

DESIREE L. NARANGO, PH.D.

Conservation Scientist, Vermont Center for Ecostudies
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EDUCATION

- 8/2018 **PhD** Entomology and Wildlife Ecology, Specialization: Entomology
University of Delaware, Newark, DE
Advisors: Dr. Douglas Tallamy & Dr. Peter Marra
Dissertation: The effects of nonnative plants on food webs in residential landscapes
- 5/2012 **MS** Environment & Natural Resources, Specialization: Wildlife Ecology & Statistics
The Ohio State University, Columbus, OH
Advisor: Dr. Amanda Rodewald
*Thesis: Causes and consequences of urban-associated song variation: A study of vocal behavior in the Northern Cardinal (*Cardinalis cardinalis*)*
- 12/2006 **BS** Environmental Biology, Specialization: Wildlife Ecology
State University of New York: ESF, Syracuse, NY
- 12/2003 **AA** General Studies—Transfer Track
Community College of Baltimore County, Baltimore, MD

PROFESSIONAL APPOINTMENTS

- 10/2022—Present **Conservation Scientist**
Vermont Center for Ecostudies, White River Junction, VT, 05001
I lead an independent research program focusing on biodiversity conservation and global change. We use integrative approaches combining field studies, experiments and modeling to understand how climate and land use change impact plants, insects and birds across space and time. I seek to understand how individuals, populations and communities respond to habitat change and restoration, with a primary focus on multitrophic interactions, habitat and diet relationships of species with specialized life histories, and mechanistic approaches to applied ecology in human-dominated and managed landscapes.
- 7/2020-9/2022 **David H. Smith Conservation Research Fellow**
Department of Biology, University of Massachusetts, Amherst
USDA Forest Service – Northern Research Station
Project: Investigating multi-trophic linkages between plants, insects, and migratory birds to inform effective forest management strategies
- 6/2018- 5/2020 **Postdoctoral Researcher**
Advanced Science Research Center, City University of New York
Department of Environmental Conservation, University of Massachusetts, Amherst
Project: Macroecological relationships of bird, bee, and ground arthropod communities in six major metropolitan cities

- 4/2013-5/2018 **Graduate Research Associate & Doctoral Fellow**
Department of Entomology and Wildlife Ecology, University of Delaware
Migratory Bird Center, Smithsonian Conservation Biology Institute
- 1/2010-5/2012 **Graduate Research Assistant**
School of Natural Resources and the Environment, The Ohio State University
- 5/2005-12/2009 **Research Assistant**
& 5/2012-4/2013 Smithsonian Institute, Vermont Center for Ecostudies, The Ohio State University,
University of Delaware, University of Arizona, SUNY-ESF.
Bird, insect and plant field and lab work in the United States, The Caribbean, Central
America and South America. All temporary positions.

GRANTS AND FELLOWSHIPS (Total funding ~ \$410,838 to date)

Grants Received

- 2023 **USDA Forest Service – International Program** (\$40,000), “Identifying and quantifying population drivers for female Bicknell’s Thrush across the full annual cycle”
- 2022 **David H. Smith Conservation Postdoctoral Research Fellowship - extension** (\$18,000), PI
- 2021 **University of Massachusetts ECo Summer forest research internship award**, (\$4,500), PI
“Foliage Arthropods in Urban Forests”
- 2020 **David H. Smith Conservation Postdoctoral Research Fellowship**, (\$186,038), PI
“Investigating multi-trophic linkages between plants, insects and migratory birds to inform effective forest management strategies”
- 2018 **Disney's Worldwide Conservation Fund** (\$48,200), Co-PI
“Smorgasbords in the agroforestry canopy”
- 2017 **University of Delaware**, (\$18,000), Doctoral Fellowship
- 2017 **Smithsonian Institute**, (\$11,500), Doctoral Fellowship
- 2014 **Disney's Worldwide Conservation Fund** (\$24,500), Co-PI, “Shade Coffee, Insects and Birds”
- 2014 **Maryland Ornithological Society** (\$1500), Student Research Grant
- 2014 **North American Bluebird Society** (\$1600), Student Research Grant

Consulting Funding Received

- 2023 **Plan It Wild** (\$50,000), Consultation work designing methodology and study design to measure responses of biodiversity and ecosystem services to rewilding management; Study design of common garden experiments to evaluate the impact of native plant landscaping and; Analysis of iNaturalist data to quantify current ecological integrity of residential and commercial land uses.
- 2023 **Green Mountain National Forest** (\$2,500), Conducting an inventory of biodiversity at the Blue Ridge high-elevation fen, with a special focus on nocturnal and diurnal Lepidoptera and Carabidae beetles.

Submitted/In Revision

In revision for NSF-Macrosystems, Co-PI

“Assessing the influence of traits, scale, and landscape context on the ability of trees to support foliage arthropod biodiversity in a changing world.” Combines data synthesis, field collection, and community science to identify the intrinsic traits (e.g., functional traits) and extrinsic contexts (e.g., landscape development) that drive patterns in host plant-insect interactions across the globe. With Doug Tallamy (University of Delaware) and Allen Hurlbert (University of North Carolina).

AWARDS

- 2022 **Elective Member**, American Ornithology Society
- 2021 **Diversity, Equity and Inclusion Award**, University of Massachusetts, Amherst – Environmental Conservation Department
- 2021 **ESA Early Career Fellow**, Ecological Society of America (only postdoc to receive this award in 2021)
- 2020 **(Nominee), Pritzker Emerging Environmental Genius Award** (Nominated by Blackrock Financial)
- 2019 **City University of New York**, (\$1500) Conference Travel Award
- 2019 **American Ornithology Society** (\$300) Conference Travel Award
- 2018 **Ecological Society of America** (\$500) Joan Ehrenfeld Urban Ecology Presentation Award
- 2018 **University of Delaware** (\$500) William J. Benton Dissertation Award
- 2018 **American Ornithology Society** (\$400) Conference Travel Award (declined)
- 2018 **University of Delaware** (\$500) Professional Development Award (declined)
- 2017 **American Ornithological Society** (\$500) Presentation Award
- 2017 **American Ornithological Society** (\$470) Conference Travel Award
- 2017 **University of Delaware** (\$668) Conference Travel Award
- 2015 **Association of Field Ornithologists** (\$250) Student Presentation Award
- 2015 **Wilson Ornithology Society** (\$864) Student Travel Award
- 2015 **Ecological Society of America** Joan Ehrenfeld Urban Ecology Award Finalist
- 2014 **American Ornithologists Union** Student Membership Award
- 2012 **North American Ornithological Conference** (\$300) Conference Travel Award
- 2012 **The Ohio State University** (\$350) Conference Travel Award

PEER-REVIEWED PUBLICATIONS (20 in press/published, 673 citations, H-index: 13, [Google Scholar](#))

Accepted/Published (n=20)

20. Lerman, S.B., Larson K.L., Narango, D.L., Goddard, M., Marra, P.P. Humanity for Habitat—Residential yards as an opportunity for conservation. *Bioscience*, Accepted.
19. Grijseels, N. et al. Evapotranspiration of residential lawns across the United States. In Press, *Water Resources Research*.
18. Larson, K., Lerman, S., Nelson, K., Groffman, P.M., Grove, M., **Narango, D.L.**, Wheeler, M. M. Examining the potential to expand wildlife-supporting residential yards and gardens. In press, *Landscape and Urban Planning*.
17. Piel, G.*, Tallamy, D.W., **Narango, D.L.** Lepidoptera host records accurately predict tree use by foraging birds. *Northeastern Naturalist*. 28(4): 527-540.
16. Lerman, S.B., **Narango, D.L.** (Dual First Author), Avolio, M.L., Bratt, A.R., Engebretson, J.M., Groffman, P.M., Hall S.J., Heffernan, J.B., Hobbie, S.E., Larson, K.L., Locke, D.H., Neill, C., Nelson, K.C., Padullés Cubino, J., and Trammell, T.L.E. Residential yard management and landscape cover affect urban bird community diversity across the continental US. *Ecological Applications*. 31(8): 02455.
15. Tallamy, D.W., **Narango, D.L.**, Mitchell, A. Do nonnative plants contribute to insect population declines? Invited submission to special issue on “Insect Declines”. *Ecological Entomology*, 46(4), 729-742.
14. Larson, K.L., Fleeger, M., Wheeler, M.M., Andrade, R., Brown, J., Hall, S.J., Lerman, S.B., **Narango, D.L.** (2020) Who’s abuzz about bees? Explaining Residents’ Attitudes in Phoenix, Arizona. *Urban Ecosystems*, 24, 35-48.

13. **Narango, D.L.**, Shropshire, K.J., and Tallamy, D.W. (2020). Few keystone plant genera support the majority of Lepidoptera diversity. *Nature Communications*, 11, 5751.
****Included in top 25 Nature Communications papers of 2020****
12. Milam, J., Johnson, D.E., Andersen, J.C., Fassler, A., **Narango, D.L.**, and Elkington J.S. (2020) Defining morphological characteristics to reliably distinguish among three commonly misidentified species of *Bombus* (Hymenoptera: Apidae). *Insects*, 11(10), 669.
11. Cubino, P., Cavender-Bares J., Lerman, S. B., Groffman, P.M., Avolio, M.L., Trammell, T.L.E., Wheeler, M. M., Larson, K.L., **Narango, D.L.**, Neill, C., Bratt, A.R., Hall, S. J., Hobbie, S.E. (2020) Taxonomic, phylogenetic, and functional composition and homogenization of residential yard vegetation with contrasting management. *Landscape and Urban Planning*, 202: 103877.
10. **Narango, D.L.** (2020) Natural History in the City: Connecting people with the ecology of their plant and animal neighbors. Invited submission for special issue: "Historia naturalis: Inspiring Ecology". *Journal of Natural History Education and Experience*, 14: 13-17.
9. **Narango, D.L.** Tallamy, D.W., Snyder, K.J.* and Rice, R.A. (2019) Canopy tree preference by insectivorous birds in shade coffee: implications for migratory bird conservation. *Biotropica*, 51(3):387-398.
8. **Narango, D.L.**, Tallamy D.W. and Marra P.P. (2018) Nonnative plants reduce population growth of an insectivorous bird, *Proceedings of the National Academy of Sciences*, 115, 45: 11549-11554.
7. Baisden, E.C., Tallamy, D.W., **Narango, D.L.** and Boyle E. (2018) Do cultivars of native plants support insect herbivores? *HortTechnology*, 28(5):596-606.
6. Keilson W.*, **Narango D.L.**, and Tallamy D.W. (2018) The effects of roadside habitat on insect traffic mortality. *Journal of Insect Conservation* 22(2):183-188.
5. Hansen, W.D., Scholl, J.P., Sorensen, A.E., Fisher, K.E., Klassen, J.A., Calle, L., Kandlikar, G.S., Kortessis, N., Kucera, D.C., Marias, D.E., **Narango, D.L.**, O'Keefe, K., Recart, W., Ridolfi, E., Shea, M. (2018) How do we ensure the future of our discipline is vibrant? Student reflections on career and culture of ecology. *Ecosphere* 9(2): e02099.
4. **Narango, D.L.** and Rodewald, A.D. (2018) Signal information of bird song changes in human-dominated landscapes. *Urban Ecosystems* 21(1): 41-50.
3. **Narango, D.L.**, Tallamy, D.W. and Marra, P.P. (2017) Native plants improve breeding and foraging habitat for an insectivorous bird, *Biological Conservation* 213: 42-50.
2. **Narango, D.L.**, and Rodewald, A.D. (2015). Urban-associated drivers of song variation along a rural–urban gradient. *Behavioral Ecology* 27(2): 608-616.
1. Newell, F.L., Haiman, A.N., **Narango, D.L.**, Elder, J.M., Leonhard, L.D., Philhower-Gillen, J., Johnson, A.M. and Rodewald, A.D. (2013). Occurrence of polygyny and double brooding in the Eastern Wood-Pewee. *The Wilson Journal of Ornithology* 125(2): 251-259.

Book Chapters (n=2)

1. Lerman, S.B, **Narango, D.L.**, Andrade, R., Warren, P.S., Grade, A., Straley, K. Wildlife in the City: Human Drivers and Human Consequences. In: *Nature and Challenges of Urban Ecology*. Boston, MA: CABI Publishing.
2. **Narango, D.L.** Habitat selection in human-dominated landscapes. In: *Songbird Behavior and Conservation in the Anthropocene*. CRC Press.

In Review/Revision (n=5)

5. *In revision.* Mejia G. et al. How do urban trees vary across the USA: It depends on where and how you look. *Frontiers in Ecology and the Environment*.
4. *In revision.* Mejia G. et al. Woody plant-soil relationships in urban interstitial spaces have implications for future forests within and beyond urban areas. *Ecosystems*.
3. *In revision.* **Narango, D. L.**, Brandao, M. *, Tallamy, D.W., Rice, R.A. Foraging niche and tree preferences of Yellow Warblers (*Setophaga petechia*) differs with sex and age in a Bird-friendly® shade-coffee farm. *Journal of Field Ornithology*.
2. *In revision.* **Narango, D.L.** Lerman, S.B., Avolio, M.L., Bratt, A.R., Groffman, P.M., Hall S.J., Hobbie, S.E., Padullés Cubino, J., and Trammell, T.L.E. Urban land management and canopy cover affects ground beetle (Coleoptera: Carabidae) diversity across six US metropolitan cities.
1. *In revision.* **Narango, D.L.** Carlo, T.A., Tallamy, D.W. and Marra P.P. Tracking nitrogen flow from native and nonnative plants to invertebrate and avian consumers using a stable isotope tracer. For *Proc B*.

Popular Articles

1. **Narango, D.L.** and Lambert M. "Biodiversity Conservation Should Start in Biden's Backyard", *Scientific American*, 10 May 2021.

* Undergraduate mentee

INVITED PRESENTATIONS (n=19)

- 2023 **Narango, D.L.** "Feast or Famine: Do urban forests provide adequate refueling for migratory birds?" American Ornithological Society Conference
- 2022 **Narango, D.L.** "Using plant-animal interactions to inform management and conservation in human-dominated ecosystems" Tyson Research Center
- 2022 **Narango, D.L.** "Using plant-animal interactions to inform management and conservation in human-dominated ecosystems", Michigan State University—Kellogg Biological Station
- 2021 **Narango, D.L.** "Using plant-animal interactions to inform management and conservation in human-dominated ecosystems" & "Integrating ecological research with community outreach and engagement – lessons learned", Pennsylvania State University – Ecology and Evolution Department, ****Graduate Student Choice for Fall Invited Speaker****
- 2021 **Narango, D.L.** "Using Informed Plant Selection to Restore Pollinators and Songbirds in Human-dominated Landscapes" Natural Areas Association.
- 2021 **Narango, D.L.** "Ecological Interactions in a Changing World", National Park Service, Avifauna Conservation Webinar
- 2020 **Narango, D.L.** "Cultivating Conservation: Multitrophic wildlife ecology in human-dominated ecosystems." Iowa State University. *Virtual*.
- 2020 **Narango, D.L.**, Brandao, M., Marra, P., Rice, R., Shropshire, K., Snyder, K., Tallamy, D. "Using tree preferences of birds to inform restoration in human-dominated landscapes". In organized session: *Advancing the integration of behavior into songbird conservation and management*. North American Ornithological Conference, *Virtual*.
- 2020 **Narango, D.L.** "Trophic interactions in a novel world: the importance of plants for wildlife conservation in human-dominated landscapes" Iowa State University. *Virtual*.

- 2020 Invited panelist for *Mild to Wild: How our backyard choices impact our environment*, Woods Hole Research Center –Kaneb Webinar Series, *Virtual*.
- 2020 **Narango, D.L.**, “Trophic interactions in a novel world: the importance of plants for wildlife conservation in human-dominated landscapes”, George Mason University
- 2020 **Narango, D.L.**, “Trophic interactions in a novel world: the importance of plants for wildlife conservation in human-dominated landscapes”, Illinois State University
- 2020 **Narango, D.L.**, “Trophic interactions in a novel world: the importance of plants for wildlife conservation in human-dominated landscapes”, University of California, Santa Cruz
- 2019 **Narango, D.L.**, "Natural history in the city: connecting people with the ecology of their plant and animal neighbors". In organized session: *Historia naturalis: Inspiring Ecology*, Ecological Society of America meeting, Louisville, KY.
- 2019 **Narango, D.L.** et al. “Patterns of local- and landscape-scale management effects urban bird communities across six major metropolitan areas: Do yards matter?”. In organized session: *Linking landowner practice and preference to ecological process*. Ecological Society of America meeting, Louisville, KY.
- 2019 **Narango, D.L.**, “Creating habitat for birds in urban settings”. In organized session: *Species Selection in the Urban Landscape—Professional Perspectives*. University of Massachusetts Community Tree Conference, Amherst, MA.
- 2018 **Narango, D.L.**, “The chickadee’s guide to gardening” In organized session: *Faculty Research Lightning Talks*. University of Massachusetts, Amherst, Department of Ecological Conservation, Amherst, MA.
- 2018 Invited panelist for *Conservation Challenges-Nonnative species*, Smithsonian Conservation Biology Institute – 6th annual Conservation Immersion Seminar, Front Royal, VA.
- 2016 **Narango, D.L.**, Tallamy, D., Marra, P.P. “Are exotic plants related to dietary shifts in nestlings of an insectivorous bird?”. In organized session: *Comparing Traditional and Next-generation Methods for Understanding Bird Diets*. North American Ornithological Conference, Washington D.C.
- 2015 Invited panelist for *Bird-invertebrate interactions in a changing world: a synthesis of understanding the importance of our most diverse wildlife group to ornithology*, The Wildlife Society’s 22nd Annual Conference, Winnipeg, Manitoba.

CONTRIBUTED PRESENTATIONS AND POSTERS (n=21)

- 2022 **Narango, D.L.** Lerman S., Guiterrez, M., Rogers, E. and Gerson A. “Effects of Urbanization and Forest Composition on Habitat Quality for *en route* Migratory Birds: A Multitrophic Approach”. Association of Field Ornithology, Plymouth MA.
- 2020 **Narango, D.L.** “The birds, the bees, the flowers and the trees, Multitrophic bird conservation in human-dominated ecosystems”. In organized session: Early-professionals lightning talk symposium. North American Ornithological Conference, *Virtual*.
- 2019 **Narango, D.L.**, Lerman, S.B., Neill, C., Hall, S. J., Hobbie, S.B., Trammell, T.L.E., Groffman, P. “Macroecological patterns of local and landscape management on urban breeding bird communities; Do yards matter?” American Ornithological Society meeting, Anchorage, Alaska. Presentation.

- 2019 Lerman S.B., Marra P.P., Reitsma, R., Evans, B.S., **Narango, D.L.**, Clipp, H. “Shared Stewardship for Bird Conservation: Linking Backyard Habitats, Citizen Science and Yard Management”, In organized session: *Translational Ecology*. AOS meeting Anchorage Alaska. Presentation.
- 2019 Groffman, P.M, **Narango, D.L.**, et al. [+ additional 24 coauthors], “Alternative Futures for the American Residential Macrosystem”, NSF Macrosystems meeting, Boulder, CO. Poster.
- 2019 Wang, A.*, **Narango, D.L.**, Neil, C., Lerman, S.B. “Effects of Urban Land Use Management on Hymenopteran Communities”. North Eastern Natural History Conference, Springfield, MA. Poster.
- 2019 **Narango, D.L.**, Lerman, S.B., Neill, C., Hall, S. J., Hobbie, S.B., Trammell, T.L.E., Groffman, P. “Patterns of local- and landscape-scale management on urban bird communities across six major metropolitan areas: Do yards matter? Massachusetts Audubon Staff Natural History Conference, Westborough, MA. Presentation.
- 2018 **Narango, D.L.**, Carlo, T.A., Tallamy, D.W. and Marra P.P. “A ¹⁵N isotope tracer experimentally demonstrates that nonnative plants limit energy flow to higher order consumers”. Ecological Society of America Meeting, New Orleans, LA. Presentation.
***Won Ehrenfeld award from the Ecological Society of America**
- 2018 Piel, G.*, **Narango, D.L.**, Tallamy, D.W. “Using Artificial Caterpillars to Measure Bird Foraging Patterns”. University of Delaware – Undergraduate research symposium, Newark, DE. Poster.
- 2017 **Narango, D.L.**, Tallamy, D.W., Marra, P.P. “Nonnative plants reduce reproductive success for an insectivorous bird”. American Ornithological Society National Meeting, East Lansing, MI. Presentation.
***Won best student presentation from the American Ornithological Society**
- 2017 **Narango, D.L.**, Tallamy, D.W., Marra, P.P. “Nonnative plants reduce reproductive success for an insectivorous bird”. Smithsonian Emerging Scientists Symposium, Washington, D.C. Presentation.
- 2017 **Narango, D.L.**, Marra, P.P., and Tallamy, D.W., “Nonnative plants reduce reproductive success for an insectivorous bird”. University of Delaware – CANR research symposium, Newark, DE. Poster.
- 2015 **Narango, D.L.**, Marra, P.P., Tallamy, D.W., “Tritrophic effects of nonnative vegetation on insect prey and bird behavior in residential landscapes”, Ecological Society of America Meeting, Baltimore, MD. Presentation.
- 2015 **Narango, D.L.**, Marra, P.P., Tallamy, D.W., “Behavioral Responses of Carolina Chickadees to Nonnative Vegetation”, Joint meeting of American Field Ornithology, Wilson Ornithology Society & Society of Canadian Ornithologists, Wolfville, NS, Canada. Presentation.
***Won best student presentation from the Association of Field Ornithologists**
- 2015 **Narango, D.L.**, Marra, P.P., Tallamy, D.W., “Nonnative Plants Affect Lepidoptera Prey Items for an Insectivorous Bird”, Entomology Society of America - Eastern, Rehoboth Beach, DE. Presentation.
- 2012 **Narango, D.L.**, Rodewald A.D., “Variation in Song Information for Urban Birds”. North American Ornithological Conference, Vancouver, BC, Canada. Presentation.
- 2012 **Narango, D.L.**, and Rodewald A.D., “Communication Breakdown – Are there Consequences to Song Variation for Urban Adapting Birds?” Ohio Natural History Conference, Columbus, OH. Poster.
- 2012 **Narango, D.L.**, and Rodewald A.D., “How are avian communication systems affected by urbanization?” Ohio Fish and Wildlife Management Association, Columbus, OH. Poster.

- 2011 **Narango, D.L.**, and Rodewald A.D., “How are avian communication systems affected by urbanization?” Ohio Biodiversity Conservation Partnership meeting, Columbus, OH. Poster.
- 2011 **Narango, D.L.**, and Rodewald A.D., “Songs in the City: How are avian communication systems affected by urbanization?” Joint meeting of American Field Ornithology, Cooper Ornithological Society & Wilson Ornithological Society, Kearny, NE. Poster.
- 2008 **Narango, D.L.**, and Sargent, S. “Presque Isle Bird Banding – Evaluating Stopover Site Quality on the Lake Erie Shore”. Regional Science Consortium, Erie, PA. Presentation.
- 2008 Sargent, S., **Narango, D.L.**, and Balogh, A. Effect of invasive plants on stopover habitat quality for songbirds. American Ornithologists Union meeting, Philadelphia, PA. Poster.

**Undergraduate mentee*

STUDENT MENTORSHIP (5 high school, 21 undergraduates, 27 postgraduates, 6 graduate students)

- 2021-present Beth Rogers – University of Massachusetts, Amherst, Graduate Student Research
2021 Trained 10 undergraduates and 2 graduate students in bird banding techniques, insect identification, and lab assays.
- 2019-2021 Alphonsus Ho – University of Massachusetts, Amherst, **undergraduate independent research in progress**
- 2020-2021 Anna Kohlberg – University of Massachusetts, Amherst, undergraduate
- 2019-2020 Matthew Sirotkin—University of Massachusetts, Amherst, undergraduate
- 2018-2020 Melory Brandao—University of Massachusetts, **undergraduate independent research & manuscript in revision**
- 2018-2020 Garrison Piel—University of Delaware, **undergraduate independent research and publication**
- 2019 Leah Wallner – University of Massachusetts Amherst, undergraduate
- 2018-2019 Alexis Wang—University of Massachusetts Amherst, undergraduate
- 2018-2019 Brett Barnard—University of Massachusetts Amherst, undergraduate
- 2018-2019 Sydney Jacobs—University of Massachusetts Amherst, undergraduate
- 2017-2018 Sameeha Zele—University of Delaware, undergraduate
- Katie Bird—University of Delaware, undergraduate
- 2017-2018 Emily Baisden –University of Delaware, graduate student
- 2015-2017 William Keilsohn—University of Delaware, **honor’s thesis and publication**
- 2013-2018 Mentored and trained 5 high school students, 5 undergraduates, 15 postgraduates and 1 graduate student in ecological research techniques for *Neighborhood Nestwatch*
- 2013-2015 Kerry Snyder—University of Delaware, **honor’s thesis and publication**
- 2013-2014 Kerry Snyder—University of Delaware, **Independent REU project**
- 2009-2012 Mentored and trained 3 undergraduates, 12 postgraduates and four graduate students in ecological research techniques for the Columbus Urban Riparian Project

TEACHING EXPERIENCE

Instructor of Record

2015 Urban Wildlife Ecology, University of Delaware (1-credit Graduate Student Readings Course).

Teaching Assistant

2015 Ecology of Migratory Birds, Smithsonian Conservation Biology Institute (2 week course for professionals).

2012 Introduction to Environmental Science, The Ohio State University.

Workshop Instructor/Assistant

2019 Get Spatial! Using R as GIS and Spatial Analyses Workshop, AOS meeting, Anchorage, Alaska

2016 Advanced Programming & Graphing in R, North American Ornithological Conference, Washington, DC

Twitter for Scientists, North American Ornithological Conference, Washington, DC

2015 Avian Field Techniques, The Wildlife Society Professional Development, Newark, DE

The Graduate School Process, The Wildlife Society Professional Development, Newark, DE

Guest Lectures

2021 Ornithology, Kansas State University

2020-2021 Student Mentor, "Importance of native plants for bird conservation", Ornithology Class, University of Massachusetts, Amherst

2020 Urban Ecology, ("Multitrophic Ecology in Urban Ecosystems"), Concordia University

Avian Ecology, ("Urban Ecology and Bird Conservation"), University of Florida

2018 Intro to Biology ("Birds, Bugs and Urban Ecosystems"), Mount Holyoke College

Intro to STEM ("Avian Ecology and Urban Ecosystems"), Springfield Technical Community College

2013—2017 Agricultural & Urban Insects ("Stem & Twig Damagers"), University of Delaware

Advanced Ecology ("Parasite Ecology and Evolution"), University of Delaware

Habitat Management ("Urban Ecology"), University of Delaware

Behavioral Ecology ("Territoriality"), University of Delaware

Insect Ecology ("Life history Traits", "Plant-Insect Interactions"), University of Delaware

ORGANIZATION MEMBERSHIPS

2014—present American Ornithology Society

2015—present Ecology Society of America

2012—present Wilson Ornithological Society

2015-2017 Entomology Society of America

INVITED PEER REVIEWER

Associate Editor: Ornithological Applications (2020—present)

Editorial Board: Urban Naturalist (2018—present)

Grant Reviewer: NSF Career Award, Wilson Ornithological Society

Reviewer: Behavioral Ecology, Biological Conservation, Canadian Field-Naturalist, Ecography, Ecological Applications, Ecosphere, Journal of Biometeorology, Journal of Animal Ecology, Journal of Field Ornithology,

Journal of Raptor Research, Landscape and Urban Planning, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, Urban Ecosystems, Wilson Journal of Ornithology

PROFESSIONAL SERVICE

2021-2022	Early Professional Award Committee – The Wilson Ornithological Society
2020	Social Communications Policy Ad Hoc Committee , American Ornithology Society
2020	Student Presentation judge , North American Ornithology Conference
2020—present	Story-telling Scientific Communication Event Committee , North American Ornithology Conference
2020	Pre-proposal Webinar organizer and moderator , Smith Fellowship
2020-2021	Diversity, Equity and Inclusion Committee , UMass Environmental Conservation Department
2020	Student speaker judge , University of Massachusetts, Amherst
2019-present	Elected Council Member , Wilson Ornithological Society
2019-2021	Early Professional Committee , Wilson Ornithological Society
2019-2021	Communications Committee , Wilson Ornithological Society
2019	Organized oral session organizer – Ecological Society of America
2019	Student Speaker Judge , University of Massachusetts, Amherst
2019	Website reviewer , American Ornithological Society
2017-2018	Co-organizer , CANR Diversity in science seminar series
2015	Student Poster Judge , AFO/WOS/SCO Ornithology Meeting
2014-2016	Coordinator, ENWC Seminar Series
2010-2012	Committee member , Gradroots Graduate Student Organization
2011-2012	Committee member , Gradroots Seminar Committee
2010-2011	Committee member , Gradroots Minigrants Committee

SELECTED MEDIA COVERAGE

Residential Yard Biodiversity

2020	“Taking the sting out of bee conservation”, <i>The Wildlife Society</i> (link)
2020	“Cultivating Change”, <i>The National Wildlife Federation</i> (link)

Native Plants and Breeding Birds

2020	“The pleasure and value of our street trees”, <i>Greenfield Recorder</i> , Pat Leuchtman (link)
2020	“What’s the value of natural landscaping?”, <i>Shorelines Newsletter</i> (Association to Preserve Cape Cod) (link)
2020	“A native plant guru’s radical vision for the American yard”, <i>The Washington Post</i> , (link)
2019	“Birds, Bugs, and Native Plants”, <i>Planning Magazine</i> -The American Planning Association, (link)
2019	“Want to Encourage Native Bees and Wildlife? Plant Local”, <i>DCist</i> , (link)
2019	“Is your yard a ‘food desert’ of non-native plants?”, <i>The Examiner</i> , (link)
2018	“Want to See More Wildlife in Your Yard? Researchers Have A Suggestion: Plant Native”, <i>WAMU-NPR</i> , (link)
2018	“These plants bring all the birds to your yard”, <i>Popular Science</i> , (link)
2018	“Yards With Non-Native Plants Create ‘Food Deserts’ for Bugs and Birds”, <i>National Audubon Society</i> , (link)

- 2018 “A Yard Full of Native Plants Is a Yard Full of Well-Fed Birds”, *Cornell Lab of Ornithology – Living Bird Magazine*, ([link](#))
- 2018 “Exotic trees may be pretty, but they are bad news for birds”, *Sierra Magazine*, ([link](#))
- 2018 “Ecologists Have this Simple Request to Homeowners—Plant Native”, *Smithsonian Magazine*, ([link](#))
- 2018 “Gardens with too many nonnative plants threaten populations of insect-eating birds, study finds”, *Mongabay*, ([link](#))
- 2017 “New Research Further Proves Native Plants Offer More Bugs for Birds”, *National Audubon Society*, ([link](#))
- 2017 “Turns out birds like to eat local too”, *Alleghany Front, Michigan NPR/Pittsburgh NPR*, ([link](#))
- 2015 “Chickadees show why birds need native trees” *National Wildlife Federation*, ([link](#))

Shade Coffee Research Project

- 2019 “Shade Grown doesn’t necessarily mean bird friendly, researchers find”, *Daily Coffee News*, ([link](#))
- 2018 “Made in the Shade: Bird-Friendly Coffee”, *National Zoo News* ([link](#))

Bird Song in Urban Forests

- 2016 “It’s not just noise that makes city birds sing a different tune”, *Conservation Magazine*, ([link](#))
- 2016 “City Cardinals, Country Cardinals”, *Bird Watcher’s Digest* ([link](#))

Insect Conservation

- 2020 “Those pretty roadsides may be bad for bugs” SciShow YouTube Video ([link](#))
- 2020 “How Non-Native Plants Are Contributing to a Global Insect Decline”, Yale 360 ([link](#))

INVITED OUTREACH TALKS (4 keynote lectures, 31 public talks)

4 Keynote Lectures and >38 public seminars and webinars about topics related to native and non-native plants, plant-animal interactions and host plant specialization, conservation opportunities of residential yards, and insect and bird declines.

COMMUNITY SERVICE AND OUTREACH ACTIVITIES

- 2021-2022 “Conservation Heroes” – Interviews with underrepresented heroes of conservation.
- 2022 “Biodiversity conservation and leaf litter management” – “Possibly” Sustainability science radio show, Rhode Island NPR
- 2021 Food Web Field Day – Renaissance School in Springfield, MA. Led arthropod and earthworm sampling demonstration with >100 9th graders.
- 2021 Commentary on future bird conservation for Connecticut’s ‘State of the Birds’ publication
- 2021 University of Massachusetts 2022 Horticultural Extension Calendar, contributed information and pictures for a written piece about keystone plants for conservation
- 2021 “Biden’s 30 x 30 Conservation Plan”, Conservation Unfiltered podcast, Jason Crighton
- 2021 “Birds & Native Plants” – Bird Note podcast, Washington Public Radio
- 2021 “Meet a Scientist Program” Hartford Connecticut Public Schools
- 2020 “Growing Greener” podcast, Thomas Christopher
- 2020-2022 Shutesbury elementary school ‘Meet a Scientist’ program
- 2018-2019 Girls Inc! Bird banding activity for STEM inspire session
- 2017 Guest host, invited to host online twitter chat about research (@Sciparty)

2017	Monarch butterfly tagging activity with multiple school groups
2016	Various bird monitoring activities with Northern Virginia schools
2013—2017	Outreach activities with community scientists involved with <i>Neighborhood Nestwatch</i>
2013—2017	Social media activities for the Smithsonian Migratory Bird Center
2013—2017	International Migratory Bird Day, National Zoo
2014—2015	Ecological activities for Tatnall School, taught 6th graders about insect and bird ecology
2013—2014	Bird house building activity and bird banding demonstrations, Waples Mill Elementary School
2013—2014	Bird house building activity, Booz Allen Family Event at the National Zoo
2011	Bird banding Demonstration for Denison University Ornithology Class
2008	Bird banding Demonstration for Three Rivers Birding Club, Erie, PA
2006	Contributed Articles, The Spruce Moose, Adirondack Ecological Center

CONSULTING SERVICE

2021	Consultant for infographic piece on creating overwinter habitat for Lepidoptera in yards (link)
2020	Consultant about young adult book on bird conservation, Rebecca Hirsch
2020	Consultant for proposal to fund activities promoting natural landscaping in residential yards, Tom Chase, Nature Conservancy
2019	Consultant for best native plants for urban gardens, “Climate Change Coverage for D.C.” Candace Montague, DCist (link)
2019	Washington D.C., Urban Street Tree Master Plan, Landscape Architecture Bureau, LLC
2018	Research design for studies of insects and nonnative plants, Dr. David Coyle, Forest Health and Invasive Species Extension Program
2018	Research design for studies of restoration ecology and birds in urban areas, Dr. Adam Fudickar, Indiana University, Bloomington
2018	Research design for studies of landscaping plants, Dr. Ilya R. Fischhoff, Cary Institute of Ecosystems Studies
2017	Best practices for working on privately-owned land, Dr. Karen Dyson, University of Washington

PROFESSIONAL DEVELOPMENT

2021	Future Faculty Workshop , Northeastern University
2021	Introduction to Shiny Applications , SESYNC, Denis Valle
2019	Introduction to the NEON data network , Batelle, Boulder Colorado
2018	Managing Ecological Data for Effective Use and Re-Use: A Workshop for Early Career Scientists , Ecological Society of America, Amber Budden
2018	Introduction to Community Data Analysis Using the vegan Package in R , Ecological Society of America, Naupaka Zimmerman
2018	Hormone assays for corticosterone extraction from avian feathers , Chris Tonra, OSU
2017	Instructor Training—Programming and Coding in R , Software Carpentry
2017	Introduction to Python, Git and Bash shell , Software Carpentry Workshop, Univ Delaware
2016	Network Analysis in R , North American Ornithological Conference, Daizaburo Shizuka
2016	Survival Estimation Using Markov Transition Matrices , Matt Etterson, Univ Delaware
2016	Metabarcoding avian fecal material for dietary information , Andreeanna Welch, Smithsonian
2015	AWIS Mentoring , Wilson Ornithological Society, Cindy Simpson
2014	Bayesian Population Analysis , University of Montana, Marc Kery and Michael Schuab

SKILLS

Programming:	R, Rstudio, Winbugs/JAGS, git/Github, cluster computing
Field:	Bird banding (Subpermit holder, 15 years' experience), population demography (nest searching, resighting, etc.), Motus/radio-telemetry, point count/distance sampling, behavioral observation, collecting biological samples, identification of birds, insects, plants, etc. bioacoustics recording, small/large mammal trapping, adult and larval insect sampling, taxonomy and museum specimen preparation, i-Tree vegetation sampling
Modeling:	generalized linear models, hierarchical models, survival analysis, occupancy/n-mixture models, Bayesian modeling, community ordination, AIC model selection, network analysis, community occupancy models, trait-based models
Laboratory:	stable isotopes, DNA-extraction, lipid assays, hormone extraction
Geospatial Data:	primarily in R using packages 'sp', 'raster' etc. map making, data extraction, home range analysis