

Erin D. Treanore, Ph.D.

Postdoctoral Researcher, Tufts University
Medford, MA,

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EDUCATION

Pennsylvania State University University Park, PA
Ph.D. in Entomology 2022

Pennsylvania State University University Park, PA
M.Sc. in Entomology 2017

Michigan State University East Lansing, MI
B.Sc. in Zoology, concentration in Ecology, Evolution, and 2013
Organismal Biology, Additional Major: German;
Specialization: Environmental Studies

RESEARCH EXPERIENCE

Postdoctoral Researcher

April 2023 | Department of Biology | Dr. Elizabeth Crone | Tufts University | Medford, MA
Research focus on pollinator conservation life history, and community outreach.

Postdoctoral Researcher-PI Dr. Clare Rittschof

June 2022-April 2023 | Department of Entomology | University of Kentucky | Lexington, KY
Research focus on honey bee health, physiology, and behavior.

Graduate Research Assistant and Fellow (Ph.D.)-PI Dr. Etya Amsalem

August 2017-June 2022 | Department of Entomology | Pennsylvania State University | University Park, PA
Research focus on ecological and evolutionary implications of diapause in social insects.

Visiting Researcher-PI Dr. Sharoni Shafir

April-May 2022 | Department of Entomology | The Hebrew University of Jerusalem | Rehovot, Israel
Research focus on the interaction between nutrition and cognition in pre-diapause bumble bee queens.

Graduate Research Assistant (M.Sc.)-PI Dr. Shelby Fleischer

August 2015-December 2017 | Department of Entomology | Pennsylvania State University | University Park, PA
Research focus on supporting pollinators in agricultural systems through sustainable agricultural practices.

Research Assistant-PI Dr. Teja Tscharntke

February 2015-June 2015 | Department of Agroecology | Georg-August-Universität | Göttingen, Germany
Research focus on landscape gradients in urban and rural environments and pollinator foraging behavior.

Research Assistant-PI-Dr. Hermann Behling

October 2014-June 2015 | Department of Palynology | Georg-August-Universität | Göttingen, Germany
Research focus on stingless bee foraging behavior in human-altered ecosystems (EFFoRTS)

Undergraduate Research Assistant-PI Dr. Rufas Isaacs

May 2013-July 2014 | Department of Entomology | Michigan State University | East Lansing, MI
Research focus on pollinators and pollination in highbush blueberry production systems.

PROFESSIONAL EXPERIENCE

Public Diplomacy Fellow-Congress-Bundestag Youth Exchange for Young Professionals (CBYX)

July 2014-June 2015 | Department of State | Cologne & Göttingen Germany
Cultural exchange program with a focus on agricultural sciences and conservation.

Michigan State Student Organic Farm: Volunteer and Student Employee

Jan 2012-December 2013 | East Lansing, MI

Intern-Department of Environmental Quality

May 2012-August 2012 | State of Michigan | Lansing, MI

Intern-Mid-Michigan Environmental Action Council

Jan 2012-May 2012 | East Lansing, MI

GRANTS AND FELLOWSHIPS

2023 | Citizen Diplomacy Action Fund (Co-grantee: Andrew Blunk): Using Community on-Farm Research Projects to Educate and Empower Farming Communities (\$10,000)
2023 | Experiment.com (Co-grantees: Andrew Blunk, Lamin Keita): Improving Soil Health with Oyster Industry "Waste" (\$4,706)
2020-2022 | USDA-NIFA AFRI Pre-doctoral fellowship (\$119,763)
2019 | United States-Israel Binational Science Foundation Travel Grant (\$4,000)
2019 | Penn State | Department of Entomology, Apes Valentes Research Grant (\$5,000)
2018 | Penn State | College of Agricultural Sciences, Competitive Research Grant (\$3,000)
2014-2015 | Congress-Bundestag for Young Professionals Exchange Fellowship (Est. \$10,000)

AWARDS AND HONORS

2023 | Journal of Insect Physiology, David Denlinger and Stuart Reynolds Early Career Research Award (1 of 2, \$1000)
2021, 2022 | Penn State | Department of Entomology, ESA* Comstock Award Nominee (1 of 2 nominees)
2022 | International Union for the Study of Social Insects Travel Award (\$1570)
2022 | Penn State | College of Agricultural Sciences, Outstanding Dissertation Award (\$1000)
2021 | Penn State | Department of Entomology, Vartkes Miroyan Memorial Award (\$769)
2020 | Penn State | Department of Entomology, Paul E. Heller Memorial Award (\$1,063)
2019 | ESA* 10-minute Student Paper Competition: 1st Place in PBT: Pollinator Biology and Ecology (\$75)
2019 | Penn State | Department of Entomology, Michael E. Duke Memorial Award (\$519)
2018 | Penn State | College of Agricultural Science, Sahakian Travel Award (\$500)
2017 | Building Our Methods Using Sound Science (BOMBUSS) Scholarship (Est. \$500)
2017 | Integrated Crop Pollination (ICP) Travel Grant Award (\$800)
2016 | Penn State | Department of Entomology, Yendol Memorial Research Award (\$540)

*Entomological Society of America

REFEREED PUBLICATIONS

***Treanore, E.D.**, Ramos Medero, A., Garcia, J.K., Amsalem, E. (2023). The effect of pollen diet composition and quantity on diapause survival and performance in an annual pollinator (*Bombus impatiens*). *Integrative and Organismal Biology*. <https://doi.org/10.1093/iob/obad014>.

Ollerton, J. . Trunschke, J., Havens, K., Landaverde-González, P., Keller, A., Gilpin, A-M., Rodrigo Rech, A. Baronio, G. J., Phillips, B. J., Mackin, C., Stanley, D. A., **Treanore, E.** et al. (2022). Pollinator-flower interactions in gardens during the COVID-19 pandemic lockdown of 2020. *Journal of Pollination Ecology*. [https://doi.org/10.26786/1920-7603\(2022\)695](https://doi.org/10.26786/1920-7603(2022)695)

Treanore, E.D., & Amsalem, E. (2022). Examining the individual and additive effects of cold storage and CO₂ narcosis on queen survival and reproduction in bumble bees. *Journal of Insect Physiology*, 104394.

Ramadani, R. F., Raffiudin, R., Ariyanti, N. S., Biagioni, S., **Treanore, E.**, & Behling, H. (2021). Stingless bee foraging behavior and pollen resource use in oil palm and rubber plantations in Sumatra. *Jurnal Entomologi Indonesia*, 18(2), 81-81.

Treanore, E., Barie, K., Derstine, N., Gadebusch, K., Orlova, M., Porter, M., Purnell, F., & Amsalem, E. (2021). Optimizing Laboratory Rearing of a Key Pollinator, *Bombus impatiens*. *Insects*, 12(8). <https://doi.org/10.3390/insects12080673>.

Treanore, E., & Amsalem, E. (2020). The effect of intrinsic physiological traits on diapause survival and their underlying mechanisms in an annual bee species *Bombus impatiens*. *Conservation Physiology*, 8(1), coaa103.

****Treanore, E.**, Derstine, N., & Amsalem, E. (2020). What can mechanisms underlying derived traits tell us about the evolution of social behavior? *Annals of the Entomological Society of America*, 114(5), 547-561.

Orlova, M., **Treanore, E.**, & Amsalem, E. (2020). Built to change: dominance strategy changes with life stage in a primitively eusocial bee. *Behavioral Ecology*, 31(6), 1361-1368.

***Treanore, E.**, Kiner, J. M., Kerner, M. E., & Amsalem, E. (2020). Shift in worker physiology and gene expression pattern from reproductive to diapause-like with colony age in the bumble bee *Bombus impatiens*. *Journal of Experimental Biology*, 223(9), jeb218768

Vaudo AD, Tooker JF, Patch HM, Biddinger DJ, Coccia M, Crone MK, Fiely M, Francis JS, Hines HM, Hodges M, Jackson SW, Michez D, Mu J, Russo L, Safari M, **Treanore E**, Vanderplanck M, Yip E, Leonard AS, Grozinger CM. Pollen Protein: Lipid Macronutrient Ratios May Guide Broad Patterns of Bee Species Floral Preferences. *Insects*. 2020; 11(2):132.

Treanore, E.D., Vaudo, A., Grozinger, C.M. Fleischer, S.J., (2019). Examining the nutritional value and effects of different floral resources in pumpkin agroecosystems on *Bombus impatiens* worker physiology. DOI: 0.1007/s13592-019-00668-x. Apidologie.

*Indicates undergraduate co-author(s)

** Indicates equal first author contribution

NON-REFEREED PUBLICATIONS

Treanore, E.D. (2022). Ecological and evolutionary aspects of bumble bee diapause. (*Doctoral dissertation*)

Treanore, E. D. (2017). Supporting *Bombus* and other bees in Cucurbita agroecosystems. (*Master's thesis*)

Ullman, K., Cane, J., Fleischer, S., **Treanore, E.**, McGrady, R. (2017). Integrated crop pollination for squashes, pumpkins, and gourds. Project Integrated Crop Pollination. Project ICP.org. Extension Publication.

Reininghaus, H., Udy, K. L., **Treanore, E.**, Tschardtke, T., & Scherber, C. (2017). Reversed Importance of Local vs. Landscape Flower Resources for Bumblebee Foraging and Colony Performance along Farmland-Urban Gradients. *Scaling of Animal Communities: From Local and Landscape to Global Processes*, 38.

Michigan Comprehensive Trail Plan (2013): Michigan Snowmobile and Trail Advisory Council. Department of Natural Resources.

DELIVERED ACADEMIC PRESENTATIONS

2023 | **Treanore, E.D.** Filling in the gaps: A holistic approach to studying bumble bee life history. BOMBUSS 3.0 Meeting. San Cristobal, Mexico.

2022 | **Treanore, E.D.** Evolutionary and Ecological Aspects of Bumble Bee Diapause. University of Kentucky, Departmental Seminar Series. Lexington, Kentucky.

2022 | **Treanore, E.D.**, Ramos Medero, A., Garcia, J.K., Amsalem, E. How age, mass and diet in pre-diapause bumble bee queens affect diapause survival and nest founding. International Union for the Study of Social Insects International Congress. San Diego, California.

2022 | **Treanore, E.D.**, Ramos Medero, A., Garcia, J.K., Amsalem, E. The effects of pre-diapause pollen nutrition on bumble bee queen diapause performance. Bees in Winter: Mini-workshop. Virtual.

2021 | **Treanore, E.D.**, Ramos Medero, A., Garcia, J.K., Amsalem, E. Examining the effects of pollen nutrition on bumble bee (*Bombus impatiens*) queen diapause survival and post-diapause reproductive performance. Center for Pollinator Research Symposium. University Park, Pennsylvania.

2021 | **Treanore, E.D.**, Ramos Medero, A., Garcia, J.K., Amsalem, E. Examining the effects of pollen nutrition on bumble bee (*Bombus impatiens*) queen diapause survival and post-diapause reproductive performance (**Invited Speaker**). Entomological Society of America Annual Meeting. Denver, CO.

2021 | **Treanore, E.D.**, Amsalem, E. Examining the combined effects of cold storage and CO₂ narcosis on bumble bee queen reproduction. (Virtual) Society for Integrative and Comparative Biology Meeting.

2020 | **Treanore, E.D.**, et al. Optimizing captive rearing success of a key pollinator, *Bombus impatiens*, with a focus on the queen solitary phase. (Virtual) Entomological Society of America Annual Meeting.

2019 | **Treanore, E.D.**, Porter, M., Amsalem, E. Winter is coming: Factors affecting diapause performance in bumble bee queens. Entomological Society of America Annual Meeting. St. Louis, MO.

2019 | **Treanore, E.D.**, Winter is Coming: Nutrient Acquisition in pre-diapause bumble bee queens. (**Invited Speaker**). BOMBUSS 2.0 Meeting. Toronto, Ontario.

2018 | **Treanore, E.**, Kiner, J., Kerner, M., Amsalem, E. The origin of castes in social insects: Examining the diapause ground plan hypothesis in bumble bees. Entomological Society of America Annual Meeting. SINNERS. Philadelphia, PA.

2018 | **Treanore, E.**, Kiner, J., Kerner, M., Amsalem, E. The origin of castes in social insects: Examining the diapause ground plan hypothesis in bumble bees. Entomological Society of America Annual Meeting. Vancouver, Canada.

2017 | **Treanore, E.**, From the field to the lab: What are the limitations of microcolonies for *Bombus* spp. nutritional studies? (**Invited Speaker**) Building Our Methods Using Sound Science (BOMBUSS) Conference. Logan, Utah.

2017 | **Treanore, E.**, Pumpkins, Pollen, and Pesticides: An Integrative Approach to Bumble Bee Health. Center for Pollinator Research Symposium. University Park, Pennsylvania.

2016 | **Treanore, E.**, Vaudo, A.D., Grozinger, C.M., Fleischer, S.J. Integrating Nutritional Studies into Targeted Floral Provisioning for *Bombus Impatiens*. International Congress of Entomology. Orlando, Florida.

2016 | **Treanore, E.**, Miller, R.C., Fleischer, S.J., Identifying Fall-Growing Plants to Support Bumble Bees in Agroecosystems. Center for Pollinator Research Symposium. University Park, Pennsylvania.

2015 | **Treanore, E.**, S. Fleischer, R. Miller. Cover Cropping to Support Pollinators. Entomological Society of America: Eastern Branch Meeting, Philadelphia, Pennsylvania. (*Poster presentation*)

KEY OUTREACH AND EXTENSION PRESENTATIONS

2023 | Dual-use landscapes: supporting diverse pollinators in agroecosystems | New England Organic Farming Annual Conference | Worcester, Massachusetts| (Est. 20 attendees)

2020 | Bumble bee biology and management. (**Invited Speaker**). Pollinator Webinar Series. Penn State Extension (Est. audience >800 live viewers)

2017 | Cover Crops for Pollinators (**Invited speaker**). Mid-Atlantic Fruit and Vegetable Convention Hershey, Pennsylvania (Est. 75 attendees)

2016 | The Tricks and Treats of Pollinator Health: From Poor Nutrition to Pathogens (**Invited Speaker**). Science Café: University Park, Pennsylvania (Est. 10 attendees)

2016 | Cover Cropping to Support Pollinators on Farms (**Invited speaker**). Xerces Society Pollinator Conservation Short Course: University Park, Pennsylvania (Est. 75 attendees)

2016 | The Xerces Society: Pollinators and Cover Crops Field Day: Columbia County, Pennsylvania (Est. 25 attendees)

PROFESSIONAL SERVICE

Academic Symposium and Workshops

2023 | Co-Organizer: "Bumble Bee Nesting Biology (& Diapause) Session". Building Our Methods Using Sound Science Meeting (BOMBUSS). Conference Session. San Cristobal, Mexico. (Est. 75 Attendees)

2021 | Co-Organizer: "Tradeoffs of Adapting to a Changing World: From Physiological to Behavioral Transformations. Section symposium: Physiology, Biochemistry, and Toxicology. Entomological Society of America Annual Meeting. Denver, Colorado. (Est. 85 Attendees.)

Peer Reviewer

2023 | *Insects*, *Journal of Applied Entomology*, *Insectes Sociaux* | 2022 | *Insects*, *Ecological Entomology* | 2021 | *Journal of Insect Physiology* (Co-reviewed with PI), *Insects* | 2020 | *Philosophical Transactions of the Royal Society* | 2019 | *PLOS One* (Co-reviewed with PI), *Conservation Physiology*, *Molecular Ecology* (Co-reviewed with PI) *Journal of Apiculture Research* (Co-reviewed with PI) | 2019 | *Journal of Apicultural Research* (Co-reviewed with PI) | 2017 | *PeerJ* |

Grant Panel Reviewer

2022 | National Science Centre, Poland

Society Membership

2015-Present | Department of State; International Exchange Alumni

2015-Present | Entomological Society of America

2019-Present | International Union for the Study of Social Insects

2020-2022 | Society for Integrative and Comparative Biology
2015-2022 | Penn State Entomological Graduate Student
2020-2021 | American Association for the Advancement of Science (AAAS)

Leadership and Committees

2023 | Tufts University, Tufts Pollinator Initiative, Advisory Board
2023 | University of Kentucky, Shelby Stamper Award Committee
2021 | Penn State Entomology, Admin Assistant Search Committee*
2019-2020 | Penn State Community Garden Secretary
2017-2019 | Penn State Community Garden Treasurer
2017-2018, 2019-2020 | Penn State Entomology Instruction Committee*
2019 | Penn State Entomology Diversity Committee*
2018-2019 | Penn State Entomology Graduate Student Association Outreach Committee
2018 | Penn State Entomology Candidacy Committee*
2017-2018 | Penn State Entomology Awards Committee*
2016-2017 | Penn State Entomology Seminar Committee*
**Graduate student representative*

Panels and Judging

2022 | University of Kentucky, Department of Entomology Retreat, Poster Judge
2022 | Penn State, Department of Plant Pathology, USDA Predoc Panel
2021 | ESA Undergraduate MUVE and PBT Session, Poster Judge
2020 | CBYX Alumni Connections Panel: Ecology, Conservation, and Sustainable Agriculture (Virtual)
2019-2021 | Penn State, Department of Entomology (ENT 522), Graduate Student Grant Panelist
2018 | Penn State, Undergraduate MRSEC Panel
2017 | Penn State, Undergraduate Research Exhibition Judge

TEACHING EXPERIENCE

2023 | Tufts University: Lunch and Learn (Biology Graduate Students): Guest lecture 'Studying Pollinators in Seasonal Environments'

2023 | Tufts University: Food4All: Ecology, Technology and Sustainability: Guest Lecture 'Pollinators and our food Systems'

2023 | West Virginia State University: Insect Ecology: (Ent 404, undergraduate level): Virtual guest lecture on social insect biology (Instructor: Dr. Elizabeth Rowen)

2020-2022 | Pennsylvania State University: The Insect Connection (ENT 202, undergraduate level): Virtual guest lecture 'Insect pollination' (Instructor: Dr. Etya Amsalem)

2021 | West Virginia State University: Insect Ecology: (Ent 404, undergraduate level): Virtual guest lecture on social insect biology (Instructor: Dr. Elizabeth Rowen)

2020 | Pennsylvania State University: Invertebrate Zoology (Bio 417, undergraduate level): Guest lecture on bumble bee biology (Instructor: Dr. Todd Lajeunesse and Kira Turnham)

2020 | Pennsylvania State University: The Insect Connection (ENT 202, undergraduate level): Virtual guest lecture 'Insects as research models' (Instructor: Dr. Etya Amsalem)

2019 | Pennsylvania State University: Invertebrate Zoology (Bio 417, undergraduate level): Guest lecture on Social Organization in Insects (Instructor: Dr. Todd Lajeunesse and Kira Turnham)

2016-2018 | Pennsylvania State University: Insect Natural History (ENT 518, graduate-level): Co-Teaching Assistant (Instructors: Dr. Shelby Fleischer, Dr. Ruud Schilder, Dr. Julie Urban, Dr. Michael Sklarva)

2018 | Pennsylvania State University: Introduction to Entomology (ENT 313, undergraduate level): Co-Teaching Assistant (Instructor: Dr. Istvan Miko)

MENTORING EXPERIENCE

2023-Present | Edison Chae (REU Student, Tufts University)
2022-2023 | Wade Pike (Graduate student, University of Kentucky)
2021-2022 | Andrea Ramos-Medero (Undergraduate Student, Penn State)
2019-2020 | Monique Porter (Undergraduate Student, Penn State)
2018-2020 | Jacklyn Garcia* (Undergraduate Student, Penn State)
2017-2018 | Nick Krause (Undergraduate Student, Penn State)
2016-2017 | Christiana Sanden, Hannah Balko (Undergraduate Students, Penn State)
2016 | Alexandra Fahoome (Undergraduate Student, Penn State)
*Dutch Gold Honey Undergraduate Scholarship Recipient

COMMUNITY OUTREACH AND VOLUNTEERING (2017-present)

Entomological and Pollinator Outreach

2023 | Pollinator Trivia (Tufts Pollinator Initiative, Co-organizer), Aeronuat, Brewery, Medford, MA
2023 | Tufts Community Day (Tufts Pollinator Initiative, Event Lead), Medford, MA
2023 | CREW Interfaith Climate Summit (Tufts Pollinator Initiative, Workshop Facilitator), Medford, MA
2023 | New Entry Farms, Farmer Resource Fair (Tufts Pollinator Initiative), Beverly, MA
2019 | The Great Insect Fair: The World with(out) Insects, Penn State, Outreach (General public)
2019 | ScienceU: Interview a Scientist, Penn State, Outreach (Elementary students)
2019 | Stone Valley Charter School: Intro to Entomology, Huntingdon, PA, Outreach (Elementary students)
2018 | CSATS Teacher Training Workshop: Basics of Entomology, Penn State, Outreach, (Elementary teachers)
2018 | The Great Insect Fair: ARTHROPOP, Penn State, Outreach (General public)
2018 | Rohrbach Farm Children's Outreach: All about Entomology, Catawissa, PA, Outreach (Elementary students)
2018 | Upward Bound: Bumblebee Ecology and Biology, Penn State, Outreach (High School Students)
2018 | Bug Camp: Aquatic Insects, Penn State, Outreach, (Elementary students)

General Outreach and Volunteering

2023 | Carnegie Center for Literacy, Lexington, KY, Tutor
2022 | Glean Kentucky, Lexington, KY, Volunteer
2020-2021 | Tait Farm, Boalsburg, PA, Workshare, Volunteer
2018-2019 | Pleasant Gap Housing Transitions, Science Night, Pleasant Gap, PA, Outreach (Elementary students).

ADDITIONAL TRAINING AND EXPERTISE

Training

2023 | Cornell University Extension, Advanced Soil Health Training Certificate
2022 | University of Kentucky, Leadership and Management in Action Program (LMAP)
2020 | Pennsylvania State University Graduate Student Online Teaching Certificate
2019 | Pennsylvania State University: Shreyer Institute Course in College Teaching Certification (CCT)
2014 | Carl Duisburg Centrum: Cologne, Germany. Intensive German Course (C1-level)

Research Expertise

Pollinator conservation and management | Beneficial insects in agriculture: outreach and extension | Insect physiology, health, and nutritional ecology | Insect seasonality, phenology and life history | Community and stakeholder engagement with entomology, ecology, and sustainable agriculture |