

# Benjamin H. Burgunder

MS Student  
Department of Entomology  
University of Maryland

Email: [bburgund@umd.edu](mailto:bburgund@umd.edu)  
Site: <https://benburgunder.wixsite.com/ento>  
Twitter: [@BugmanBurgunder](https://twitter.com/BugmanBurgunder)

## EDUCATION

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- 2022-present      **University of Maryland, MS** (Entomology)  
Advisor: Dr. Megan Fritz  
Thesis: Tracking the cryptic species community composition and West Nile virus prevalence of Chicago *Culex* to understand anomalies in human case forecasting
- 2018-2022      **Cornell University, BS** (Entomology major, Biology of Infectious Disease minor)  
*Summa cum laude*; Research Honors Program

## GRANTS AND AWARDS

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- 2024      [UMD] Gahan Fellowship Award (\$14,192)  
2024      [UMD] VMCA Student Poster Competition: 2nd Place (\$300)  
2022      [UMD] Gahan Fellowship Award (\$12,514)  
2022      [UMD] CMNS Dean's Fellowship Award (\$2,500)  
2022      [CU] CALS Academic Excellence Award for the Entomology major  
2021      [CU] Dextra Undergraduate Research Endowment Fund (\$1000)  
2021      [CU] Jane E. Brody Undergraduate Research Award (\$500)  
2021      [CU] CALS Honor Society  
2021      [CU] Cornell University Department of Entomology Outstanding Undergraduate TA Award (\$100)

## PEER-REVIEWED PUBLICATIONS

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2022: **Burgunder BH**, Rampasso AS, O'Grady PM The *Scaptomyza cyrtandrae* species group, with the description of a new species (Diptera: Drosophilidae). Bishop Museum Occasional Papers 142: 75–87.

## SKILLS

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**Molecular:** PCR and RT-qPCR • DNA and RNA extraction • NanoDrop • Qubit • Primer Reconstitution • BSL-2 clean cabinet • Gel electrophoresis, sample preparation and processing  
**Analysis:** R (proficient in ggplot, tidyverse), Quarto  
**Lab:** Mosquito colony maintenance • *Drosophila* stock maintenance • Insect dissection • Project management • Presentation • Vector identification (mosquitoes, ticks, kissing bugs)  
**Field:** Insect trapping (Malaise traps, *Culex* gravid traps, blacklight vane traps, multimodal kissing bug traps, CDC mosquito light traps, baited yellow pan traps, tick dragging/flagging) •

Insect collecting (experienced in collecting aerial, terrestrial, subterranean, nocturnal, and aquatic invertebrates) • Conducting research in challenging environments

### **Certifications:**

Best Practices for Integrated Mosquito Management Virtual Training Program

- American Mosquito Control Association [Mar 2024]

## **RESEARCH PRESENTATIONS**

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- University of Maryland, College Park Department of Entomology Seminar Series [Nov 2024]
  - o Presentation: “All viral on the midwestern front: tracking West Nile prevalence in Chicago’s cryptic *Culex*”
- UMD CMNS 3 Minute Graduate Thesis Competition [Mar 2024]
  - o Do Mosquito Look-Alikes Ruin Viral Forecasts?
- Virginia Mosquito Control Association Annual Meeting [Feb 2024]
  - o Presentation: “Do Chicago’s Cryptic *Culex* Ruin West Nile Virus Forecasts?”
  - o Poster: “Site-specific community composition of primary West Nile virus vectors in Chicago does not explain fine-scale variation in modeling human cases”
- Mid-Atlantic Mosquito Control Association Annual Meeting [Jan 2024]
  - o Presentation: “Can fine-scale differences in mosquito communities explain unexpected results in predicting human WNV cases in the Greater Chicago Area?”
- University of Maryland, College Park Department of Entomology Seminar Series [Nov 2023]
  - o Presentation: “Can fine-scale differences in mosquito communities explain unexpected results in predicting human WNV cases in the Greater Chicago Area?”
- Entomological Society of America Annual Meeting: Grad Competition MUVE: Vector Control and Surveillance [Monday, Nov 6, 2023]
  - o Poster: “Site-specific community composition of primary West Nile virus vectors in Chicago does not explain fine-scale variation in modeling human cases”
- Virtual Eastern Branch Meeting, Entomological Society of America [Mar 2021]
  - o Poster: “Notes on Hawaiian Phoridae: New Island Records and Revised Key to Hawaiian *Megaselia* (Diptera: Phoridae) Species”

## **EXTENSION**

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- DNR Invited Talk, “Let’s Keep MD Tick Safe!” Presentation [Sep 2024], Annapolis
- DNR Es Mi Parque Series, “Let’s Keep MD Tick Safe!” Booth [Jul 2024]
  - o Presented bilingual educational materials
- Robinson Nature Center, “Let’s Keep MD Tick Safe!” Booth [May 2024]
  - o Presented an informational poster and materials to 50 visitors
- Robinson Nature Center, “Let’s Keep MD Tick Safe!” Booth [May 2024]
  - o Presented an informational poster and materials to 60 visitors, including a class of high school students
- UMD Maryland Day, “Let’s Keep MD Tick Safe!” Booth [Apr 2024]
  - o Designed tick educational materials, including an informational poster, live display of ticks using a USB microscope, tick collections, ID materials
  - o Presented educational materials to 400+ attendees

## RESEARCH EXPERIENCE

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### 2022-present: Master's Student

The University of Maryland, College Park Department of Entomology

Supervisor: Dr. Megan Fritz

Cryptic West Nile Virus Vector Species Community Composition in Suburban Chicago

- Molecularly identified 3000+ cryptic mosquito samples as *Culex restuans* or *Culex pipiens*

West Nile Virus Prevalence and Phenology

- Assessed vector prevalence through RT-qPCR of pooled legs
- Determined seasonality, interspecific dynamics, and annual trends of West Nile Virus in sampled mosquitoes

Tick Sampling and Extension

- Prepared and presented tick extension materials at \_\_\_ events
- Identified \_\_\_ ticks submitted by MD residents
- Collected invasive longhorned ticks in western MD over four collecting trips [Summer 2023]

### 2018 - 2022: Undergraduate Researcher

Cornell University Department of Entomology

Supervisor: Dr. Patrick O'Grady

Undergraduate Honors Thesis:

Burgunder BH, O'Grady PM. *Notes on Hawaiian Phoridae: New Island Records and Revised Key to Hawaiian Megaselia (Diptera: Phoridae) Species*

- Determined morphological characteristics of new *Scaptomyza* species by examining literature and conducting light microscopy to describe species new to science
- Developed a taxonomic key for thirteen species of Hawaiian *Megaselia* flies by examining extensive literature, photographing specimens, and sampling *Megaselia* on the Hawaiian Islands of Hawaii, Maui, and Oahu using bait traps and sweeping
- Identified thirteen new distribution records for Hawaiian *Megaselia*

### May - August 2021: Undergraduate Researcher

Supervisors: Antonio Alvarado, PI: Dr. Laura Harrington

Project: Assessing the Risk of Triatomine Exposure of National Park Service Employees in Park Housing

- Determined the efficacy of three passive traps for kissing bug surveying; collected, identified, and recorded 150 kissing bugs
- Inspected and evaluated government housing for risk of kissing bug entry

### July 2020 - May 2021: Lab Technician

National Drosophila Species Stock Center

Cornell Department of Entomology

Supervisors: Lidane Noronha, Mary Slavinsky

- Maintained and organized ~150 living *Drosophila* stocks for use in a wide range of experiments

## TEACHING EXPERIENCE

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Teaching Assistant, Cornell University

Spring 2022: ENTOM 4830 Insect Physiology (one session, 21 students)

- Assisted students during lab blocks with their dissections
  - Led students through an RNA extraction activity, instruction of lab protocols
- Spring 2021: ENTOM 2011 Alien Empire [Virtual] (one session, 26 students)
- Assisted and led weekly discussion sections
- Fall 2020: ENTOM 2120 Insect Biology (one session, 25 students)
- Attended and assisted weekly labs, graded student insect collections, held weekly office hours
  - Organized and led collecting trips outside of class
  - Maintained a safe learning environment during peak SARS-CoV-2 transmission

## RESEARCH INTERESTS

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Disease ecology, evolution, and transmission • Sensory biology • Public health • Conservation ecology • Mosquito biology • Insect diversity

## LEADERSHIP, VOLUNTEERING, AND OUTREACH

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2024: *Volunteer*, UMD Department of Entomology

- Committee Member, Charlie Mitter Travel Award, 2024

2022-5: *Volunteer*, UMD Department of Entomology Outreach

- Patuxent Pollinator Festival
  - o 2024: Led two insect education walks, tick education
- UMD Maryland Day, Insect Petting Zoo and Mosquito Education Booth, 2023-5
  - o 2024: Designed tick educational outreach materials, including a poster and several hands-on activities
- UMD Insect Zoo
  - o Burtonsville Day, 2022

2018-2022: *Member*, Snodgrass and Wigglesworth Undergraduate Entomology Club

- Represented the club at information sessions, open house events, to visiting students, online and in-person club fairs, and on visits to two universities
- *President*: Led weekly meetings, managed the club website and a listserv of 500+ students, contacted and hosted speakers
- *Vice President*: Organized eight meetings and two speakers, led the transition to online meetings

2020-2021: Member, Anti-Malarial Project at Cornell

2021-2022: Student Ambassador, Cornell College of Agriculture and Life Sciences

- Represented Cornell to prospective and new students through tabling events and online communication
- Gave tours of the Department of Entomology to three prospective students and their parents
- Shared my experiences as a Cornell student as part of a panel for 300 prospective students

## PROFESSIONAL MEMBERSHIPS

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- Mid-Atlantic Mosquito Control Association
- Entomological Society of Washington, DC
- Entomological Society of America
  - o MUVE Mentorship Program, 2024

- o Member, 1<sup>st</sup> place team, ESA 2022 Virtual Entomology Games
- o Member, 3<sup>rd</sup> place team, ESA 2023 Eastern Branch Entomology Games

## PHOTOGRAPHY CREDITS

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- iNaturalist; iNaturalist May News Highlights: “First occurrence of the invasive Asian needle ant in Italy”
- Megan Ma (Q?rius Smithsonian NMNH) Spiders World & Me; Four photos included
- Ali Shokoohi (UMD College Park) Thesis Presentation: ENHANCING BIOLOGICAL CONTROL BY GROUND BEETLES (COLEOPTERA: CARABIDAE) THROUGH AGRICULTURAL DRAINAGE DITCH MANAGEMENT PRACTICES
- Jacob Gorneau (UC Berkeley): Chapter on arachnid biodiversity; photo of *Dermacentor variabilis*
- Alan Mata (Cornell University) Presentation on Southwestern Bombyliidae Phylogenetics
- Theresa Menna (UMD College Park): Presentation at Gettysburg College on the molecular basis of olfaction in *Culex pipiens* and *molestus*
- Matthew Prebus (Arizona State University): Revision of eastern North American *Temnothorax*
- Sam Howard (TAMU): *Plega dacotyla* behavioral research

## REFERENCES (Contact Information Available Upon Request)

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1. Dr. Megan Fritz- Assistant Professor, University of Maryland, College of Computer, Mathematical, and Natural Sciences
2. Dr. Laura Harrington- Professor of Entomology, Cornell University; Director of the CDC Northeast Regional Center for Excellence in Vector Borne Diseases
3. Dr. Patrick O’Grady- Professor of Entomology, Cornell University; Cornell University Department of Entomology Chair; Director of the National *Drosophila* Species Stock Center
4. Dr. Cole Gilbert- Professor of Entomology, Cornell University; Hays and James M. Clark Director of Undergraduate Biology