

Matthew L. Richardson

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Coordinator of the Professional Science Masters in Urban Agriculture
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RESEARCH INTERESTS

- Improving urban agricultural production systems such as raised beds, green roofs, hydroponics, aquaponics, layering, and vertical growing
- Identifying high-value crops (especially ethnic crops) that are adapted to urban heat islands
- Quantifying differences in a crop's nutrients across different production systems
- Identifying pests and their management
- Mitigating the impact of human activities on biodiversity
- Understanding human knowledge about natural resources, climate change, food production, and nutrition and the effectiveness of interventions

EDUCATION

PhD – University of Illinois at Urbana-Champaign, Ecology, Evolution, and Conservation Biology
MS – University of Illinois at Urbana-Champaign, Natural Resources and Environmental Sciences
BS – University of Delaware, Entomology with a concentration in Wildlife Conservation
BA – University of Delaware, Biology

POSTGRADUATE EXPERIENCE

- Assistant Director of Urban Agriculture Research and Program Coordinator of the Professional Science Master's Program in Urban Agriculture Concentration, College of Agriculture, Urban Sustainability & Environmental Sciences (CAUSES), University of the District of Columbia (UDC), 2016-present
- Affiliate Research Ecologist, Bok Tower Gardens, Lake Wales, FL, 2012-present
- Research Scientist, Center for Conservation Education and Sustainability, Smithsonian Institution, Washington, DC, 2013-2016
- Research Entomologist, USDA-ARS, Fort Pierce, FL, 2011-2013
- Post Doctoral Research Associate, Department of Crop Sciences, UIUC, 2009-2011

CLASSES TAUGHT

- 1) Conservation of Natural Resources Lecture and Laboratory (IGED 260/ENSC 350/ENSC 351)
- 2) Climate Change and Carbon Reduction (IGED 280/ENSC 460)
- 3) Advanced Climate Change Science (ENSC 509)

PUBLICATIONS (2012-2018)

Oleas, NH, CL Peterson, J Thompson, ML Richardson, Y Reynaldo & EJB von Wettberg. 2018. Genetic and environmental variation among populations of *Vicia ocalensis* in the Ocala National Forest, USA. *Journal of the Torrey Botanical Society* 145. (*In press*)

Hanks, LM, JA Mongold-Diers, TH Atkinson, MK Fierke, MD Ginzel, EE Graham, TM Poland, AB Richards, ML Richardson & JG Millar. 2018. Blends of pheromones, with and without host plant volatiles, can attract multiple species of cerambycid beetles simultaneously. *Journal of Economic Entomology* 111:716-724.
[https://www.fs.fed.us/nrs/pubs/jrnl/2018/nrs_2018_hanks_001.pdf]

Richardson, ML, B Wilson, D Aiuto, J Crosby, A Alonso, F Dallmeier & GK Golinski. 2017. A review of the impact of pipelines and power lines on biodiversity and methods for mitigation. *Biodiversity and Conservation* 26: 1801-1815.

Noland, K, E Norman, C Peterson & ML Richardson. 2017. Extrinsic factors influence phenology of the epiphytic hand fern (*Cheiroglossa palmata*). *Botany* 95:889-895.
[<https://tspace.library.utoronto.ca/bitstream/1807/79636/1/cjb-2017-0071.pdf>]

Richardson, ML. 2017. Daily and monthly activity of brown bears near a proposed industrial project in coastal British Columbia. *Western North American Naturalist*. 77:118-123.
[<http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=4b030a9b-ccb-4a16-b06a-bb59537601a5%40sessionmgr102>]

Richardson, ML, CP Keathley & CL Peterson. 2016. Breeding system of the critically endangered Lakela's Mint and influence of plant height on pollinators and seed output. *Population Ecology* 58(2):277-284. [<https://boktowergardens.org/wp-content/uploads/2016/01/Breeding-system-of-the-critically.pdf>]

Stover, E, S Inch, ML Richardson & DG Hall. 2016. Conventional citrus of some scion/rootstock combinations show field tolerance under severe huanglongbing disease pressure. *HortScience* 51:127-132.
[https://www.researchgate.net/profile/Sharon_Inch/publication/296485734_Conventional_Citrus_of_Some_Scion_Rootstock_Combinations_Show_Field_Tolerance_under_High_Huanglongbing_Disease_Pressure/links/56d5db8d08aebabdb40050b7.pdf]

Ammar, E-D, ML Richardson, Z Abdo, DG Hall & RG Shatters Jr. 2014. Differences in stylet sheath formation and the fibrous ring (sclerenchyma) between *xCitroncirus* plants resistant or susceptible to adults of the Asian citrus psyllid *Diaphorina citri* (Hemiptera: Liviidae). *PLoS One* 9(10):e110919. [<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0110919>]

Richardson, ML, J Rynear & CL Peterson. 2014. Microhabitat of critically endangered *Lupinus aridorum* (Fabaceae) at wild and introduced locations in Florida scrub. *Plant Ecology* 215:399-410. [<https://boktowergardens.org/wp-content/uploads/2014/02/Richardson-et-al.-2014-scrub-lupine-habitat.pdf>]

Stover, E, R Driggers, ML Richardson, DG Hall, Y Duan & RF Lee. 2014. Incidence and severity of Asiatic citrus canker on diverse citrus and citrus-related germplasm in a Florida field planting. *HortScience* 49:4-9. [<http://hortsci.ashspublications.org/content/49/1/4.full.pdf>]

Richardson, ML & DG Hall. 2013. Toxicity of 6 miticides to the Asian citrus psyllid, *Diaphorina citri* (Hemiptera: Liviidae). *Florida Entomologist* 96:433-441. [<http://www.bioone.org/doi/full/10.1653/024.096.0207>]

Rynear, J, CL Peterson & ML Richardson. 2013. Variables influencing germination and initial survival of two critically endangered plants: *Warea amplexifolia* and *Lupinus aridorum*. *Botany* 91:323-326. [<http://boktowergardens.org/wp-content/uploads/2013/05/Warea-amplex.pdf>]

Hall, DG & ML Richardson. 2013. Toxicity of insecticidal soap to the Asian citrus psyllid (*Diaphorina citri*) and natural enemies. *Journal of Applied Entomology* 137:347-354. [<http://www.imok.ufl.edu/hlb/database/pdf/00003021.pdf>]

Peterson, CL, G Kaufmann, C Vandello & ML Richardson. 2013. Parent genotype and environmental factors influence introduction success of the critically endangered Savannas Mint (*Dicerandra immaculata* var. *savannarum*). *PLoS One* 8(4):e61429. [<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0061429>]

Richardson, ML, MLJ Watson & CL Peterson. 2013. Influence of community structure on the spatial distribution of critically endangered *Dicerandra immaculata* var. *immaculata* (Lamiaceae) at wild, introduced, and extirpated locations in Florida scrub. *Plant Ecology* 214:443-453. [<https://boktowergardens.org/wp-content/uploads/2013/05/10.pdf>]

Hall, DG, ML Richardson, E-D Ammar & SE Halbert. 2013. Asian citrus psyllid, *Diaphorina citri* (Hemiptera: Psyllidae), vector of citrus huanglongbing disease. *Entomologia Experimentalis et Applicata* 146:207-223. [https://www.researchgate.net/profile/David_Hall16/publication/284762143_Asian_citrus_psyllid_Diaphorina_citri_Hemiptera_Psyllidae_vector_of_citrus_huanglongbing_disease/links/573b6dce08aea45ee84063a7.pdf]

Richardson, ML & DG Hall. 2013. Resistance of *Poncirus* and *Citrus x Poncirus* germplasm to the Asian citrus psyllid. *Crop Science* 53:183-188. [<https://pubag.nal.usda.gov/pubag/downloadPDF.xhtml?id=57048&content=PDF>]

Richardson, ML. 2012 Temperature influences the expression of resistance of soybean (*Glycine max*) to the soybean aphid (*Aphis glycines*). *Journal of Applied Entomology* 136:641-645.

Richardson, ML, PF Reagel, RF Mitchell & DW Whitman. 2012. Opportunistic carnivory by *Romalea microptera* (Orthoptera: Acrididae). *Annals of the Entomological Society of America* 105:28-35.

Richardson, ML, SL Richardson & DG Hall. 2012. Using biological control research in the classroom to promote scientific inquiry and literacy. *The American Biology Teacher* 74:445-451. [https://www.researchgate.net/profile/David_Hall16/publication/278189316_Using_Biological-Control_Research_in_the_Classroom_to_Promote_Scientific_Inquiry_Literacy/links/5612852008ae83674f437730.pdf]

PRESENTATIONS [2014-2018]

Luthria, D, R Marupaka, R Kotha, J Harnly, C Arlotta, T Jeffery & ML Richardson. 2018. Changes in the phytochemicals and sugar contents in hibiscus grown on a rooftop and farm. International Society for Nutraceuticals and Functional Foods Annual Conference. Vancouver, BC.

Arlotta, C, R Marupaka, D Luthria, J Harnly, T Jeffery, & ML Richardson. 2018. Differential yield and nutrients of hibiscus genotypes. The American Society of Agronomy and the Canadian Society of Agronomy International Annual Meeting. Baltimore, MD.

Harrison, E & ML Richardson. 2018. Climate resilience in Washington, DC. Northeast Climate Hub Partners Meeting, Building Agricultural Resiliency Through Adaptation, Rutgers University, New Brunswick, NJ.

Richardson, ML, T Jeffery, D Jones, & K Zendejdel. 2017. Improving resilience and health: the role of urban agriculture and green infrastructure. The 10th Annual Dupont Summit on Science, Technology, and Environmental Policy, Washington, DC.

Richardson, ML, D Zaya & CL Peterson. 2016. The influence of climate on the viability of wild and augmented populations of the endangered *Dicerandra immaculata* (Lamiaceae). Annual Meeting of the Ecological Society of America. Ft Lauderdale, FL.

Peterson, CL, K Noland, E Norman & ML Richardson. 2016. Age, location, and weather influences morphology, leaf production, growth, and fertility of hand fern (*Cheiroglossa palmata*). Annual Meeting of the Ecological Society of America. Ft Lauderdale, FL.

Richardson, ML, A Alonso, J Crosby, K Golinski, B Wilson & F Dallmeier. 2015. The impact of linear infrastructure on biodiversity and the effectiveness of mitigation strategies. Annual Meeting of the Ecological Society of America. Baltimore, MD.

Peterson, CL & ML Richardson. 2015. Influence of plant traits, density, and the environment on pollinators and reproduction of *Dicerandra immaculata* (Lamiaceae). Annual Meeting of the Ecological Society of America. Baltimore, MD.

Richardson, ML. 2015. Human impacts on biodiversity. The Wilds, Cumberland, OH.

Richardson, ML, JL Deichmann, & T Gregory. 2015. Integrating conservation needs with development priorities to sustain biodiversity. National Parks Conservation Association, Washington, DC.

Rynear, J, ML Richardson & CL Peterson. 2015. Microhabitat of critically endangered *Lupinus aridorum* (Fabaceae) at wild and introduced locations in Florida. Florida Native Plant Society Annual Conference. Tallahassee, FL.

Rynear, J, ML Richardson & CL Peterson. 2015. Microhabitat of critically endangered *Lupinus aridorum* (Fabaceae) at wild and introduced locations in Florida. Rare Plant Task Force Meeting. Gainesville, FL.

Rynear, J, CL Peterson & ML Richardson. 2014. Variables influencing germination and initial survival of two critically endangered plants: *Warea amplexifolia* and *Lupinus aridorum*. Florida Native Plant Society Annual Conference. Ft. Myers, FL.

GRANTS (2016-2018)

USDA-AMS Specialty Crop Block Grant. ML Richardson, J Harnly, F Lopez. "Urban and island sustainability: evaluating the use of repurposed waste for production of specialty crops." 2018; \$74,236.93

USDA-NIFA Hatch Grant. ML Richardson, A Wallingford. "Cultural techniques to increase yield of winter-grown vegetables." 2018; \$60,000.

USDA-ARS. ML Richardson. Student internship programs. 2017-2018; \$31,400.

USDA-AMS Specialty Crop Block Grant. ML Richardson, T Schneider. "Using green roofs as research and educational training spaces to enhance urban specialty crop production." 2017; \$50,000.

USDA-NIFA Hatch Grant. ML Richardson, X Hu, T Jeffery. "Assessing the urban production potential and nutrient profiles of two crops native to the tropics." 2017; \$60,000.

USDA-NIFA Hatch Grant. T Jeffery, X Hu, ML Richardson. "Merging health with culture: a heritage model for improving plant-based food consumption and mitigating health disparities among urban minorities." 2017; \$56,442.

NSF. ML Richardson, SU O'Hara. "Smart cities and connected communities: a workshop bridging rural, peri-urban and urban sustainability." 2016; \$25,000.

USDA-NIFA. ML Richardson, SU O'Hara. "Smart cities and connected communities: a workshop bridging rural, peri-urban and urban sustainability." 2016; \$25,000.

Florida Forest Service Endangered and Threatened Plant Conservation Program. CL Peterson, CL Pruett, ML Richardson. "Phase V *Warea amplexifolia* conservation efforts: population augmentation and research into pollinator dynamics, spatial seedling recruitment patterns, population genetics, and factors influencing in situ seed germination." 2016; \$12,000.

RECENT HONORS AND AWARDS

Fulbright Scholar, Barbados, 2018-2019.

The President's Volunteer Service Award presented by the Corporation for National and Community Service, 2013. (Recognition for over 360 hours of service in 12 consecutive months)

Martin Luther King Jr. Drum Major for Service Award from the United States Department of Agriculture, 2013. (Recognition for over 290 hours of service in 2012)

Science Education Project Award from the Entomological Foundation, 2012.