# DESIREE L. NARANGO, PH.D.

Conservation Scientist, Vermont Center for Ecostudies
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*Research Interests:* ecology and conservation of insects and birds, human-dominated landscapes, applied forest and urban ecology, species interactions, food webs, introduced plants, community ecology, macroecology, data science

## EDUCATION

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| 8/2018 | **PhD** Entomology and Wildlife Ecology, Specialization: Entomology<br>University of Delaware, Newark, DE<br>Advisors: Dr. Douglas Tallamy & Dr. Peter Marra<br>*Dissertation: The effects of nonnative plants on food webs in residential landscapes* |
| 5/2012 | **MS** Environment & Natural Resources, Specialization: Wildlife Ecology & Statistics<br>The Ohio State University, Columbus, OH<br>Advisor: Dr. Amanda Rodewald<br>*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<br>State University of New York: ESF, Syracuse, NY |

## PROFESSIONAL APPOINTMENTS

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| 10/2022—Present | **Conservation Scientist**<br>Vermont Center for Ecostudies, White River Junction, VT, 05001<br>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 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**<br>Department of Biology, University of Massachusetts, Amherst<br>USDA Forest Service – Northern Research Station<br>Project: Investigating multi-trophic linkages between plants, insects, and migratory birds to inform effective forest management strategies |
| 6/2018- 5/2020 | **Postdoctoral Researcher**<br>Advanced Science Research Center, City University of New York<br>Project: Macroecological relationships of bird, bee, and ground arthropod communities in six major metropolitan cities |

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| 4/2013-5/2018 | **Graduate Research Associate & Doctoral Fellow**<br>Department of Entomology and Wildlife Ecology, University of Delaware<br>Migratory Bird Center, Smithsonian Conservation Biology Institute |
| 1/2010-5/2012 | **Graduate Research Assistant**<br>School of Natural Resources and the Environment, The Ohio State University |
| 5/2005-12/2009<br>& 5/2012-4/2013 | **Research Assistant**<br>Smithsonian Institute, Vermont Center for Ecostudies, The Ohio State University, University of Delaware, University of Arizona, SUNY-ESF.<br>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 ~ $955k to date)

**Grants Received**

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| 2026 | **One Hive Foundation** ($217k) "Assessing pesticide risk for pollinators and birds in residential landscapes" |
| 2026 | **Private funder** ($10k) "Assessment of vulnerable Bombus sp. persistence and occupancy across the Northeast" |
| 2026 | **Private funder** ($40k) "Residential Yard Pesticide Exposure in the Northeast" |
| 2025 | **USDA Forest Service – International Program** ($40k), "Investigating stopover habitat for Bicknell's Thrush", PI |
| 2025 | **One Hive Foundation** ($51k to VCE, $225k), "Building alpine plant-pollinator networks and fostering conservation connections in gateway communities". Senior Personnel |
| 2024-2026 | **Forest Ecosystem Monitoring Cooperative** ($15k per year, $45k) "Long term monitoring of birds on Mount Mansfield", PI |
| 2024 | **One Hive Foundation** ($207k) "Investigating the effects of plant provenance on pollinator support among New England native plant species". PI |
| 2024 | **USDA Forest Service – International Program** ($25k) – Caribbean capacity building program and internship. Co-PI |
| 2023 | **USDA Forest Service – International Program** ($40k) "Identifying and quantifying population drivers for female Bicknell's Thrush across the full annual cycle". Co-PI |
| 2023 | **Green Mountain National Forest** ($2,500) "Inventory of moth and beetle diversity in a high-elevation fen", PI |
| 2022 | **David H. Smith Conservation Postdoctoral Research Fellowship - extension** ($18k), PI |
| 2021 | **University of Massachusetts ECo Summer forest research internship award,** ($4,500), "Foliage Arthropods in Urban Forests" PI |
| 2020 | **David H. Smith Conservation Postdoctoral Research Fellowship,** ($186k)<br>"Investigating multi-trophic linkages between plants, insects and migratory birds to inform effective forest management strategies" PI |
| 2018 | **Disney's Worldwide Conservation Fund** ($48k), "Smorgasbords in the agroforestry canopy" Co-PI |
| 2017 | **University of Delaware**, ($18k), Doctoral Fellowship |
| 2017 | **Smithsonian Institute**, ($11,500), Doctoral Fellowship |
| 2014 | **Disney's Worldwide Conservation Fund** ($24,500), "Shade Coffee, Insects and Birds" Co-PI |
| 2014 | **Maryland Ornithological Society** ($1,500), Student Research Grant |
| 2014 | **North American Bluebird Society** ($1,600), Student Research Grant |

**Consulting Funding Received**

2024 **Connecticut Audubon** ($20k), Consulting work to survey and monitor butterfly and bee populations before restoration management, including testing focal species for pesticide exposure and quantifying plant-pollinator networks.

2023 **Plan It Wild** ($50k), 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.

**Proposals submitted**

**In review for NSF-PCE, Co-PI (requested $350k, 800k total)**

Collaborative Research: Assessing the influence of traits, scale, and landscape context on the ability of trees to support foliage arthropod biodiversity in a changing world." With Allen Hurlbert (UNC).

**In review for Stanley Smith Horticultural Trust ($20.5k)**

Assessing floral and foliar resource quality among plant ecotypes in a common garden experiment

**In review for USFS – International Program (75k)**

Harnessing community science, bioacoustics, and machine learning to assess stopover habitat suitability for Bicknell's Thrush in the Mid-Atlantic

**Proposals Declined**

Collaborative Research: From models to management: Assessing the effectiveness of plant-pollinator networks in guiding pollinator habitat enhancement With Melissa Guzman, Chris Cosma, Eric Wood and Neal Williams. NSF-PACSP, Co-PI

Collaborative Research: Advances in monitoring and habitat modeling for urban wildlife conservation. NSF-PACSP, Co-PI

SCC-DG: Building Communities of Environmental Stewardship Through Autonomous Biodiversity Monitoring. NSF-SCC, PI

NSRC: Pollinator-friendly Forestry–Evaluating the role of silviculture for forest beneficial insect conservation, PI

NSF-SRS Social-environmental homogenization, vulnerability and stress along urban to rural gradients in the continental U.S., Co-PI

## 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 (27 in press/published, 1455 citations, H-index: 17, Google Scholar)

**Published (n=27)**

27. Kennedy, A.C., **Narango, D.L.,** Tallamy, D.W., Miles, K., Bartlett, C.R. and Stewart, I., 2026. Camera traps at nest boxes reveal consistent importance of Lepidoptera in Eastern Bluebird (*Sialia sialis*) nestling diets. The Wilson Journal of Ornithology, pp.1-18.

26. Deckel, S.C., **Narango, D.L**., DeLuca, W., King, D.I., Gerson, A. Stable Isotope Analysis and DNA Metabarcoding Reveals Elevational Shifts in Diet of a Montane Breeding Bird. Journal of Field Ornithology.

25. **Narango, D.L.,** Tallamy, D.W. Shropshire, K. Tree composition mitigates negative effects of urbanization on specialist and generalist moth communities. *Ecological Solutions and Evidence.*

24. **Narango, D.L.** and Straley, K. *In press.* Nonnative congeneric trees are poor quality host plants for a larval Lepidopteran. *Ecosphere.*

23. Blanc-Benigeri, A., Poirier, V., **Narango, D.L.,** et al. (2024). Dietary preferences of moulting Swainson's Thrushes (*Catharus ustulatus*) and Tennessee Warblers (*Leiothlypis peregrina*) at a stopover site during fall migration. *Scientific Reports*

22. Mejia G., Groffman, P. M., Avolio, M.L., Bratt, A., Engebretson, J. M., Grijseels, N., Hall, S. J., Hobbie, S. E., Lerman, S. B., Litvak, W., Locke, D. H., **Narango, D.L.,** et al. (2024). How do urban trees vary across the USA: It depends on where and how you look. *Frontiers in Ecology and the Environment*

21. Mejia G., Groffman, P. M., Avolio, M.L., Bratt, A., Cavender-Bares J., Grijseels, N., Hall, Heffernan, J., S. J., Hobbie, S. E., Lerman, S. B., Morse J., **Narango, D.L.,** et al. (2023). Woody plant-soil relationships in urban interstitial spaces have implications for future forests within and beyond urban areas. *Ecosystems.*

20. Lerman, S.B., Larson K.L., **Narango, D.L.,** Goddard, M., Marra, P.P. (2023). Humanity for Habitat—Residential yards as an opportunity for conservation. *Bioscience*.

19. Grijseels, N. et al. (2023). 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. (2022). Examining the potential to expand wildlife-supporting residential yards and gardens. *Landscape and Urban Planning.*

17. Piel, G.*, Tallamy, D.W., **Narango, D.L.** (2021). 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), et al. (2021). 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. (2021) 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.**, et al. (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.,** Andrande, 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=4)**

*In review for Ecosystem Services*. Bratt, A. **Narango, D.L.** (Dual First Author), et al. Urban greenspace management and ecosystem services at the continental scale.

*Revision in review at Nature Reviews Biodiversity*. Cooke et al. The consequences of changing insect abundance and diversity for vertebrates. (*Product of RCN working group)

*In review at Urban Ecosystems*. Ryan, C. et al. The influence of alternative yard management strategies on soil biogeochemistry in six U.S. cities.

*In review at Journal of Animal Ecology*. Narango D.L. Jones, A, Sosa, P., Rebozo, R., Hallworth, M. Anthropogenic subsidies reshape Ruby-throated Hummingbird (*Archilochus colubris*) interactions across spatial and temporal contexts: evidence from community-collected data

*In review at Nature Sustainability*. Baiotto, T., Cosma, C. et al. Local interaction networks reconstructed from global biodiversity data improve pollinator restoration decision making

*Preprint in prep*. Costello L. and Narango, D. Diel patterns and community composition of insect visitors to Platanthera dilatata (Orchidaceae) revealed by time-lapse photography

**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=23)

2026 **Narango, D.L.** "Scaling Up Plant–Pollinator Interaction Data with iNaturalist Observations" (Community Science Section) and "Does Plant Ecotype Matter for Pollinators? Insights from a Common Garden Experiment" (Plant-insect interactions Section), Northeastern Natural History Conference

2025 **Narango, D.L.** "Bird and Insect Ecology as a Nonprofit Scientist: From Research to Conservation Action", Washington College

2025 **Narango, D.L.** "Feast or Famine: Do urban forests provide adequate refueling for migratory birds? Northeastern Natural History Conference

2024 **Narango, D.L.** "Multitrophic interactions in human-dominated landscapes: links between people, plants, and animals" Indiana University—Bloomington

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 $^{15}$N isotope tracer experimentally demonstrates that nonnative plants limit energy flow to higher order consumers". Ecological Society of America Meeting, New Orleans, LA. Presentation.
***Won Enhrenfeld 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*

## ADVISING AND COMMITTEE SERVICE

2024-2026 Laura Costello, M.S. Student, University of Vermont "Quantifying moth flower visitation using automated and community science data". *External Advisor*

2024-present Melory Brandao, M.S. Student, University of Delaware, "Investigating the efficacy of Miyawaki Forests in urban ecosystems". *External Advisor*

2024-present Emelia Kusi, University of Massachusetts, Amherst, PhD Student 'Pathogen transmission rates and bumble bees" *Committee Member*

2023-2025 Kevin Dernier, State University of New York Plattsburgh, M.S. Student "Using automated technology to monitor female bird behavior" *External Advisor*

2022-2026 Kelsey Miles, University of Connecticut PhD Student, "Plant-insect interactions on urban street trees" *Committee Member*

## POSTDOCTORAL MENTORSHIP

2024-present Sarah Deckel, "Comparing adaptive physiology between Bicknell's Thrush and Swainson's Thrush" Great Hollow Nature Preserve Fellow

2023-present Giselle Mejía "Shaping Urban Biodiversity: A Multi-scale Analysis of Nursery Trends, Stakeholder Preferences, and Tree Composition in Urban Landscapes" David H. Smith Postdoctoral Fellow

## STUDENT MENTORSHIP (5 high school, 30+ undergraduates, 29 postgraduates, 6 graduate students)

2022-present Vermont Center for Ecostudies "*Future Ecologists Program*" – Over the past three years, I have mentored nine undergraduate and postgraduate students in ecological techniques. This program is designed to give students their first experiences in field ecology and data analysis and is a targeted program for members of underrepresented communities, including both BIPOC and neurodiverse identities.
2021-present Beth Rogers – University of Massachusetts, Amherst, Graduate Student Research
2020-2021 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
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
2018-2020 Garrison Piel—University of Delaware, undergraduate independent research and publication
2019 Leah Wallner – University of Massachusetts Amherst, undergraduate
2018-2019 Alexus 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**

2023-2025 (2) Sustainable Agriculture and (3) Ecology and (1) Sustainability, Dartmouth College
2022 Intro to Biology for first year students, University of Massachusetts, Amherst
Ornithology, Mount Holyoke College
2021-2022 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—2020 Wilson Ornithological Society
2015-2017 Entomology Society of America

## INVITED PEER REVIEWER

*Associate Editor:* Ornithological Applications (*2020—2024*)

*Editorial Board:* Urban Naturalist (*2018—2025*)

*Grant Reviewer:* NSF Career Award, NSF DEB, Wilson Ornithological Society

*Reviewer:* Behavioral Ecology, Biological Conservation, Canadian Field-Naturalist, Ecography, Ecological Applications, Ecosphere, Journal of Biometerology, 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

## WORKING GROUP MEMBERSHIPS

"Developing a native plant selection tool for conservation organizations" – Morpho Initiative National Center for Ecological Analysis and Synthesis (2023-present)

Insect Decline Research Coordination Network (2022-present)

## PROFESSIONAL SERVICE

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|---|---|
| 2021-2022, 2025 | **Conservation 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", *The Wildlife Society* (link)
2020 "Cultivating Change", *The National Wildlife Federation* (link)

**Native Plants and Breeding Birds**

2020 "A native plant guru's radical vision for the American yard", *The Washington Post*, (link)
2018 "Want to See More Wildlife in Your Yard? Researchers Have A Suggestion: Plant Native", *WAMU-NPR*, (link)
2018 "These plants bring all the birds to your yard", *Popular Science*, (link)
2018 "Yards With Non-Native Plants Create 'Food Deserts' for Bugs and Birds", *National Audubon Society*, (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)
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", C*onservation 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)
2025 "Scientists Are Tracking Worrying Declines in Insects—and the Birds That Feast on Them. Here's What's Being Done to Save Them Both" - Smithsonian Magazine (link)

**Keystone Plants for Wildlife Conservation**

2025 Native Plants Feed Ecosystems -- In Defense of Plants (link)
2022 Power Plants - National Wildlife Federation (link)
2022 May #BLTrees – WYNC, The Brian Lehrer Show (link)

## INVITED OUTREACH TALKS

8 Keynote Lectures and >50 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, urban ecology, 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 9$^{th}$ 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

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|---|---|
| 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 *Neighborhood Nestwatch* |
| 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**, Andreanna Welch, Smithsonian

2015 **AWIS Mentoring**, Wilson Ornithological Society, Cindy Simpson
2014 **Bayesian Population Analysis**, University of Montana, Marc Kery and Michael Schuab

## SKILLS

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|---|---|
| **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 mixed 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 and amplification, protein and lipid assays, hormone and metabolite assays |
| **Geospatial Data:** | primarily in R using packages 'sp', 'raster' etc. map making, data extraction, home range analysis |