

Michael Roswell

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Education

2014-2020 Ph.D. Ecology and Evolution, Rutgers University. Adviser: Dr. Rachael Winfree
2007-2011 B.A. Majors in Biology and Linguistics, Swarthmore College

Professional experience

2023-pres Postdoctoral Associate, Dept. Biology, *University of Maryland, College Park*
2022-2023 Data Science Consultant, McMaster Theoretical Biology Group, *McMaster University*
2020-2023 Postdoctoral Associate, Dept. Entomology, *University of Maryland, College Park*
2019 Lecturer, Dept. Ecology, Evolution, & Natural Resources, *Rutgers University*
2018 Adjunct Professor, Dept. Biology, *Rider University*
2017 Lecturer, *Freedom Summer Collegiate/Millsaps College*
2014-2018 NSF Graduate Fellow, Dept. Ecol., Evol., & Nat. Resources, *Rutgers University*
2014-2015 Excellence Graduate Fellow, Dept. Ecol., Evol., & Nat. Resources, *Rutgers University*
2013-2014 Lead Field Technician & Lab Manager, Winfree Lab, *Rutgers University*
2014 Field Science Instructor and Site Manager, *Nature Bridge in Southern California*
2012-2013 Scientist, *Wondergy Inc.*

Peer-reviewed publications (Mentee: *Undergraduate, *Graduate)

Roswell, M. & Espíndola, A. Global conservation prioritization approach provides credible results at a regional scale. *Diversity and Distributions*. 2025. <https://doi.org/10.1111/ddi.13969>

Roswell, M., Harrison, T., & Genung, M. A. Biodiversity-ecosystem function relationships change in sign and magnitude across the Hill diversity spectrum. *Philosophical Transactions of the Royal Society B*. 2023; 378:20220186 <https://doi.org/10.1101/2022.09.30.510130>

Simpson, D. *, Weinman, L. *, Genung, M., **Roswell, M.**, MacLeod, M., & Winfree, R. Many species, including rare species, are important for function of mutualist networks. *Proceedings of the Royal Society B*. 2022; 289:20212689 <https://doi:10.1098/rspb.2021.2689>

Roswell, M., Dushoff, J., & Winfree, R. A conceptual guide to measuring species diversity. *Oikos*. 2021; 130(3), 321–338. <https://doi:10.1111/oik.07202> * **Editor's Choice**.

MacLeod, M., Reilly, J., Cariveau, D., Genung, M., **Roswell, M.**, Gibbs, J., & Winfree, R. How much do rare and crop-pollinating bees overlap in identity and flower preferences? *Journal of Applied Ecology*. 2020; 57(2), 413–423. <https://doi.org/10.1111/1365-2664.13543>

Roswell, M., Dushoff, J., & Winfree, R. Male and female bees show large differences in floral preference. *PLoS One*. 2019; 14: e0214909. <https://doi:10.1371/journal.pone.0214909>

Grants (\$46,200) & Fellowships (\$258,000)

- 2019 Earth, Ocean, and Atmospheric Science Seed Grant (for Data Club expansion). Golden A., **Roswell M.** \$6,000
- 2016 Rutgers Ecology & Evolution Graduate Program Small Grant, **Roswell, M.** \$1,000
- 2015 Federal Conservation Innovation Grant (**M. Roswell** addendum to existing grant, *Next steps in pollinator conservation...* Vaughn, M., Winfree R., & others). \$33,000
- 2015 Rutgers University Graduate School Conference Travel Award. **Roswell, M.** \$200
- 2015 Rutgers University School of Environmental and Biological Sciences Pre-Dissertation Award. **Roswell, M.** \$2,000
- 2014 Rutgers University Graduate School Excellence Fellowship. **Roswell, M.** \$30,000
- 2014 NSF Graduate Research Fellowship (Stipend + Scholarship). **Roswell, M.** \$138,000
- 2014 NSF GAANN Fellowship in Urban Ecology (declined). **Roswell, M.** \$90,000
- 2009 NY Times Sustainability Grant. **Roswell, M.** \$500
- 2009 Joel Dean Research Fellowship (awarded to research dying language, Muniche, in Peruvian Amazon). **Roswell, M.** \$3500

Teaching

Course instruction

- 2023 *The World of Biology*, University of Maryland (lab coordinator & TA supervisor for 7-section introductory course)
- 2021 *Frontiers in Biodiversity Measurement*, University of Maryland (Developed and taught graduate seminar with programming in R)
- 2019 *Data Club*, Rutgers University (coordinator, co-wrote grant to develop graduate course from club)
- 2019 *Pollination Ecology*, Rutgers University (proposed, developed, and taught upper-level 4-credit course with programming in R)
- 2018 *General Ecology and Lab* Rider University (developed and taught first half of upper-level 4-credit course)
- 2017 *Pollination Ecology*, Millsaps College/Freedom Summer Collegiate (developed and taught 2 sections of 2-credit course)

Guest lectures

- 2018 *Conservation Ecology*, Rutgers University
- 2018 *Agroecology*, Rutgers University
- 2017, '18 *Introduction to Apiculture*, Rutgers University
- 2016, '17 *Introduction to Environmental Science*, Rutgers University
- 2015, '16 *Plant Diversity and Evolution*, Rutgers University

Additional teaching experience

- 2016 *FIGS faculty mentor*, Rutgers University (Advised the undergraduate instructor in development and instruction of 1-credit seminar)
- 2014 *Science Educator*, NatureBridge (designed and taught 3-5 day outdoor science courses)
- 2011-'13 *Science Educator*, Wondergy Inc. (led 1-2 hour interactive science explorations, up to 20 groups/week)

Mentoring

Professional reference for colleagues, former students, and technicians; medical school, Ph.D., employment, NIH, NSF, and Fulbright fellowship recommendations (2015-present)

Mentor >15 undergraduates and technicians: assist with conference presentations, applying for jobs, fellowships, and graduate programs, securing funding for independent research, conducting peer reviews for journals, navigating degree and GPA. (2016-present)

EEB Mentor match mentor. Aid aspiring graduate students in application process and career readiness. (2020-2022)

Co-Adviser for Honors Thesis: "Morphological trait matching between bees and flowers drives pairwise interactions." Guided lit. review, analysis, writing, presentation. (2015-2016)

Research Mentor for 3 Rutgers undergraduates. (2014-2015)

Technical reports, software, datasets, and preprints

R packages

Roswell, M., Bolker, B., & Dushoff, J. ratioScales: Rational Scales for Visualizing Change (R package). 2022. <https://github.com/mikeroswell/ratioScales>

Roswell M., Dushoff J. MeanRarity: Hill Diversity Estimation and Visualization (R package). 2020. <https://github.com/mikeroswell/MeanRarity>

R Shiny web applications

Roswell, M. & Dushoff, J. Mean Rarity balance plots. 2019. https://mean-rarity.shinyapps.io/rshiny_app1/

Technical reports and book reviews

Roswell, M. (2019). Protecting Pollinators: How to save the creatures that feed our world. *Ecological Restoration*, 37(4), 280.

Ward, K., D. Cariveau, E. May, **M. Roswell**, et al. 2014. *Streamlined Bee Monitoring Protocol for Assessing Pollinator Habitat*. Portland, OR: The Xerces Society for Invertebrate Conservation.

The Munique Talking Dictionary- an online "talking" lexicon with both Munique- Spanish and Munique-English interfaces. June 2011. Available online at <http://munique.swarthmore.edu>

Una Breve Descripción del Idioma Munique. Yurimaguas, Peru, August 2009. Available online at http://www.cabeceras.org/cap_mygramatica_sep09.pdf

Manuscripts in preparation

Cornfeld, O., Niu, K., Neeman, O., **Roswell, M.**, & Steinbach, G. (2025). Integrating Macroeconomic and Public Health Impacts in Social Planning Policies for Pandemic Response, 1–27. *Preprint*:
<https://www.medrxiv.org/content/10.1101/2025.01.21.25320900v1.full-text>

Earn, D. J. D., MacKinnon, G., Manzin, S., **Roswell, M.**, Cygu, S., Shi, C., Bolker, B., Dushoff, J., & Walker, S. C. (2024). Over a Century of Infectious Disease Surveillance in Canada: Introducing the Canadian Disease Incidence Dataset (CANDID). *Preprint*:
<https://www.medrxiv.org/content/10.1101/2024.12.20.24319425v1>

Li M, **Roswell M**, Hampson K, Bolker B, & Dushoff, J. Reassessing global historical R0 estimates of canine rabies. [Preprint](#).

Roswell M, T. Harrison, M. Genung, J. Dushoff, R. Winfree, D. Cariveau. Wildflower plantings provide scarce benefit to rare bee species. [Preprint](#).

Invited talks and conference presentations

Invited talks

- 2022 Synthesizing Biodiversity Series, Hakai Institute (remote)
- 2020 Department of Entomology, University of Maryland, College Park, MD
- 2020 Synthesizing Biodiversity Series, Hakai Institute (remote)
- 2019 Drongos Conservation Biology Seminar, Princeton University, Princeton, NJ

Contributed talks and posters

- 2023 Ann. meeting, Entomological Society of America (talk)
- 2023 Mid-Atlantic chapter meeting of the Ecological Society of America (poster)
- 2022 Postdoctoral Symposium, University of Maryland (poster)
- 2020 Ann. meeting, Ecological Society of America (talk)
- 2019 Ann. meeting, Ecological Society of America (poster, *undergraduate first author)
- 2019 Ann. meeting, Ecological Society of America (talk)
- 2017 Ann. meeting, Ecological Society of America (talk)
- 2015 Ann. meeting, Ecological Society of America (talk)
- 2014 Ann. meeting, Ecological Society of America (poster)
- 2013 Int'l Conf. on Pollinator Biology, Health, and Policy (poster)
- 2011 Ann. meeting, Ecological Society of America (poster)

Professional service and outreach

Manuscript reviewer

American Journal of Botany, Annals of the Entomological Society of America, Arthropod-Plant Interactions, Canadian Journal of Microbiology, Ecography, Ecology (2x), Ecology and Evolution,

Ecology Letters (2x), *Functional Ecology*, *Journal of Animal Ecology* (2x), *Journal of Ecology*, *Natural Areas Journal*, *Oikos* (3x), *Philosophical Transactions of the Royal Society B*, *PLoS One*, *Proceedings of the Royal Society B*, *Rhodora*, *Royal Society Open Science*

Grant reviewer (* *ad-hoc*, ° *panelist*)

National Science Foundation Populations, Community, and Ecology cluster*

UMD Entomology outreach award °

Outreach and Extension

- 2024 *Foodie Fridays*. Montgomery County Parks (interactive presentation)
- 2022-2024 *Bug Camp Pollinator Programs* (workshop series)
- 2023 *Ask a Scientist*. Montgomery Blair High School (interview)
- 2023 *Skype a Scientist*. Pewaukee Lakes Elementary School (workshop)
- 2023 *Skype a Scientist*. Roosevelt Middle School (interactive presentation)
- 2022 *Skype a Scientist*. Chelsea High School (interactive presentation)
- 2022 *4-H Summer Pollinator Programs* (train the trainers)
- 2022 *Apple Beeginnings*. Calvert County 4-H (workshop)
- 2020 *Bees and Pollination*. Orion Lakes School District (workshop)
- 2020 *Pollinator Party*. Baltimore Greenspace (lecture)
- 2019 *Pollinators of HMF*. Hutcheson Memorial Forest Center (workshop)
- 2018 *Bees and Pollination*. Duke Farms Master Ecologists (workshop)
- 2018 *Does habitat enhancement benefit rare bees?* New Jersey Wildlife Society (lecture)
- 2018 *Introduction to bees and pollination*. Master Gardeners of Passaic Co. (lecture)
- 2018 *Do male and female bees like different flowers?* Lord Stirling Env. Center (lecture)
- 2017 *Luring pollinators for lurid favors*. Master Gardeners of Monmouth Co. (lecture)
- 2016 *What are native bees?* Princeton Academy (workshop)
- 2016 *Wild bees can help with pollination concerns*. NJ Agricultural Convention (lecture)
- 2015 *Why Native Bees?* The Native Plant Society of Bergen Co. (lecture)
- 2014 *Asking questions about native bees*. Native Plant Society of NJ (keynote lecture)
- 2014 *Streamlined bee monitoring protocol*. Duke Farms (workshop)
- 2013 *Pollinator Biodiversity*. Rutgers Gardens (lecture)

Other service

- 2024 *Abstract Reviewer*, MIDAS annual meeting
- 2022 *Subject Matter Expert* for instrument validation: NSF-funded study on how DEI labor is rewarded in promotion and tenure
- 2020-2022 *Member*, Entomology Department Diversity, Equity, and Inclusion working group, *University of Maryland College Park*
- 2022 *Participant*, NSF URoL Workshop “Stewarding and Integrated Biodiversity-Climate System.” *National Science Foundation*
- 2022 *Judge*, IDEA 2022 Trade Show “How can we Save the Bay.” *Bryant University*
- 2014-2019 *Host*, 5 extramural speakers for departmental seminar series
- 2015-2018 *Reviewer*, New Jersey Junior Science & Humanities Symposium (2015-2018)
- 2016, 2019 *Organizer*, grad program “data club” (2016); co-developed as a grad course (2019)
- 2016-2017 *Volunteer*, Shore Bowl regional oceanography competition, *Rutgers University*

Professional development

- 2023 *Trauma-informed Pedagogy*, University of Maryland
2022 *Mentoring Workshop Series for Postdoctoral Fellows*, University of Maryland
2021 *Becoming a Resilient Scientist Series*, NIH
2020 *Bayesian Statistics*, SESYNC
2017 *Curriculum Workshop and Teaching Orientation*, Millsaps College
2017 *Introduction to College Teaching*, Rutgers University

Societies and certifications

Sigma Xi; The Ecological Society of America; The Entomological Society of America
Wilderness First Responder

Languages

English (Native); Spanish (Proficient); French (Conversational)