

Curriculum vitae for

Dr. Loren B. Byrne

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Education

- B.A. Ecological Artistry (Individualized Major) Hiram College, Hiram, OH 2000
Final GPA 3.94 Departmental Honors, Summa Cum Laude
Courses include: Invertebrate Zoology, Vertebrate Zoology, General Ecology, Marine Ecology, Vascular Plant Taxonomy, Non-vascular Plant Biology, Humans and the Environment, Environmental Policy, Intro. Geology, Environmental Philosophy, Scientific Illustration, Advanced Photography, Oil Painting, Spirit and Nature
- Ph.D. Ecology Penn State University 2006
Final GPA 3.93 Advisors: Mary Ann Bruns and K.C. Kim
Thesis title: Effects of urban habitat types and landscapes patterns on ecological variables at the aboveground-belowground interface.
Courses include: Soils in the Environment, Soil Microbiology, Insect Taxonomy, Insect Biodiversity and Conservation, Biology of Fungi, Population Ecology, Plant Ecology, Landscape Ecology, Cultural Ecology, Urban Sociology, Biostatistical Analysis, Multivariate Statistics, Science and Creativity, Where Science meets Art

Additional Education Experiences

Ecology field studies in Hawaii (May 1998), Smoky Mountains National Park (May 1999), Costa Rica (December 1999), Cold Harbor Springs, FL (March 2000) with Hiram College courses

Ohio State University Acarology Summer Program for Soil Acarology, 2002

3rd Annual Goddard Forum on Biodiversity, Penn State University, December 2002

Fundamentals of Ecosystem Ecology course, Institute of Ecosystem Studies, Milbrook, NY, January 2003

Collembolan identification and taxonomy training with Dr. Ken Christiansen, Grinnell College, IA, August 2004

BioScholars Assessment Residency with the American Society for Microbiology, Washington, DC, June 2013

Positions Held and Teaching Experience

- Aug 2019 to present Professor of Biology and Environmental Science, Roger Williams University
- RWU courses taught since 2007:
Core 101 Science-Discoveries in Context (non-majors);
Intro. to Evolution and Ecology and lab; Soil ecology with lab;
Humans, Environmental Change and Sustainability;
Urban Ecosystems; Concepts of Ecology; Conservation Biology;
Environmental Management & Health; Biological Illustration;
Intro. to Sustainability Studies; Working toward Sustainability;
Tropical Ecology (in Belize)
- Aug. 2013 to 2019 Associate Professor of Biology and Environmental Science, Roger Williams University
- Aug. 2010 to Aug. 2013 Coordinator, Sustainability Studies Program, Roger Williams University
- Aug. 2007 to Aug. 2013 Assistant Professor of Biology and Environmental Science, Roger Williams University

August 2006 to May 2007	<p>Visiting Assistant Professor of Biology, College of Wooster, Wooster, OH</p> <p>Independently designed and taught 3 courses:</p> <ul style="list-style-type: none">• Introduction to Biology of Populations (majors course in ecology & evol.)• Human Ecology (non-majors course in environmental science)• Population and Community Ecology (majors course in general ecology)
August 2006 to May 2007	<p>Post-doctoral scholar, Department of Entomology & Urban Landscape Ecology Program, OARDC, Ohio State Univ., Wooster, OH. Advisor: Dr. Parwinder Grewal</p> <ul style="list-style-type: none">• Planning a national urban ecology conference to be held June 2006 in OH• Developing course with Dr. Grewal about biodiversity and bioindicators• Writing Ohio State and USDA grant proposals
August 2003 to May 2006	<p>Teaching assistant, Crop & Soil Sciences Dept., Penn State Univ. (4 semesters)</p> <p>Soil ecology course (3 semesters: Fall 2005, Spring 2003 & 2004)</p> <ul style="list-style-type: none">• Developed syllabus, laboratory section and reading list with course professor, Mary Ann Bruns• Created and organized laboratory specimen collection with living and preserved organisms (Spring 2003)• Created and revised hands-on student laboratory activities and laboratory stations for student observation of soil organisms• Prepared and coordinated laboratory sessions on soil organisms and ecology• Prepared and presented lectures on arthropods, taxonomy and biodiversity• Led student discussions on non-native earthworms and soil food webs• Graded student laboratory reports• Worked with students on their individual semester-long research projects <p>Introductory soils laboratory instructor (Spring 2005)</p> <ul style="list-style-type: none">• Prepared and presented lectures on soil physics, chemistry and biology• Designed and implemented a new laboratory session on soil ecology• Supervised an undergraduate teaching assistant• Graded student laboratory reports• Led field trips to observe soils in the field
December 2002 to May 2003	<p>Service assistant. Ecology Program, Penn State University</p> <ul style="list-style-type: none">• Planned and helped execute three seminar series• Completed survey of student body about funding sources and suggestions for improving ecology coursework and research program
Fall 2002-04	<p>Prepared and presented guest lectures on soil ecology and led student field research projects, Field Biology course, Penn State University</p>
Fall-Spring 2002	<p>Prepared and presented invited lectures on biodiversity for Insects in Society course, Landscape Architecture Graduate Seminar, Intro. to Earth System course</p>
Fall 2001 to Spring 2003	<p>Created and taught 8 sessions of a 6-week extracurricular course in scientific illustration for the Penn State Univ. Center for Arts and Crafts</p>
August 2001 to December 2001	<p>Teaching assistant, Field biology course, Biology Dept. Penn State Univ.</p> <ul style="list-style-type: none">• Prepared and presented lectures on urban and lawn ecology• Mentored students for completion of semester-long research projects
Fall 2000	<p>Prepared and presented soil arthropod lectures, Soil Ecology course, Penn State Univ.</p>
August 2000 to May 2001	<p>University Fellow, Penn State University Graduate School</p>

- May to August 1999 Research Intern, Department of Horticulture, Bronx Zoo, New York
- Researched activities of gorillas in zoo enclosures and their use of plants
 - Developed recommendations for future plantings in gorilla enclosure
 - Assisted in maintenance of plantings on zoo grounds

Undergraduate Mentoring Experiences

- 2021-23 Mentored one student for a senior capstone research project for his individualized major (Owen Bucklin)
- 2020-21 Mentored one student in independent research (Alejandro Mayorga)
- 2016-17 Mentored one student in independent research (Spencer Babst)
- Spring '16 Mentored two students in capstone independent research (Trevor Nelson, James Parente)
- Fall '15 Mentored two students in literature review research and synthesis (Mitch Porter, Racheal Nilson)
- Fall 13 – Sp '14 Mentored one student for a senior capstone research project for his individualized major (Ben Floyd)
- Fall '12 to Sp '13 Mentored five students in laboratory and library research
- Sum. '12 Mentored two students in field research (Linda Oppong and Brenna Tomon)
- Fa. '11 Mentored one student in laboratory work and oral presentation preparation (Liz Futoma)
- Sum. '11-Sp '12 Primary advisory for one senior thesis project (Caroline Martin)
- Sum.-Fa. '10 Mentored three students in field research & poster construction (Joe Koproski, Taryn Mancarella, Caroline Martin)
- Sum.-Fa. '09 Mentored two students in field research & poster construction (Joe Koproski, Taryn Mancarella)
- Sum.'09-Sp.'10 Primary advisor for two senior thesis projects (Angela Possinger, Emily Tran)
- Sum.-Fall 2008 Advised four students in laboratory and field work (Samantha Lausten, Taryn Mancarella, Laura-Ashley Przondo, Leanne Farrell)
- Fall 2007 Advised two students in laboratory and field work (Erica Ryke, Barbara Mann)
- 2006-2007 Mentored one senior undergraduate biology student (Natalie Jawyn) during the development, completion and write-up of her senior Independent Study Project
- Helped her to write a successful \$200 Copeland grant for research supplies
- 2003-2005 Supervised 10 undergraduate science students for independent study projects, Penn State University
- Trained students in arthropod sorting and identification methods
 - Assisted students in writing summaries of research experiences
- 2004-2005 Supervised undergraduate student field research assistant, Penn State University
- Trained student in basic soil ecology methods
 - Shared and discussed journal articles with student
- 2003-2005 Supervised three undergraduate laboratory assistants, Penn State University
- 2003-2004 Advised three students on preparation of posters about independent research projects, Penn State
- Two posters presented at Allegheny Branch of American Society of Microbiology meeting
 - One poster presented at Penn State University undergraduate student research exhibition

Scholarships, Fellowships, and Research Support

1996-2000	Trustee's Fellowship, Hiram College, \$48,000
1999	Garden Club of America Summer Internship Research Grant, \$3000
2000-01	University Fellowship, Penn State University, \$13,000
2001	Kenneth Grant Research Scholarship, Soil and Water Conservation Society, \$1200
2002	Summer Research Support, Penn State College of Agricultural Sciences and Department of Crop and Soil Sciences, \$3000
2003	Competitive Student Research Grant, Penn State College of Agricultural Sciences, \$2000
2003-05	Pennsylvania NASA Space Grant Consortium Fellowship, \$10,000
2004-05	NSF Doctoral Dissertation Improvement Grant (DEB 0411527, "Effects of habitat structure on ecological communities and processes at the aboveground-belowground interface"), \$12,000
2004	Summer Research Grant, Penn State Center for Environmental Chemistry, \$3000
2005	Research Support, Penn State Departments of Entomology and Crop and Soil Sciences, \$6000
2008-11	Lead Co-PI for Merck/AAAS undergraduate research grant, \$60,000
2008-09	RWU Foundation to Promote Scholarship and Teaching grant, with Co-PI Charles Thomas, \$7000
2008	RI EPSCoR summer faculty research stipend
2009-10	RWU Presidential Fellowship (for sustainability studies curriculum), with Charles Thomas, \$5000
2009-10	RWU Foundation to Promote Scholarship and Teaching grant, \$7000
2010-11	RI NASA Space Grant, \$21,000
2010-12	Senior Personnel on NSF/USDA ULTRA-Ex Boston Project, \$3400 to RWU
2014-15	AAC&U STIRS Scholar (1 of 13 nationwide)

Publications

Byrne, L.B. 2000. Floral and faunal interactions of the Bronx Zoo's Congo Gorilla forest exhibit. Proceedings of the 2000 Association of Zoological Horticulture Annual Meeting.

J. Pearce, C. Uhl, A. Mandryk, D. Matalavage, C. Vischer, **L. Byrne**, S. Eisenfeld. 2001. The Mueller Report: Moving Beyond Sustainability Indicators to Sustainability Action at Penn State. Report of The Green Destiny Council of Penn State University. Available online at: http://www.bio.psu.edu/greendestiny/publications/gdc-mueller_report.pdf.

Byrne, L.B., M.A. Bruns. 2004. The effects of lawn management on soil microarthropods. Journal of Agricultural and Urban Entomology 21: 150-156.

Bruns, M.A, **L.B. Byrne**. 2004. Scale model of a soil aggregate and associated organisms: A teaching tool for soil ecology. Journal of Natural Resources and Life Science Education 33: 85-91.

Byrne, L.B. 2005. Of looks, laws and lawns: How human aesthetic preferences influence landscape management, public policies and urban ecosystems. In D. Laband, ed., Emerging Issues Along Urban-Rural Interfaces: Linking Science and Society, pp. 42-46. Auburn University, Auburn, GA.

Kim, K.C., **L.B. Byrne**. 2006. Biodiversity loss and the taxonomic bottleneck: Emerging biodiversity science. *Ecological Research* 21: 794-810.

Byrne, L.B. 2007. Habitat structure: a fundamental concept and framework for urban soil ecology. *Urban Ecosystems* 10: 255-274.

Published abstract: Jawyn, N., L.P. Phelan, **L.B. Byrne**. 2007. Plasticity in biomass allocation of weed and crop congener species in response to N-S-P nutrient interactions. *The Ohio Journal of Science* 107: A-17.

Baker, L., A. Brazel, **L. Byrne**, A. Felson, M. Grove, K. Hill, K.C. Nelson, J. Walker, V. Shandas. 2007. Effects of human choices on characteristics of urban ecosystems. *Bulletin of the Ecological Society of America*, October: 404-409.

Byrne, L.B., M.A. Bruns, K.C. Kim. 2008. Ecosystem properties of urban land covers at the aboveground-belowground interface. *Ecosystems* 11: 1065-1077.

Byrne, L.B. 2008. Issue Introduction: Ecological landscaping: From scientific practices to public practices and policies. *Cities and the Environment* 1(2) article 2. 3 pp. <http://escholarship.bc.edu/cate/vol1/iss2/2>.

Byrne, L.B., P. Grewal. 2008. Introduction to ecological landscaping: A holistic description and framework to guide the study and management of urban landscape parcels. *Cities and the Environment* 1(2) article 3. 20 pp. <http://escholarship.bc.edu/cate/vol1/iss2/3>.

Pavao-Zuckerman, M.A., **L.B. Byrne**. 2009. Scratching the surface and digging deeper: Exploring ecological theories in urban soils. *Urban Ecosystems* 12: 9-20.

Thomas, C., **L. Byrne**, J. Campbell. 2010. Creating an Interdisciplinary Introduction to Sustainability Studies Course. Proceedings of the 2010 Zone 1 ASEE Conference, Wentworth Institute of Technology. (*This was peer-reviewed.*)

Byrne, L.B. 2012. Complexity in Conservation: The Legal and Ethical Case of a Bird-Eating Cat and its Human Killer. Online Resource with the National Center for Case Study Teaching in Science. [Available online here](#). (Peer-reviewed)

Possinger, A.*, **L.B. Byrne**, N. Breen. 2013. Effect of buckwheat (*Fagopyrum esculentum*) on soil phosphorus availability and organic acids. *Journal of Plant Nutrition and Soil Science* 176: 16-18. *undergraduate author

Byrne, L.B. 2013. An in-class role-playing activity to foster discussion and deeper understanding of biodiversity and ecological webs. Available online through the [EcoEd Digital Library](#). (Peer-reviewed)

Setälä, H., R. D. Bardgett, K. Birkhofer, M. Brady, **L. Byrne**, et al. 2013. Urban and agricultural soils: conflicts and trade-offs in the optimization of ecosystem services. *Urban Ecosystems*. In press. (Abstract [here](#))

Byrne, L.B. 2015. Exploring lawns and gardens as complex socio-ecological systems: Teaching Case study for AAC&U STIRS Project. Available online: [Website](#), [Student Case File](#).

Byrne, L.B., ed. 2016. *Learner-Centered Teaching Activities for Environmental and Sustainability Studies*. Springer, New York.

Byrne, L.B. 2016. *Learner-Centered Teaching for Environmental and Sustainability Studies*. In L.B. Byrne, ed. *Learner-Centered Teaching Activities for Environmental and Sustainability Studies*. Springer, New York.

Byrne, L.B. 2016. An Introductory Examination of Worldviews and Why They Matter For Environmental and Sustainability Studies. In L.B. Byrne, ed. *Learner-Centered Teaching Activities for Environmental and Sustainability Studies*. Springer, New York.

Byrne, L.B. 2016. Conservation Triage: Debating Which Species to Save and Why. In L.B. Byrne, ed. *Learner-Centered Teaching Activities for Environmental and Sustainability Studies*. Springer, New York.

Byrne, L.B., R.K. Thiet, V.B. Chaudhary. 2016. Pedagogy for the Pedosphere. *Frontiers in Ecology and the Environment* 14: 238-240.

Byrne, L.B. 2016. Overcoming Challenges of the Soil Education Gap: Part 1. Posted on Beneath Our Feet: The Blog of the Global Soil Biodiversity Initiative: <https://www.globalsoilbiodiversity.org/blog-beneath-our-feet/2016/7/19/overcoming-challenges-of-the-soil-education-gap-part-1?rq=byrne>

Byrne, L.B. 2016. Overcoming Challenges of the Soil Education Gap: Part 2. Posted on Beneath Our Feet: The Blog of the Global Soil Biodiversity Initiative: <https://www.globalsoilbiodiversity.org/blog-beneath-our-feet/2018/10/2/overcoming-challenges-of-the-soil-education-gap-part-2>

Bennett, A. E., Preedy, K., Golubski, A., Umbanhowar, J., Borrett, S. R., **Byrne, L.**, et al. 2019. Beyond the black box: promoting mathematical collaborations for elucidating interactions in soil ecology. *Ecosphere* 10(7): e02799.

Reynolds, D., **Byrne, L.**, Campbell, J., & Spritz, B. 2019. One Size Doesn't Fit All: Students' Perceptions of FYE Approaches. *Journal of the Scholarship of Teaching and Learning*, 19: 105-118.

Byrne, L.B.. 2020. Urbanization. Pp. 200-202, in: UN-FAO: State of Knowledge of Soil Biodiversity. Rome, Italy.

Byrne, L.B. 2021. Socioecological Soil Restoration in Urban Cultural Landscapes. Pp. 373-410 in: J.A. Stanturf and M.A. Callahan, eds. *Soils and Landscape Restoration*. Wiley Publishers

Goddard, M.A., Davies, Z.G., ... **Byrne, L.B.**, et al. 2021. A global horizon scan of the future impacts of robotics and autonomous systems on urban ecosystems. *Nature Ecology and Evolution* 5: 219–230.

Byrne, L.B. 2022. Ecology with cities. *Urban Ecosystems* 25: 835–837.

Byrne, L.B. 2022. The essence of soil biodiversity. *Conservation Letters*: doi.org/10.1111/conl.12900

Byrne, L.B. 2022. Using the prepositional framework for urban environmental education: Teaching and learning about ecology in, of, for, and with cities. Pp. 233-244 in D. Mutnick et al. eds. *The City Is an Ecosystem*. Routledge Press.

Byrne, L.B. 2022. Afterword: Transdisciplinary Urban Ecosystem Research, Education and Stewardship. Pp. 266-269 in D. Mutnick et al. eds. *The City Is an Ecosystem*. Routledge Press.

Ellwanger, J.H., **Byrne, L.B.** and Chies, J.A.B. 2022. Examining the paradox of urban disease ecology by linking the perspectives of Urban One Health and Ecology with Cities. *Urban Ecosystems*: doi.org/10.1007/s11252-022-01260-5

Byrne, L.B. 2022. Teaching about the essence of soil biodiversity. Posted on Beneath Our Feet: The Blog of the Global Soil Biodiversity Initiative: <https://www.globalsoilbiodiversity.org/blog-beneath-our-feet/2022/8/22/teaching-about-the-essence-of-soil-biodiversity>

Byrne, L.B. and Szlavecz, K. 2023. Multidimensionality of biodiversity in urban social-ecological soil systems. In M. Aronson and C. Nilon, eds. *Routledge Handbook of Urban Biodiversity*. Routledge Press.

Byrne, L.B. 2024. Synthesizing Science. Pp 134-137 in: K. Shaw, A.I. Wilkins, eds. *Pocket Instructor for Writing*. Princeton University Press, Princeton, NJ.

Byrne, L.B. 2024. Authors from wealthy countries cannot all pay publishing fees. *Nature* 625: 450.

Rodgers, V., S.E. Scanga, ... **L.B. Byrne** et al. 2024. Four-dimensional ecology education (4DEE) for everyone: Teaching ecology to non-majors. *Frontiers in Ecology and the Environment* 22: e2749. <https://doi.org/10.1002/fee.2749>

Byrne, L.B., E.S.J. Rauschert, et al. 2025. Diversifying ecology education for everyone through more inclusive, interdisciplinary, and accessible teaching. *Bulletin of the Ecological Society of America* 106: e2233. <https://doi.org/10.1002/bes2.2233>

Scanga, S.E., V. Rodgers, **L.B. Byrne** et al. 2025. Hooks for four-dimensional ecology education (4DEE) teaching with differing audiences of nonmajors. *Ecosphere* 16: e70395. <https://doi.org/10.1002/ecs2.70395>

Klemow, K.M., C.W. Beck, **L.B. Byrne** et al. 2025. An overview of current education efforts within the Ecological Society of America. *Bulletin of the Ecological Society of America* 106: e70040. <https://doi.org/10.1002/bes2.70040>

Oral Presentations (*by LBB unless noted*) and Co-organized Conferences Sessions & Workshops

- 2003 The effects of lawn management on soil arthropods. Soil Ecology Society biannual meeting, Palm Springs, CA.
- Ecology of the lawn: an interdisciplinary focus for ecological research and education. Urban Ecology conference, Pace University, New York, NY.
- The effects of lawn management on soil microarthropods. Ecological Society of America annual meeting, Savanna, GA.
- 2004 *Co-organizer of symposium entitled* “Digging deeper or scratching the surface? Exploring ecological theories in urban soils.” Ecological Society of America annual meeting, Portland, OR.
- City collembolan, country collembolan: A tale of lawn and garden landscape ecology. In symposium on urban soil ecology, Ecological Society of America annual meeting, Portland, OR.
- Co-organizer of symposium entitled* “Biodiversity assessment and applied taxonomy.” Entomological Society of America annual meeting, Salt Lake City, UT.
- with K.C. Kim.* Biodiversity assessment and applied taxonomy: What for? Entomological Society of America annual meeting, Salt Lake City, UT.
- 2005 Humans as sociocultural ecosystem engineers. Mid-Atlantic section of the Ecological Society of America annual meeting, Baltimore, MD.
- Invited symposium talk.* The advantages of arthropods for advancing ecology: linking ecological and entomological scientists. Entomological Society of America Eastern-branch meeting, Harrisburg, PA.
- Invited seminar.* Breaking the boundaries of soil ecology: aboveground-belowground linkages and landscape patterns. Presented to soil ecology course, Johns Hopkins University, Baltimore, MD.
- Of looks, laws and lawns: How human aesthetic preferences influence landscape management, public policies and urban ecosystems. Urban-Rural Interfaces conference, Atlanta, GA.
- Carbon and nitrogen cycling in urban habitats. Soil Ecology Society biannual meeting, Argonne, IL.
- The effects of landscape patchiness and heterogeneity on arthropod communities. Ecological Society of America annual meeting, Montreal, Canada.
- Invited seminar.* On mowing and mulching: exploring the ecology of urban habitats. Ohio State University, Wooster, OH.
- The aesthetic and ecological functions of urban detritus. Long-term Ecological Research, Baltimore Ecosystem Study annual meeting, Baltimore, MD.
- 2006 *co-authored with and presented by M.A. Bruns.* Get the Scoop on Measuring Soil Biodiversity. 15th Annual Pennsylvania Association for Sustainable Agriculture Conference, February, University Park, PA.
- Invited seminar.* Ecological consequences of habitat structure and landscape pattern in urbanized ecosystems. College of Wooster, Wooster, OH.

Invited seminar. Ecological consequences of urban habitat creation and landscape design. Centre College, Danville, KY.

Invited seminar. From Patch to Landscape: Ecological consequences of heterogeneous urban habitat structures. Arizona State University, Phoenix, AZ.

Invited Seminar. The effects of landscape context patterns on ground arthropod communities. Penn State University Department of Entomology, University Park, PA.

The ecology of mowing and mulching: communities and ecosystem processes in urban habitats. Ecological Society of America annual meeting. Memphis, TN.

co-authored with and presented by Matt McCoy, Penn State graduate student and formerly mentored undergraduate. Linking microbial community structure and function related to greenhouse gas emissions from planted and mulched soils. Soil Science Society Annual Meeting, Indianapolis, IN.

- 2007 Humans as sociocultural ecosystem engineers: A metaphor to facilitate interdisciplinary urban ecology research and education. 2nd Urban-Rural Interfaces conference, Atlanta, GA.

Differences in nitrogen cycling and associated ecosystem services among four types of urban land cover. Soil Ecology Society biannual meeting, Moab, UT.

Co-organizer of symposium entitled “Effects of human choice on ecosystem properties.” Ecological Society of America annual meeting, San Jose, CA.

Learning to see and drawing to learn: On the value of art in ecology classrooms. Ecological Society of America annual meeting, San Jose, CA.

Conservation biological control in urbanized landscapes: Moving from research to practical practices. Ecological Landscaping conference, Cleveland, OH.

Conserving backyard biodiversity: effects of habitat structure and landscape heterogeneity on arthropods in lawns and gardens. BioNESUR conference, Roger Williams University, Bristol, RI.

- 2008 *Invited seminar.* Toward sustainable urban landscape management: Effects of habitat structure and landscape patterns on ground arthropods. Providence College, Providence, RI.

Creating ecological dynamics in the classroom through learner-centered teaching activities. Ecological Society of America annual meeting, Milwaukee, WI.

- 2009 *Co-organizer of symposium entitled* “Ecosystem services in urban soils.” Soil Ecology Society biennial meeting, Burlington, VT

Co-organizer of and presenter in teaching workshop entitled “Toward learner-centered soil ecology teaching, Soil Ecology Society biennial meeting, Burlington, VT

Co-organizer of symposium entitled “Your big backyard ecosystem: The ecology of lawns and gardens.” Ecological Society of America annual meeting, Albuquerque, NM. Presented introductory talk for the symposium entitled: “Introduction to ecological landscaping: overview of issues and a conceptual framework.”

Invited seminar: Urban ecosystem services: Linking social & ecological variables through habitat structure management & ecological landscaping. University of New Hampshire, Durham, NH.

- 2010 *Invited talk:* “Urban ecosystem services: Linking ecological & social variables through ecological landscaping of habitat structure.” Second EU-sponsored Soil Service Workshop: “Threats of Land Use Change and Urbanization on Soil Ecosystem Services. Lammi, Finland.

"This I believe": Pedagogical approaches for exploring environmental worldviews and controversies in ecology classrooms. Annual meeting of the Ecological Society of America. Pittsburgh, PA.

From Space grant fellow to space grant faculty. Northeast Regional Space Grant Conference. Newport, RI.

- 2011 *Co-organizer of and presenter in teaching workshop entitled* "How does soil ecology fit within environmental literacy and citizenship?", Soil Ecology Society biennial meeting, Kelowna, BC, Canada

"What does it mean to be environmentally literate?" Annual meeting of the Ecological Society of America. Austin, TX.

"Working toward Sustainability: A capstone course about environmental citizenship & effective communication" Annual meeting of the Association for Sustainability in Higher Education. Pittsburgh, PA.

- 2012 "Exploring the Bugs in Boston: Relationships between land covers in a city & arthropod communities." Annual meeting of the Eastern Branch Section of the Entomological Society of America. Hartford, CT.

Oral presentation by Caroline Martin: "Effects of Historical Land Cover on Arthropod Populations." Annual meeting of the Eastern Branch Section of the Entomological Society of America. Hartford, CT.

Oral presentation by Liz Futoma: "Ground-dwelling arthropod activity-density levels in lawns and patches of annual flowers." Annual meeting of the Eastern Branch Section of the Entomological Society of America. Hartford, CT.

"Urban landscape ecology & management for conservation biological control in lawns & gardens." Annual meeting of the Ecological Society of America. Portland, OR.

- 2013 Organizer of an education presentation session at the Soil Ecology Society biennial meeting, Rutgers, NJ

Designing soil biodiversity zoo exhibits enhances student learning about soil ecology and biodiversity. Biannual meeting of the Soil Ecology Society. Camden, NJ.

- 2014 Can soil organisms become our best teachers? Exploring soil biodiversity as an ecosystem service provider of excellent environmental education. First Global Soil Biodiversity Conference. Dijon, France.

- 2015 Teaching activities that foster soil ecology knowledge and "rooted-in-the-soil" environmental citizenship. Biannual meeting of the Soil Ecology Society, Colorado Springs, CO.

Organizer and moderator of workshop entitled "Backward design of learner-centered soil ecology education teaching activities." Biannual meeting of the Soil Ecology Society, Colorado Springs, CO.

Invited talk. Pedagogy for the pedosphere: Soil organisms and the ecosystem service of education. Annual meeting of the Ecological Society of America, Baltimore, MD.

Invited talk. Urban soil ecology: Progress and future potential for science and sustainability. Annual meeting of the Ecological Society of America, Baltimore, MD.

A Simple Demonstration of Island Biogeography Theory's Mechanisms and Predictions. Resources for Ecology Education Fair and Share. Annual Meeting of the Ecological Society of America, Baltimore, MD.

- 2016 *Lead co-organizer of a workshop:* Strategies and Challenges of Learner-Centered Ecology Education. Annual Meeting of the Ecological Society of America, Fort Lauderdale, FL.

- 2017 *Co-organizer and moderator of an Ignite session:* Try this to help students learn ecology better. Annual Meeting of the Ecological Society of America, Portland, OR.

Learner-Centered Teaching Techniques for Ecological Education that Enhance Student Engagement and Skill Development. Annual Meeting of the Ecological Society of America, Portland, OR.

Soil health fosters student engagement and deepens environmental literacy in soil ecology education, *Ignite talk*. Biannual meeting of the Soil Ecology Society, Fort Collins, CO.

Integrating soil biodiversity and soil ecology into non-soil-focused undergraduate courses. Biannual meeting of the Soil Ecology Society, Fort Collins, CO.

2018 Cardinal case study to introduce ecology, evolution and scientific competencies. Resources for Ecology Education Fair and Share. Annual Meeting of the Ecological Society of America, New Orleans, LA.

2019 Conceptual Diagramming as Learner-Centered Pedagogy for the Soil Ecology Classroom. Biennial meeting of the Soil Ecology Society. Toledo, OH.

Organizer and presenter of a teaching workshop: Case Studies and Data Sets for Soil Ecology Education. Biennial meeting of the Soil Ecology Society. Toledo, OH.

2020 *Invited talk*. Restoring Urban Soils for Biodiversity, Ecosystem Services & Human Well-Being. Annual meeting of the Soil Science Society of America (virtual).

2021 *Invited talk*. Expanding Education about Soil Biodiversity. Inspire talk for the virtual Ecological Society of America meeting.

Invited talk. Flipping Soil Ecology Education Upside Down. Virtual Soil Ecology Society meeting.

2022 Urban soil ecology research and education for improving people's environmental literacy and stewardship. Biennial meeting of the Soil Ecology Society. Richland, WA.

Co-organizer of an Organized Oral Session: Non-majors, 4DEE and Teaching Ecology for All. Annual meeting of the Ecological Society of America. Montreal, Canada

Is the 4DEE framework a sufficient "hook" to cultivate ecological literacy for all? Annual meeting of the Ecological Society of America. Montreal, Canada.

2023 Soil biodiversity for educational diversity: Using soil organisms for diverse learning outcomes with diverse audiences. Third Global Soil Biodiversity Initiative conference, Dublin, Ireland.

Organizer of a workshop: Designing Soil Biodiversity Education Programs for Diverse Audiences. Third Global Soil Biodiversity Initiative conference, Dublin, Ireland.

Invited talk. Integrating urban soil biodiversity into environmental education for the future of science & sustainability. Annual meeting of the Ecological Society of America. Portland, OR.

Co-organizer and moderator of an Ignite session: Ecology education for all through more accessible, interdisciplinary 4DEE teaching. Annual meeting of the Ecological Society of America. Portland, OR.

Lead co-organizer of a teaching workshop: Affective ecological education: Engaging students' personal connections to nature and ecology for improved ecological literacy. Annual meeting of the Ecological Society of America. Portland, OR.

2024 *Organizer and moderator of teaching workshop*: Teaching soil ecology with 4-dimensional ecology education (4DEE) 'hooks' to improve students' social-ecological soil literacy. Biennial meeting of the Soil Ecology Society. Grand Rapids, MI.

Principles and pathways for designing learner-centered four-dimensional ecology lessons for all students. Annual meeting of the Ecological Society of America. Long Beach, CA.

Advancing ecology for and with cities through urban soil rewilding research, practice and education. Annual meeting of the Ecological Society of America. Long Beach, CA.

2025 *Lead co-organizer of a teaching workshop:* Developing and using ecology teaching hooks to capture students' attention and motivate deeper ecology learning. Annual meeting of the Ecological Society of America. Baltimore, MD.

Lead co-organizer and moderator of an Ignite session: What Are the Frontiers of Urban Ecology's Prepositions? Exploring the Future of Ecology in, of, for, & with Cities. Annual meeting of the Ecological Society of America. Baltimore, MD.

One Health is an integrative concept for learner-centered 4-dimensional (urban) ecology education. Annual meeting of the Ecological Society of America. Baltimore, MD.

Co-author with presenter Myla Aronson. Where does urban ecology go from here? Advancing the sustainable future of urban social-ecological systems using the field's prepositional framework. Annual meeting of the Ecological Society of America. Baltimore, MD.

Co-organizer of a special session: Exploring the Integration of 4DEE Dimensions to Create Dynamic Ecology Lessons. Annual meeting of the Ecological Society of America. Baltimore, MD.

Poster Presentations

2002 The effects of lawn management on abundances of soil arthropods. Graduate Research Exhibition and College of Agricultural Sciences Poster exhibition, both at Penn State University.

2004 Backyard landscape ecology: Effects of habitat structure and landscape heterogeneity on arthropod communities. Graduate Research Exhibition and College of Agricultural Sciences poster exhibition and Center for Environmental Chemistry Symposium, all at Penn State University.

2004 Effects of landscape patchiness and heterogeneity on arthropod communities. Invertebrate biodiversity conservation conference. American Museum of Natural History, New York, NY.

2005 Your big backyard ecosystem: Carbon and nitrogen cycling in urban habitats. Graduate Research Exhibition and Center for Environmental Chemistry Symposium, both at Penn State University.

2006 To mow or not to mow? On the biodiversity and ecosystem processes of urban habitats. Graduate Research Exhibition and College of Agricultural Sciences poster exhibition and Center for Environmental Chemistry Symposium, all at Penn State University.

2010 Increasing eco-literacy using brief, in-class brainstorm, review & self-reflection writing exercises. Ecology and Education Summit, Washington, DC.

Scholarly Awards

2002 First prize, biological sciences division, College of Agricultural Sciences poster exhibition, Penn State University

2002 Third prize, natural sciences division, Graduate School Research Exhibition, Penn State University

2003-04 Yendol travel awards, Penn State Department of Entomology

2003 Parkinson Travel Grant, Soil Ecology Society

2003 Brian Horton Memorial Award for student leadership, Penn State Ecology Program

2004 Ralph Mumma Graduate Student Award, Penn State Department of Entomology

2004 First prize, natural sciences division, Graduate School Research Exhibition, Penn State

2005 Third prize, natural sciences division, Graduate School Research Exhibition, Penn State

- 2006 Third prize, biological sciences division, College of Agricultural Sciences poster exhibition, Penn State
- 2006 First prize, biological sciences division, Penn State Environmental Chemistry symposium poster exhibit
- 2010 Roger Williams University Presidential Fellowship (with Charles Thomas) for Sustainability Studies
- 2014-15 One of 13 fellows chosen by the American Association of Colleges and University for its first cohort of Scientific Thinking and Integrative Reasoning Scholars (STIRS) Program
- 2022 Soil Ecology Society Service Award

Professional Society Memberships

Soil Ecology Society	2001-present
Ecological Society of America	2002-present
Entomological Society of America	2004-2015
Association for Zoological Horticulture	1999-2002
Society for Conservation Biology	2003-2007
International Association for Landscape Ecology	2002-2007

Leadership and Service Activities (partial list)

- 2022-present Member, 4DEE committee, Ecological Society of America
- 2020-present Member (2020) and Chair (2021-2027), Odum Award Committee, Ecological Society of America
- 2020-present Member, 4DEE for teaching non-majors working group, chair starting in Nov 2024, Eco. Society of America
- 2023 & 2025 Faculty Review Committee (chair in 2025), Roger Williams University
- Jan 2018-Dec 2019 Chair, University Sustainability Steering Committee, Roger Williams University
- 2017- present Display Committee and Building Committee, Roger Williams University
- Winter 2016-present Associate Editor (invited), Urban Ecosystems; creator and lead editor of the Ecology with Cities article collection
- 2016-2019 Communications coordinator, Soil Ecology Society
- Created and maintained Facebook page
 - Helped update and generate content for website
 - Participated in logo redesign process
 - Helped plan meetings (review abstracts, plan schedule, etc.)
 - Take photos at the annual meeting
 - Organize and coordinate student presentation judging and awards
- Spring 2015-2019 Member, Core Science Curriculum Committee, RWU
- Spring 2015 – present Editorial Board member (invited), Frontiers in Ecology and Evolution, Urban Ecology section
- 2015 – present Member, Sustainable Grounds Committee, Roger Williams University
- Nov. 2013-2018 Editorial Board member, Journal of Microbiology and Biology Education
- 2007-2012, 2015-18, 2022-25 Judge for Buell-Braun and Soil Ecology Section student presentation awards, ESA annual meeting

- 2004-present Manuscript peer-reviewer for: *Urban Ecosystems, Ecography, PLoS One, Applied Soil Ecology, Agriculture, Ecosystems and Environment, Ecological Applications, Environmental Management, Environmental Science & Tech., Landscape Ecology, Landscape and Urban Planning, Journal of Environmental Monitoring, Forest Ecology and Management, Environment & Behavior, Journal of Urban Ecology, Environmental Management, Geoderma, Plant and Soil, Soil Science, National Center for Case Study Teaching in Science Case Database*
- Oct. 2011-Oct 2017 Elected board member, Audubon Society of Rhode Island
- 2011-2015 Elected at-large board member, Soil Ecology Society
- Helped plan meetings (review abstracts, plan schedule, etc.)
 - Take photos at the annual meeting
 - Organize and coordinate student presentation judging and awards
- May 2011-Spring 2014 Math and Sciences Division Representative, General Education Committee
- 2009-'10 Assoc. Provost for University Studies search committee, Roger Williams University
- 2008-2015 Elected board member, Save Bristol Harbor, Bristol, RI
- Member and then Chair of LNG Committee (2009- 2011)
 - Took lead role in developing the LNG slideshow
 - Member of Scholarship committee (2008-present)
 - Chair, Communications committee (Oct. 2012 to present)
- 2008-May 2011 General Education Reform committee, Roger Williams University
- 2008-'09 Anthropology faculty search committee, Roger Williams University
- 2007-2014 University Life committee, Recycling and Sustainability committee, Roger Williams University
- 2007 Waterfront Development Task Force committee, Roger Williams University
- 2006-'08 Secretary, Soil Ecology Section of the Ecological Society of America (elected position)
- Organized student presentation competition for the ESA '07 & '08 meetings
 - Coordinated social mixer for ESA 2007 meeting
- 2006-'07 Member of Goldwater undergraduate awards committee, College of Wooster, Wooster, OH
- 2003-'05 Member at Large, Friends of the Frost Entomology Museum Executive Board
- 2003-'05 Seminar planning committee, Penn State Department of Entomology
- 2001-'03 Co-president of the Penn State Ecology Graduate Students' Organization
- Planned social activities
 - Organized monthly meetings and agendas
 - Led student discussions for input to faculty program committee
 - Planned and led study sessions for candidacy examinations

Outreach Activities

- 2023 Interviewed and quoted for Wired article about urban biodiversity (<https://www.wired.com/story/urban-animals-wildlife-biodiversity-traits-pigeons-reptiles-amphibians/>)
- 2022 Moderator of a panel discussion organized by the Global Soil Biodiversity Initiative focused on "Soil Biodiversity in the City" (recording [available here](#))

- 2021 Participant in a panel discussion organized by the Global Soil Biodiversity Initiative focused on the Global Soil Biodiversity Assessment, including a short talk entitled “Urban Soil Biodiversity and Education” (recording [available here](#))
- 2015 Led walk and talk entitled “What’s up with what’s belowground?” on soil biodiversity at the Audubon Society of Rhode Island’s Environmental Education Center
- Presented a training session, “Digging Deeper for Environmental Literacy: The Science and Services of Soils”, for the Audubon Society of America’s docents and education staff
- Organized a display about soil ecology and organisms for the Audubon Society of Rhode Island’s Environmental Education Center
- 2003-‘05 Great Insect Fair Planning Committee, Department of Entomology, Penn State University
- Coordinated scientific illustration activity table, 2002
 - Developed floor layout plans for insect fair tables and activities, 2004
 - Worked with colleagues to develop theme, advertisements and children’s activities related to insect biology and ecology, 2004-05
 - Coordinated public tours of entomology museum, 2005
- 2004-05 Judge for Pennsylvania Junior Academy of Sciences research presentations
- 2004 Developed and presented lecture and laboratory session about lawn and soil ecology for horticulture staff and grounds managers of the Penn State Physical Plant
- 2003-05 Presented lectures on soil ecology to visiting minority high school students, governor’s school students and women in science program students, Penn State University
- 2002-05 Showed living arthropods and discussed soil ecology at Penn State public outreach events
- BioDays, 2004, Ag Progress Days, 2003-04, Fourth of July festival, State College, PA, 2005
- 2001-02 Visited two elementary schools with living arthropods and led discussions on soil ecology and importance of “bugs” to humans and the environment

Scientific Illustration Scholarship

- 2010 Created logo illustration for the Northeast Algal Society annual meeting (invited)
- 2007-08 Taught several 6-week scientific illustration courses through the PSU Center for Arts and Crafts
- 2009 Created illustration logo for the Northeast Algal Society meeting

Illustrations in peer-reviewed publications

Thewissen, J.G.M., S.I. Madar, S.T. Hussain, 1998. Whale ankles and evolutionary relationships. *Nature* 395: 452.

Dumont, E.R., S.G. Strait, A.R. Frisca. 2000. Abderitid marsupials from the Miocene of Patagonia: an assessment of form, function and evolution. *Journal of Paleontology* 74: 1161-1172.

Thewissen, J.G.M., E.M. Williams, S.T. Hussain. 2001. Eocene mammals from Northern Indo-Pakistan. *Journal of Vertebrate Paleontology* 21: 347-366.

Byrne, L.B., M.A. Bruns. 2004. The effects of lawn management on soil microarthropods. *Journal of Agricultural and Urban Entomology* 21: 150-156.