2019. Hands-on activities, talks and educational materials for Rhododendron Weekend at *Holden Forests & Gardens*.
- Organizer, contributor and Outreach Coordinator.** 2019. Art in the Science of Maple Sap at *Holden Forests & Gardens Pancake Breakfast*.
- Outreach Coordinator.** 2018. PhysFest 2 at *Holden Forests & Gardens*.
- Science Content Consultant.** 2018. Holden Forests & Gardens Exploring Diversity Audio Tour.
- Career Fair Presenter.** 2018. Cleveland Museum of Natural History Women in Science Day.
- Workshop Leader.** 2018-Present. *Holden Forests & Gardens Tree Corp.*
- Workshop Leader.** 2017-Present. *Holden Forests & Gardens Working with Nature Teen Camp.*
- Science Fair Judge.** 2017 and 2018. NE Ohio Science and Engineering Fair Holden Special Prize in Plant Sciences Committee.
- Science Content Consultant.** 2016. The Holden Arboretum Murch Canopy Walk and Kalberer Emergent Tower interpretive displays.
- Science Curriculum Consultant.** 2015 and 2017. Hershey Montessori School 10th grade science.
- Science Fair Judge.** 2014, 2015, 2016. NE Ohio Science and Engineering Fair Regular Judge.
- Workshop Organizer and Presenter.** 2014, 2015, 2016, 2017. *Trees Matter Summit at The Holden Arboretum.*
- Science Curriculum Consultant.** 2013. *Lake County Partners in Science Excellence P³BL Design Project.*
- Workshop Organizer.** June 2013. Research Experiences at Holden Arboretum. *Kent State Upward Bound.*
- Workshop Leader.** October 2012. *Washburn University Women in Science Day.*
- Workshop Leader.** July 2009. *United States Fish and Wildlife Service National Wildlife Refuge Youth Forum.*

COURSES TAUGHT

Online Outreach Course. Spring 2018. PhysFest2. *Holden Forests & Gardens.*

General Biology Lab for Non-Majors. Spring 2012. *Haskell Indian Nations University.*

Principles of Ecology Lecture and Lab. Fall 2011. *Haskell Indian Nations University.*

Flora of New Mexico Lab. Fall 2002, 2003, 2005 & 2009. *University of New Mexico.*

7th Grade Life Science. Fall 2006, Spring 2007, Fall 2007 & Spring 2008. *Belen Middle School*
as part of the *NSF Graduate Fellow in K12 Education Program.*

PROFESSIONAL SOCIETIES

American Rhododendron Society, Azalea Society of America, Botanical Society of America,
Society for the Study of Evolution