

Curriculum Vitae

Leo M. Kerner

Entomologist

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Notarization. I have read the following and certify that this *curriculum vitae* is a current and accurate statement of my professional record.

Signature: Leo Kerner

Date: June 25th, 2025

EDUCATION

- 2025 M.S. in Entomology, University of Maryland, College Park MD
Advisor: Dr. Cerruti Hooks
Thesis Title: Effects of red clover living mulch on weeds, insect pests, beneficials, and cantaloupe yield
- 2021 B.S. in Biological and Life Sciences; Minor in Entomology, North Carolina State University, Raleigh NC
Advisor: Dr. Ordorm Huot
Thesis Title: *Peregrinus maidis* prefers maize plants infected with Maize mosaic virus.
GPA 3.509

WORK AND RESEARCH EXPERIENCE

- Aug 2022 - May 2025 **Graduate Research Assistant - Hooks Lab, UMD Dept of Entomology:**
Master's thesis on crop diversification combined with pesticides to enhance weed and insect pest management through resource competition and promoting natural enemies in specialty vegetable crops. An additional project focused on the use of biosolarization using apple pomace for suppressing weeds in tomatoes.
- Jan - July 2022 **Research and Development Intern - United Phosphorus Limited:**
Established an AI groundwork for automating soybean pollen germination using a camera and microscope. Duties included assisting in research and development, including the building and use of a spectrophotometer imaging station to assess nutritional deficiencies in corn plants, and running greenhouse biosolutions assays on corn and tomatoes.
- Oct 2018 - July 2022 **Undergrad Research Assistant/Lab Technician - Whitfield Lab, NCSU Dept of Entomology and Plant Pathology:** Designed and ran experiments to test the effects of MMV infection on host plant preference of corn planthopper *P. maidis*. Assisted in designing and running experiments to test the survival rate of *P. maidis* adults after knockdown of

PmeIF1 and *PmXPO1* genes respectively. Maintained 7-11 *P. maidis* colonies and maintained Maize Mosaic Virus (MMV) infection among colonies. Other duties included micro-injecting *P.maidis* with MMV inoculum, evaluating MMV infection using DAS-ELISA (Double Antibody Sandwich Enzyme-Linked Immunosorbent Assay), agrobacterium transformation and infiltration using *N. benthamiana*, using BioTek Cytation 5 image reader to evaluate GFP agroinfiltration success in *N. benth* cells, RNA extraction from plant tissue using an RNA mini-kit, using NanoDrop One^c spectrophotometer to quantify RNA, using vascular puncture inoculation to infect corn seedlings and rub inoculation of adult *N. benth*.

Sept 2017 - Aug 2018 **Undergrad Research Assistant - Frank Lab, NCSU Dept of Entomology and Plant Pathology:** Designed and ran a comparative analysis of arthropod natural enemy communities between native and non-native landscapes. Responsibilities included: collecting samples for biological assay of aphids in urban trees, collecting beat samples of natural enemies, collecting leaf samples and analyzing herbivory damage using Digit and Gimp, identifying insects and conducting landscape work.

Sept 2015 - June 2017 **Research Assistant - Nijhout Lab, Duke Dept of Biology:** Assisted graduate student in a project conducted to uncover the evolutionary history of *Nymphalid* butterfly wing morphology. Responsibilities included using Gimp software to analyze wing morphology and pattern integration of *Nymphalidae* butterflies, and collecting sample data from specimen storage at the Smithsonian Museum of Natural History.

ARTICLES UNDER REVIEW AND IN REFEREED JOURNALS

- **Kerner, L.M.**, Joseph, D.D., Leslie, A.W., Hooks, C.R.R. (under review) Living mulch as a tool for integrated weed management for cantaloupe. *Agriculture, Ecosystems & Environment*.
- **Kerner, L.M.**, Leslie, A.W., Hooks, C.R.R. (under review) Red clover living mulch controls insect pests, improves natural enemies in cantaloupe. *Journal of Integrated Pest Management*.
- Xavier, C.A.D., Tyson, C., **Kerner, L.M.** & Whitfield, A.E. (2024) RNAi-mediated knockdown of exportin 1 negatively affected ovary development, survival and maize mosaic virus accumulation in its insect vector *Peregrinus maidis*. *Insect Molecular Biology*, 1–17. doi: <https://doi.org/10.1111/imb.12910>
- Xavier, C. A. D., Tyson, C., **Kerner, L. M.**, & Whitfield, A. E. (2023). Exportin 1 is required for the reproduction and maize mosaic virus accumulation in its insect vector *Peregrinus maidis*. bioRxiv, 2023-09.
- Parsons, S., **Kerner, L.**, & Frank, S. (2020). Effects of native and exotic congeners on diversity of invertebrate natural enemies, available spider biomass, and pest control

services in residential landscapes. *Biodiversity And Conservation*, 29(4), 1241-1262. doi: 10.1007/s10531-020-01932-8

REFEREED POSTERS

- Amy Goodman, **L. M. Kerner**, C. R. R. Hooks (2025). Effects of Red Clover Living Mulch on Epigeal Natural Enemy Activity Density. UMD Undergraduate Research Day, College Park, MD.
- Joseph, D.D, **L. Kerner**, A. Leslie and C. Hooks (2024). Utilizing Reduced Tillage and a Living Mulch for Weed Management in Specialty Crops. Weed Science Society of America – Southern Weed Science Society Joint Meeting, San Antonio, Texas.
- **L. M. Kerner**, D. D. Joseph, A. Leslie, C. R. R. Hooks. (2023). Evaluating the Effects of Red Clover as a Living Mulch in Weed Suppression for Specialty Vegetable Crops. Advancing Agricultural Production Systems– 5th Annual AGNR Cornerstone Event, College Park, Maryland.
- **L. Kerner**, O. Huot, A. Whitfield (2019). *Peregrinus maidis* prefers maize plants infected with Maize mosaic virus. NCSU Undergraduate Research Symposium– 18th NC State University Annual Summer Undergraduate Research and Creativity Symposium, Raleigh, NC.
- **L. Kerner**, S. Parsons, S. Frank (2018). Comparing the Degree of Biodiversity and Herbivory in the Urban Environment on Native Versus Non-native Plants. NCSU Undergraduate Research and Creativity Symposium–17th NC State University Annual Summer Undergraduate Research and Creativity Symposium, Raleigh, NC.

TALKS, ABSTRACTS AND OTHER PROFESSIONAL PAPERS PRESENTED

- V, Yurchak, HM Kahl, **L Kerner**, CRR Hooks. *Conference Title*: Entomological Society of America: Eastern Branch Annual Meeting. *Presentation Title*: Can interplanted red clover improve biological control in vegetables? Mar. 17, 2025. Harrisburg, PA.
- **L. M. Kerner**, A. Leslie, C. R. R. Hooks. 2024. *Conference Title*: 2024 Entomology Society of America National Meeting, *Presentation Title*: Recruiting Natural Enemies to Control Cucumber Beetles Using Living Mulch. Nov. 12th, 2024. Phoenix, AZ.
- **L. M. Kerner**, A. Leslie, D. D. Joseph, C. R. R. Hooks. 2023. *Conference Title*: 2023 Northeast Integrated Pest Management Research Update, *Presentation Title*: Developing a perennial living mulch system to manage insect pests in Northeastern cantaloupe fields. Nov. 13th, 2023.

EXTENSION ACTIVITIES

- **A. Field Days and Outreach.** The Field Day is an outdoor meeting for showcasing new farming practices, sharing on-farm research results and demonstrating how research findings can be implemented. It also serves as a forum to address farmer and other stakeholder questions and concerns related to pest management and other farming issues. This format requires the instructor to establish demonstration plots, prepare handouts, do a short presentation and address attendees' questions. Outreach events intended to reach the general public, not necessarily related to agriculture, are included in this section as well.
- **Maryland Day Insect Petting Zoo.** Outreach event targeting residents of the state of

Maryland to interact directly with live insect specimens. Involved handling live vinegaroons, tarantulas, beetles, millipedes, tailless whip scorpions, and other taxa for demonstration. Plant Sciences Building, College Park, MD April 26th, 2025. Attendance ~ 1000.

- **Crops Twilight Tour and Ice Cream Social.** Spoke to local growers about cover cropping and living mulch techniques to improve insect diversity, and suppress insect pests and weeds in cantaloupe. CMREC Upper Marlboro, MD Facility August 7, 2024. Attendance 85+.
- **Maryland Day Insect Petting Zoo.** Outreach event targeting residents of the state of Maryland to interact directly with live insect specimens. Involved handling live vinegaroons, tarantulas, beetles, millipedes, tailless whip scorpions, and other taxa for demonstration. Plant Sciences Building, College Park, MD April 27th, 2024. Attendance ~ 1000.
- **Field Tour for Ukraine International Delegate.** Gave tour of Upper Marlboro Research Station and experimental plots to Ukraine Deputy Minister for Agriculture, Bashlyk Denys. Spoke on evaluating cover cropping with high and low input pest management tactics in cantaloupe, and practices in weed control using apple pomace for biosolarization. CMREC Upper Marlboro, MD Facility Sept 20, 2023.
- **Environmental Technology and Economy, College Park Scholars Service Day.** Spoke with undergraduate scholars on the use of conservation biological control and cover crops to help manage pests of cantaloupe, and using biosolarization techniques to deactivate weed seeds and plant diseases below the soil. Attendance: 74 students and 2 staff. Further, provided hands-on participation for 12 undergraduate scholar students in harvesting tomatoes for donation to organizations feeding food insecure individuals from biosolarization research plots. CMREC Upper Marlboro, MD Facility August 26, 2023.
- **Crops Twilight Tour and Ice Cream Social.** Spoke to local growers about high and low input pest management tactics in cantaloupe, and using apple pomace as an organic amendment for biosolarization in tomatoes. CMREC Upper Marlboro, MD Facility August 2, 2023. Attendance 80+.

B. Invited Talks - extension conferences, working group meetings

- **L. M. Kerner.** 2025. *Conference Title:* USDA/BARC Agency Pesticide Recertification, *Presentation Title:* Living Mulch as an Integrated Pest Management Tool for Cucumber Beetles and Weeds. Virtual meeting. March 6, 2025. Attendance ~80.
- **L. M. Kerner.** 2025. *Program Title:* [EcoFarms](#) Beginning Farmer Training Program, *Presentation Title:* Pest Management in Organic Systems. Prince George's Community College, Hyattsville MD. January 22nd, 2025. Attendance ~ 40.
- **L. M. Kerner, D. D. Joseph, A. Leslie, C. R. R. Hooks.** 2024. *Conference Title:* USDA/BARC Agency Pesticide Recertification, *Presentation Title:* Living Mulch as a Tool for Sustainable Pest and Weed Suppression. Virtual meeting. March 7, 2024. Attendance ~50.
- **L. M. Kerner, D. D. Joseph, A. Leslie, C. R. R. Hooks.** 2024. *Conference Title:* 2024 Maryland Agricultural Pesticide Conference, *Presentation Title:* Red Clover as a Living Mulch- Effects on Weed and Insect Suppression. Frederick 4-H Camp, Frederick MD. February 6, 2024. Attendance ~100.

C. Extension Publications

- **Kerner, L. M.,** Hooks, C., (2024) Red Clover Living Mulch - A Look into Reduced Tillage Strategies for Insect Pest and Weed Management | 'ROOTS IN RESEARCH' Newsletter. Available at: <https://extension.umd.edu/resource/roots-research-newsletter-upper-marlboro-facility-2023/>
- Joseph, D. and **Kerner, L.** (2023) Know your foxtails (FS-2023-0658), Know Your Foxtails (FS-2023-0658) | University of Maryland Extension. Available at: <https://extension.umd.edu/resource/know-your-foxtails-fs-2023-0658> (Accessed: 01 June 2023).

RESEARCH GRANTS

- **Kerner, L.,** C.R.R. Hooks. 2023 - 2024. Planting Red Clover to Recruit Natural Enemies in the Fight Against Invading Insect Pests in Cantaloupe Crops. UMD Sustainability Fund Grant. \$14,400.
- **Kerner, L.,** Huot, O., Whitfield, K. 2019. *Peregrinus maidis* prefers maize plants infected with Maize mosaic virus. Kelman Scholarship Grant Program. \$4,000.
- **Kerner, L.,** Parsons, S., Frank, S. 2017 - 2018. Comparing the Degree of Biodiversity and Herbivory in the Urban Environment on Native Versus Non-native Plants. Undergraduate Research Grant. \$2,000.

AWARDS AND TRAVEL GRANTS

- Jacob K. Goldhaber Travel Grant (*November 2024*)
- CMNS Dean's Fellowship Award (*June 2022*): outstanding credentials and promise as an entomologist.
- Commissioner's Award (*August 2016*): 100+ of community service during the school year.
- Mayor's Award (*June 2014*): 100+ hours of community service during summer.

TEACHING AND MENTORING

A. Teaching

- Head TA for BSCI120: Served as head TA for leading discussion and lab sections of introductory insects course for non-majors. Included grading, handling student concerns, creating lab practicals, revising lecture material, providing weekly lectures, and abiding by ADS policy. Class size ~ 40.
- Teaching Assistant BSCI120: Introductory course covering broad knowledge base of insects for non-majors: importance, overview of benefits and harm, phylogeny, biology, taxonomy of insects. Led the discussion component/laboratory portion of the course. Spring 2024. Class size ~ 40.

B. Mentoring - Undergraduate Students

- Amy Goodman, Entomology, Weed Sciences, Crop Management, R Programming Language + Scientific Writing, University of Maryland. 2024

- Kaden Ireland, Entomology, Weed Sciences, + Crop Management, University of Maryland. 2024
- Alex Shelly, Weed Sciences, Poolesville High School. 2023
- Rian Neal, Entomology + Crop Management, University of Maryland. 2023
- Rajiv Esua, Entomology + Crop Management, University of Maryland. 2023
- Paisley Brock, Entomology + Crop Management, University of Maryland. 2023
- Joshua Yueh, Entomology, North Carolina State University. 2021

MEDIA/COMMUNICATION

- **Kerner, L. M.**, Graduate Student Day in the Life, Instagram reel showcasing research for UMD Science page,
https://www.instagram.com/reel/C-k6z54xQ0F/?utm_source=ig_web_copy_link&igsh=MzRIODBiNWFiZA==

SERVICE AND PROFESSIONAL DEVELOPMENT

2024	Native bee speaker/presenter- Meadow Day, University Park, MD.
2023	Insect zoo demonstration- Nature Forward Preschool, Chevy Chase, MD.
2023	Native bee speaker/presenter- Meadow Day, University Park, MD.
2022	Insect zoo demonstration- Maryland State Fair, MD.
2021	World Wide Opportunities in Organic Farming (WWOOF) volunteer - Everything Jesus Ranch, Seguin TX.
2021	World Wide Opportunities in Organic Farming (WWOOF) volunteer - Salamander Springs, Macon GA.
2021	World Wide Opportunities in Organic Farming (WWOOF) volunteer - Flying Pond Farm, Vienna MD.
2020	Farm volunteer - Raleigh City Farm, Raleigh NC.
2015	Farm volunteer - Red Wiggler Farm, Germantown MD.
2014	Science camp counselor - Camp Invention, Durham School of the Arts, Durham NC.
2012 - 2014	Insectarium manager's assistant - Museum of Life and Sciences, Durham, NC.

PARTICIPATION IN PROFESSIONAL SOCIETIES

- Entomology Society of America Eastern Branch – 2024 - present
- Entomology Society of America – 2023 - present