

Elizabeth M. Clifton

Ecologist, Postdoctoral Researcher

University of New Hampshire
Dept. Natural Resources & the Environment

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EDUCATION

Ph.D. in Ecology and Evolutionary Biology

Aug 2016 – Dec 2022

University of Connecticut (UConn), Storrs, CT, USA

Advisors: Dr. Eldridge Adams (deceased) & Dr. Elizabeth Jockusch

Termite Weapons and Warfare: Insights from Behavioral, Experimental, and Evolutionary Analyses

B.S. in Biology/ concentration in Ecology and Field Biology

Aug 2012 – Dec 2015

State University of New York (SUNY), College at Oneonta, Oneonta, NY, USA

Advisor: Dr. Jeffrey Heilveil

Honors: *Magna cum laude*

RELEVANT PROFESSIONAL EXPERIENCE

Postdoctoral Researcher – University of New Hampshire (40hrs/wk)

Feb 2023 – present

Department of Natural Resources and the Environment

Collaboration with USDA APHIS PPQ S&Q, Buzzards Bay, MA

- Supervise and manage a diverse team of USDA employees in MA, MO, IA, and MN.
- Lead EAB biological control experiment, statistical analyses, communication, and publications.
- Organize and collaborate with colleagues from USDA and U. of New Hampshire.
- Analyze multi-year datasets and develop new ideas and methods for future experiments.
- Determine the most efficient strategies for monitoring insect populations.
- Guide and assist new summer technicians on protocols and data collection.
- Solve problems arising in distant field locations.
- Write and submit progress reports.

Teaching Assistant – University of Connecticut (20hrs/wk)

Aug 2016 – Dec 2022

Department of Ecology and Evolutionary Biology

see “Leadership & Mentoring: Teaching Experience” pg. 6

- Instructed and led biological lab experiments, activities, and discussions.
- Provided constructive feedback on assessments and presentations.
- Assisted and mentored students on study and learning methods.
- Designed and delivered effective course materials.
- Supervised and managed other instructors as Administrative Instructor.
- Taught hypothesis development and testing and effective data collection methods.
- Guest lectured as Expert Scientist in other classes. *see Communication: Guest Lectures” pg. 6*

Graduate Assistant – University of Connecticut (40hrs/wk)

Aug 2016 – Dec 2022

Department of Ecology and Evolutionary Biology

- Conceived, conducted, and synthesized original STEM research. *see “Writing Success: Publications” pg. 4*
- Analyzed and summarized data on quantitative and qualitative data.
- Identified, wrote, and secured grant funding. *see “Writing Success: Grants & Fellowships Awarded” pg. 3-4*
- Managed project finances and budget for research expenses.
- Maintained research facility spaces and equipment.
- Instituted and ensured policies for safe and efficient field and lab work.
- Acquired and upheld proper permitting for all research activities.
- Traveled to foreign and often remote locations to conduct fieldwork. *see “Travel” pg. 10*
- Communicated data-based findings through professional presentations. *see “Communication” pg. 4-6*
- Hired, trained, and supervised technicians and independent study students. Provided constructive feedback and coaching to achieve a high-performance, inclusive team. *see “Leadership & Mentoring: Advisement” pg. 6-8*
- Managed multiple research projects and timelines simultaneously, while also balancing teaching and taking classes.
- Developed connections and collaborations with colleagues from around the world, including CT, TX, and FL, USA, Czech Republic, Costa Rica, Cameroon, Japan, and France.
- Adapted to unexpected changes, such as switching to remote teaching during the COVID-19 lockdowns.
- Led the department Graduate Student Association during difficult times, managing to keep students connected socially and create new committees and programs. *see “Volunteer Work: Scientific Service” pg. 9-10*

Greenhouse Assistant – University of Connecticut (10hrs/wk)

Jun – Aug 2021

Department of Ecology and Evolutionary Biology

- Assisted employees with daily tasks and needs.
- Inventoried and photographed plants in 9 greenhouse rooms. Updated plant information on Greenhouse website.
- Created and arranged informational and instructional signs in gardens.

Research Intern – SUNY Oneonta (40hrs/wk)

Jun – Aug 2015

SUNY Oneonta Biological Field Station

- Assisted research scientists with daily needs.
- Investigated, developed, and implemented experiments on preventing zebra mussels from damaging water intake pipes. Worked closely with research scientists and water facility managers.
- Drove university vehicle between campus (Oneonta, NY) and field station (Cooperstown, NY).
- Assisted Lake Management graduate students on various overnight trips to monitor water quality and fish populations.

- Conducted invasive species surveys at multiple freshwater lakes.

Field Assistant – SUNY Oneonta (10hrs/wk)

Aug 2014 – Dec 2015

Department of Biology

- Assisted Masters student with research on wood turtles populations.
- Sought, handled, and collected data on wood turtles.
- Handled and measured skeletons of preserved turtles.
- Formulated, implemented, and communicated personal research project on wood turtle habitat.

WRITING SUCCESS

Grants & Fellowships Awarded

Total: \$54,464.90

U.S. Fulbright Scholarship to the Czech Republic: **\$8,216.66**

Aug 2021 – Jun 2022

UConn Doctoral Student Travel Fellowship: **\$1,000.00**

Jan 2020

Ecology and Evolutionary Biology, UConn:

- Headship Fellowship for Exceptional Merit: **\$750.00** x2 Jun 2019 & Jun 2021
- Zoology Research Award: **\$250.00, \$1,493.64, \$1,488.00, & \$1,500.00** 2017 – 2020
- Demi Fellowship Award: **\$6,500.00** Aug 2019

The UConn Graduate School Doctoral Dissertation Fellowship: **\$2,000.00**

Jan 2020

The Organization for Tropical Studies:

- Rudy Ruggles Research Fellowship: **\$3,995.00** Mar 2020
- Donald & Beverly Stone Fellowship Extension: **\$1,700.00** May 2019
- William L. Brown + Christiane & Christopher Tyson Fellowships: **\$3,500.00** Mar 2018
- Christiane & Christopher Tyson Fellowship: **\$5,035.00** Mar 2018
- Emily Foster Memorial Graduate Fellowship: **\$4,650.00** Mar 2017

Animal Behavior Society Student Research Grant: **\$1,981.60**

Nov 2019

UConn El Instituto:

- Pre-doctoral Award: **\$1,500.00** Mar 2018
- Tinker Foundation Graduate Field Research Grant: **\$2,000.00** Mar 2017

Sigma Xi Grant-In-Aid-of-Research: **\$915.00 & \$1,000.00**

Jun 2017 & Jun 2018

USDA International Union for the Study of Social Insects Travel Award: **\$720.00**

Sep 2018

UConn National Incentives Fellowship Program: **\$1,000.00** x2

Dec 2017 & Dec 2018

The Betsy DeCoursey Endowment Fund: \$200.00	May 2017
The CT Museum of Natural History James A. Slater Endowment Fund: \$550.00	May 2017
College at Oneonta Foundation and the SUNY Alumni Association: \$770.00	Apr 2015

Publications

- 6 **Clifton, E.M.**, P.O. Lewis, E. Jockusch, E. Adams. 2022. An experimental test of Lanchester's models of combat in the Neotropical termite *Nasutitermes corniger* (Blattodea: Termitidae). *Proceedings of the Royal Society B* 289(1975):20220343. DOI: [10.1098/rspb.2022.0343](https://doi.org/10.1098/rspb.2022.0343).
- 5 **Clifton, E.** 2020. A brief review on the application of Lanchester's models of combat in nonhuman animals. *Ecological Psychology* 32(4):181-191. DOI: [10.1080/10407413.2020.1846456](https://doi.org/10.1080/10407413.2020.1846456).
- 4 García-Robledo C., E.K. Kuprewicz, C.S. Baer, **E. Clifton**, G.G. Hernández, D.L. Wagner. 2020. The Erwin equation of biodiversity: From little steps to quantum leaps in the discovery of tropical insect diversity. *Biotropica* 52: 590-597. DOI: [10.1111/btp.12811](https://doi.org/10.1111/btp.12811).
- 3 *Preprint*: McGlynn, T.P., **E. Clifton**, S. Escamilla, J. Garcia, A. Santizo, D. Tafoya. 2020. Colony-level mechanisms of thermal tolerance regulation in the ant *Ectatomma ruidum*. DOI: [10.22541/au.160760968.86965957/v1](https://doi.org/10.22541/au.160760968.86965957/v1).
- 2 Janowiecki, M., **E. Clifton**, A. Avalos, E. L. Vargo. 2019. Upper thermal tolerance of tropical and temperate termite species (Isoptera: Rhinotermitidae, Termitidae): a test of the climatevariability hypothesis in termites. *Insectes Sociaux* 67:51-57. DOI: [10.1007/s00040-019-00727-7](https://doi.org/10.1007/s00040-019-00727-7).
- 1 Nelson, A.S., T. Scott, M. Barczyk, T.P. McGlynn, A. Avalos, **E. Clifton**, A. Das, A. Figueriedo, L.L. Figueroa, M. Janowiecki, S. Pahlke, J.D. Rana, S. O'Donnell. 2018. Day/night upper thermal limits differ within *Ectatomma ruidum* ant colonies. *Insectes Sociaux* 65:183-189. DOI: [10.1007/s00040-017-0585-4](https://doi.org/10.1007/s00040-017-0585-4).

COMMUNICATION

Presentations

- 12 Evolution of Termite Defenses. Talk presented at: 2022 International Union for the Study of Social Insects Conference, 2022 Jul. 7, San Diego, CA, USA.
- 11 Termite warfare and weapons. Talk presented at: 2021 Eastern Entomological Society virtual conference, 2021 Mar 23, virtual.

- 10 Termite weapons and defenses. Talk presented at: 2020 Ecology and Evolutionary Biology Graduate Student Symposium, 2020 Feb. 6, Storrs, CT, USA.
- 9 Cooperative fighting in termites. Talk presented at: University of Florida Termite Course, 2019 June 6, Fort Lauderdale, FL, USA.
- 8 An empirical test of Lanchester’s square law. Poster presented at: The Entomological Society of America 2018 Joint Annual Meeting, 2018 Nov. 13, Vancouver, BC, Canada.
- 7 Getting to the root of Lanchester’s square law. Talk presented at: The Entomological Society of America 2018 Joint Annual Meeting, 2018 Nov. 12, Vancouver, BC, Canada. **Awarded 2nd place.**
- 6 Cooperative fighting in the social insect *Nasutitermes corniger*: a test of Lanchester’s models of combat. Poster presented at: The 2018 International Union for the Study of Social Insects Conference, 2018 Aug. 6-8, Guarujá, Brazil.
- 5 Ter-fight club: understanding how individual decisions lead to collective group behaviors. Talk presented at: The Organization for Tropical Studies La Selva Charla, 2018 Jun. 9, La Selva, Costa Rica.
- 4 Using social insects to understand group behavior. Talk presented at: The University of Connecticut Wildlife Society, 2018 Apr. 11, Storrs, CT, USA.
- 3 Ter-fight Club: using termites to understand group behavior. Talk presented at: 2018 Connecticut Entomological Society Student Competition, 2018 Mar. 30, Storrs, CT, USA. **Awarded 1st place.**
- 2 Ter-fight Club: Linking Individual Behavior to Collective Group Fighting. Talk presented at: 2018 Ecology and Evolutionary Biology Graduate Student Symposium, 2018 Feb. 17, Storrs, CT, USA.
- 1 Preventing Zebra Mussel (*Dreissena polymorpha*) veliger attachment using potassium permanganate. Poster presented at: 2016 Student Research and Creative Activity day, 2016 April 20, Oneonta, NY, USA.

Invited Seminars

- The Rules Do Not Apply: Testing models of combat in social insects, 2019 Aug. 30, Arizona State University, Social Insect Research Group, Tempe, AZ.
- Termite Weapons and Warfare. 2020 Sept. 18, University of Copenhagen, Ecology and Evolution Section, virtual.

Guest Lectures

- 8 Writing and Publishing. UConn Intro to EEB lecture. Fall 2021.
- 7 Termite Evolution and Defensive Behaviors. UConn Animal Behavior virtual lecture. Fall 2020.
- 6 Evolution of Termite Weapons. UConn Animal Behavior lecture. Fall 2019.
- 5 Using Social Insects to Understand Group Behavior. Brown Biodiversity and Ecology of Tropical Forests Class. Summer 2019.
- 4 Ter-fight Club: Studying Behavior in Social Insects. UConn Animal Behavior lecture. Fall 2018.
- 3 General Ecology Lecture on Behavioral Ecology (EEB 2244). UConn General Ecology Class. Fall 2018.
- 2 Studying Behavior in Social Insects. UConn Field Animal Behavior lecture. Summer 2018.
- 1 Ter-fight Club: Studying Behavior in Social Insects. UConn General Biology II lecture. Spring 2018.

LEADERSHIP & MENTORING

Teaching Experience

Awarded the Student Evaluation of Teaching Excellence Award	May 2019 & May 2020
Administrative Lab Instructor, General Biology II (Organism Biology; BIOL 1108) UConn, Storrs, CT	Aug – Dec 2022
Teaching Assistant, Animal Behavior (EEB 3201), UConn, Storrs, CT (3 semesters total)	Aug – Dec 2019-2022
Lab Instructor, General Biology II (Organismal Biology; BIOL 1108), UConn, Storrs, CT (6 semesters total)	2017 – 2021
Discussion Instructor, General Ecology (EEB 2244), UConn, Storrs, CT (3 semesters total)	2016 – 2019

Advisement

In total, I have mentored 24 undergraduate students from a diverse variety of backgrounds during my PhD studies.

Theses

I supervised these students while collecting behavior data and then mentored them through the entire thesis process, from forming a question to writing their thesis.

Sarah Anderson Aug 2018 – May 2020
 Title: The effect of the battle ratio on combat behavior in the termite *Nasutitermes corniger*
 Accomplishments: accepted to present at The Northeast Natural History Conference (cancelled due to COVID-19), received UCONN OUR Travel grant

Madison Molnar Aug 2018 – May 2021
 Title: The effect of colony ratios on termite group combat behavior
 Accomplishments: accepted to present at The Northeast Natural History Conference (cancelled due to COVID-19), received UCONN OUR Travel grant, presented at UConn EEB Undergraduate Symposium

Independent Projects

I supervised these students while collecting behavior data and then mentored them through small, independent projects based on my behavioral data.

Ben Townson Aug 2018 – May 2021
 Project Question: How does encounter rate affect likelihood of attack in termites?

Isabelle Guilmette Aug 2019 – May 2020
 Project Question: How does encounter rate affect termite aggression?

Alison Hammerly Aug 2019 – May 2020
 Project Question: How does encounter rate affect termite aggression?

Independent Study Research Assistants

I supervised these students as they collected behavioral data from video recordings. I held regular lab meetings with these students and led various workshops, including topics of “CV vs. resume” and “introduction to coding in R.”

Project: Collective Fighting Behavior in Social Insects, Individual Fighting Ability, and the Synergistic Attack Hypothesis
2021: Robert Joe Stanton (3 credits), Christable Darko (1 credit), Cooper Offord (1 credit), Jason Jiang (1 credit), Jenny Weiss (1 credit), Kriti Bashyal (1 credit), Leilani Duarte (1 credit), Ryan Adam (1 credit), Zoe Bates (1 credit), Austin Toscano (volunteer), Courtney Andreozzi (volunteer)
2019: Brenden McLean (1 credit), Lauren Michaels (1 credit)

Project: An Experimental Test of Lanchester’s Models of Combat in the Neotropical Termite *Nasutitermes corniger* (Blattodea: Termitidae)
 2018: Zixiao Wang (3 credits), Alexander Chu (1 credit), David Ramirez (1 credit), Emily Forauer (1 credit), Maddy Schrijn (volunteer), Sam Erickson (volunteer)

Other

I have also mentored four undergraduates (Jade Garcia, Sasha Escamilla, Ashley Santizo, and Diana Tafoya) from the University of California at Dominguez Hills while working on a field project in Costa Rica.

VOLUNTEER WORK**Outreach**

- Guest scientist, Natchaug Elementary School, Willimantic, CT, USA Nov 2021
I co-taught an interactive lesson on pollinators to 2nd grade students.
- Co-organizer of the UConn GRAnD Clean-Up, Storrs, CT, USA Jul 2018 & Jul 2019
I co-organized a campus clean up with graduate students from all departments across UConn campus.
- Guest scientist, Skype-A-Scientist Event, The Caveat, NY, NY, USA Oct 2018
This was a public outreach event during happy hour at The Caveat bar. I created and ran an interactive station on termites following trail pheromones.
- Guest Scientist, Science Salon, UConn, CT, USA Oct 2018
I co-taught elementary school students about evolution and adaptations.
- UConn EEB representative, Research Connections Event, CT, USA Oct 2018
I presented my research to undergraduate students and advised them on finding and partaking in research opportunities in their fields of interest.
- Insect Expert, Boston City Nature Challenge, Spectacle Island, MA, USA Apr 2018
This was a public, rapid bioblitz event where we identified and uploaded as many organisms as possible to iNaturalist. We worked in part with the National Parks Department in Boston.
- Guest Scientist, Canterbury Elementary School, CT, USA Apr 2018
This elementary school eliminated its science program. I joined other graduate students in teaching the students about the natural world and different organisms they share with the world. I specifically taught students about ants and myrmecophiles.
- Entomologist, UConn BioBlitz in Greenwich, CT, USA Sep 2017
I participated in a 24-hour survey of as many organisms as we could find. I specifically searched for and identified insects (namely, ants).
- Science Fair Judge, Solomon Schechter Day School, CT, USA Feb 2017
I judged, questioned, and gave feedback to 6th-8th grade students from Solomon Schechter Day School and The Bess and Paul Siegel Hebrew Academy of Greater Hartford.

Scientific Service

UConn EEB Graduate Student Association (GSA) President Jun 2020 – May 2021

I created our department's first Grad-to-Grad mentor program for new graduate students, I planned and ran our first virtual "Barn Dance" (a whole-department social event), I raised money in our first GSA fundraiser (~\$900), I created a more transparent GSA E-Board and set our first "ground rules" for communication within the association, I implemented a rank-choice voting system, I planned and oversaw our first virtual Graduate Student Symposium, and I continued a strong connection between the graduate students and the faculty/ the Graduate Admissions and Awards Committee.

Other UConn EEB GSA involvement

- Tuesday Evening Seminar co-chair Jan 2018 – May 2020
I co-organized informal seminars where graduate students would present research to faculty, staff, postdocs, and other students in the department.
- Merchandise committee co-founder Jan 2018 – May 2019
I co-founded this committee to design and purchase merchandise with our department affiliation for members of EEB. This supplemented the EEB GSA funding pool.
- Social chair Jun 2017 – May 2020
I planned social events for graduate students within our department, as well as events with other departments and events with faculty, postdocs, and staff.

UConn EEB Graduate Student Symposium Planner Feb 2018 – 2021

I assisted in set-up and clean-up of these events, as well as ran the photo contest.

Journal Reviewer

PNAS	2023
Behavioural Ecology	2022
Journal of Tropical Ecology	2021
Insectes Sociaux	2017 – 2018

English Editing Assistance Oct 2019 – present

I have reviewed and edited many grant proposals and manuscripts for ESL colleagues, namely those from the Czech Republic.

Entomological Society of America Eastern Branch Student Affairs Committee Sep 2017 – May 2019

Judge for Asa Fitch Award

Judge for John Henry Comstock Award

Assisted in planning student symposiums at Branch Conferences

UConn EEB New Graduate Student Panel Aug 2017 – Dec 2018

Answered questions and facilitated a discussion about what to expect in graduate school.

UConn EEB Undergraduate Meet and Greet Sep 2017
 Spoke with and answered questions from undergraduates in the EEB Department about how to do research and apply for graduate school.

TRAVEL

Fieldwork:

USA: MO, KS, IA, MN	Feb – Jun 2023
Costa Rica (numerous trips)	2017 – 2021
Cameroon	Feb – Mar 2020

Courses:

Tree Climbing, Portland, OR, USA	Oct 2019
Termites, Fort Lauderdale, FL, USA	Jul 2019
Tropical Social Insects, La Selva Field Station, Costa Rica	Apr 2017

Conferences:

San Diego, California, USA: International Union for the Study of Social Insects	Jul 2022
Guaruja, Brazil: International Union for the Study of Social Insects	Jul 2018
Vancouver, Canada: Entomological Society of America	Nov 2018
Denver, Colorado, USA: Entomological Society of America	Nov 2017

Other work related:

Czech Republic, US Fulbright	Jan – Jun 2022
Arizona State University, Invited seminar	Aug 2019

OTHER WORK EXPERIENCE

Customer Service

Applebee's: Carside Assistant, Waitress (40hrs/wk)	Jan – Aug 2016
Harbor Crab: Busser, Waitress (40+hrs/wk)	May 2014 – Aug 2016
Brooks BBQ: Take Out, Catering (20hrs/wk)	Sep 2014 – Dec 2015
Cooperstown All Star Village: Waitress (20hrs/wk)	Jun – Aug 2015
La Tavola: Busser (20hrs/wk)	May – Aug 2013

Night Host: SUNY Oneonta, Grant Hall (10hrs/wk) Sep – Jan 2013

Physical Therapy Student Assistant (20hrs/wk) May 2011 – Aug 2012