

James Reilly

Rutgers University, Department of Ecology, Evolution, & Natural Resources, New Brunswick, NJ

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EDUCATION

2009 Ph.D., Entomology, Cornell University, Ithaca, NY

2002 B.S., Biology, College of William & Mary, Williamsburg, VA

CONSULTANT / RESEARCH ANALYST

2014-Present Ecological data analysis, Dept of Ecology, Evolution, & Natural Resources, Rutgers University, New Brunswick, NJ

2021-Present Ecological impact/GIS mapping, Agriculture and Forest Districts Outreach Committee, Powhatan County, VA

2012-2013 Ecological data analysis, Cornell University, Ithaca, NY

2012-2013 Ecological data analysis, Dept of Entomology, Rutgers University, New Brunswick, NJ

2009-2011 GIS mapping/databases, Capital Region Land Conservancy, Richmond, VA

POSTDOCTORAL RESEARCHER

2009-2011 Dept of Biological Sciences, Louisiana State University, Baton Rouge, LA

PUBLICATIONS

Winfree R, **Reilly JR**, Genung M (2025) Biodiversity-ecosystem function research must consider abundance, not just diversity. *Nature Reviews Biodiversity* 1: 347-348.

<https://doi.org/10.1038/s44358-025-00040-1>.

Eeraerts M, and 67 others including **Reilly JR** (2025) Global synthesis of apple pollination research highlights general pollen limitation and positive contributions of wild bees compared to honeybees. *Journal of Applied Ecology*. <https://doi.org/10.1111/1365-2664.70155>

Reilly JR, Bartomeus I, Simpson D, Allen-Perkins A, Garibaldi L, Winfree R (2024) Wild insects and honey bees are equally important to crop yields in a global analysis. *Global Ecology and Biogeography* e13843.

Turo KJ, **Reilly JR**, Fijen TPM, Magrach A, Winfree R (2024) Insufficient pollinator visitation often limits yield in crop systems worldwide. *Nature Ecology & Evolution* 8(9): 1612-1622.

Eeraerts M, and 24 others including **Reilly JR** (2024) Pollinator deficits and their relation with insect pollinator visitation are cultivar-dependent in an entomophilous crop. *Agriculture, Ecosystems & Environment* 369: 109036.

Genung M, **Reilly JR**, Williams N, Buder A, Gardener J, Winfree R (2023) Rare and declining bee species are key to consistent pollination of wildflowers and crops across large spatial scales. *Ecology* 104(2): e3899.

Eeraerts M, and 28 others including **Reilly JR** (2023) Synthesis of highbush blueberry pollination research reveals region-specific differences in the contributions of honeybees and wild bees. *Journal of Applied Ecology* 60 (12): 2528-2539.

Allen-Perkins A, Magrach A, Dainese M, Garibaldi L, Kleijn D, Rader R, **Reilly JR**, Winfree R, and 179 others (2022) CropPol: a dynamic, open and global database on crop pollination. *Ecology* 103(3): e3614.

Reilly JR, Artz DR, Biddinger D, Bobiwash K, Boyle NK, Brittain C, Brokaw J, Campbell JW, Daniels J, Elle E, Ellis JD, Fleischer SJ, Gibbs J, Gillespie RL, Gundersen KB, Gut L, Hoffman G, Joshi N, Lundin O, Mason K, McGrady CM, Peterson SS, Pitts-Singer TL, Rao S, Rothwell N, Rowe L, Ward KL, Williams NM, Wilson JK, Isaacs R, Winfree R (2020) Crop production in the USA is frequently limited by a lack of pollinators. *Proceedings of the Royal Society B* 287: 20200922.

MacLeod M, **Reilly JR**, Cariveau D, Genung M, Roswell M, Gibbs J, Winfree R (2020) How much do rare and crop-pollinating bees overlap in identity and flower preferences? *Journal of Applied Ecology* 57(2): 413-423.

Reilly JR, Reilly SJ (2020) Range extension of *Hyla cinerea* (Green Treefrog) into the Virginia Piedmont. *Journal of the Virginia Herpetological Society: Catesbeiana* 40(2): 132.

Winfree R, **Reilly JR**, Bartomeus I, Cariveau DP, Williams N, Gibbs J (2018) Species turnover promotes the importance of bee diversity for crop pollination at regional scales. *Science* 359: 791-793. Also featured by *Science* as a perspective.

Winfree R, Fox J, Williams N, **Reilly JR**, Cariveau D (2015) Abundance of common species, not species richness, drives delivery of a real-world ecosystem service. *Ecology Letters* 18: 626-635. Also featured by *Nature* as a research highlight.

Reilly JR, Elder BD (2014) Effects of biological control on long-term population dynamics: Identifying unexpected outcomes. *Journal of Applied Ecology* 51(1): 90-101.

Elder BD, **Reilly JR** (2014) Warmer temperatures increase disease transmission and outbreak intensity in a host-pathogen system. *Journal of Animal Ecology* 83 (4): 838-849.

Benjamin F, **Reilly JR**, Winfree R (2014) Pollinator body size mediates the scale at which land use drives crop pollination services. *Journal of Applied Ecology* 51(2): 440-449.

Reilly JR, Liebhold A, Hajek AE, Plymale R (2014) The impact of *Entomophaga maimaiga* on outbreak gypsy moth populations: the role of weather. *Environmental Entomology* 43(3): 632-641.

Rader R, **Reilly JR**, Bartomeus I, Winfree R (2013) Predicting climate change impacts on pollination services. *Global Change Biology* 19 (10): 3103-3110.

Reilly JR, Hajek AE (2012) Prey processing by avian predators enhances virus transmission in the gypsy moth. *Oikos* 121: 1311-1316.

Hajek AE, Plymale R, **Reilly JR** (2012) Comparing Two Methods for Quantifying Soil-Borne *Entomophaga maimaiga* Resting Spores. *Journal of Invertebrate Pathology* 111: 193-195.

Reilly JR, Reilly RJ (2009) Bet-hedging and the orientation of juvenile passerines in fall migration. *Journal of Animal Ecology* 78: 990-1001.

Reilly JR (2009) The ecology of nucleopolyhedrovirus transmission in the gypsy moth (*Lymantria dispar*). Ph.D. Dissertation, Cornell University.

Reilly JR, Hajek AE (2008) Density-dependent resistance of the gypsy moth *Lymantria dispar* to its nucleopolyhedrovirus, and the consequences for population dynamics. *Oecologia* 154: 691-701.

Henson SM, **Reilly JR**, Robertson SL, Schu MC, Rozier ED, Cushing JM (2003) Predicting irregularities in population cycles. *SIAM Journal on Applied Dynamical Systems* 2(2): 238-253.

ACADEMIC AWARDS

National Science Foundation Graduate Research Fellowship, 2002-2007

Monroe Scholar, College of William and Mary, 1999-2002

Valedictorian, Trinity High School, Richmond, VA, 1999

OTHER EXPERIENCE

Peer review for academic Journals: Science, Ecology, Proceedings of the Royal Society, Journal of Applied Ecology, Environmental Entomology, Fungal Ecology

Scientific presentations: I have presented my research at numerous scientific meetings including the Ecological Society of America, Entomological Society of America, International Congress of Entomology, and the Society for Invertebrate Pathology. I have also been invited to present my research at the USDA Research Forum on Invasive Species, various universities including Virginia Commonwealth University, Louisiana State University, and Cornell University, and at local government meetings.

Modeling and data analysis: I have extensive experience writing code for mathematical modeling and data analysis (primarily in the R programming language). In my Ph.D. and postdoctoral research, I created simulations to explore how pathogens regulate insect populations. As an independent consultant, I focus on manipulating large ecological datasets, creating and managing databases, and performing statistical analyses (multi-variate models, mixed effects, Bayesian, simulations).

GIS spatial data analysis: I have a long-standing interest in GIS mapping, and am competent with ArcGIS and other software used for spatial analyses (including R). I worked as an independent GIS contractor for the Capital Region Land Conservancy in Richmond, VA, creating maps that introduce ecological criteria into land use planning. I also helped my home county of Powhatan, VA create maps identifying ecologically important areas for their comprehensive land management plan.

Insect identification: I have been sampling and photographing moths for many years, and can identify over 1500 species of moths from Eastern North America on sight. With my wife, Sarah, I run a series of moth nights each summer at Powhatan State Park that are open to the public. I also worked in the Cornell University Insect Collection to identify and curate the Franklemont Geometrid collection (several hundred thousand specimens), and incorporate it into the main collection.