CURRICULUM VITAE

CHRISTINA SUZANNE BAER
First-year Research Immersion Program
Binghamton University
4400 Vestal Parkway East
Science 3, Room 207
Binghamton, NY 13902

PHONE: (314) 803-5956 E-MAIL: cbaer @binghamton.edu

Education:

2011-2017 **University of Missouri-St. Louis**, St. Louis, MO
Ph.D. in Biology, advisor Robert Marquis, Ph.D.
Graduate School Doctoral Fellowship (2011-2015)
Raven Fellowship (Fall 2016)
University of Missouri-St. Louis Dissertation Fellowship (2017)
Certificate in University Teaching from the UMSL Center for Teaching and Learning (2016)
University of Missouri Graduate Student Leadership Development Program (2017)

2007-2011 **University of Chicago**, Chicago, IL
A.B. in Biology, with honors
University Scholar (2007-2011)

Research:

2018-2020 Postdoctoral research associate
University of Connecticut, Storrs, CT
Postdoctoral advisor: Carlos Garcia-Robledo, Ph.D.

2011-2017 Ph.D. student
University of Missouri-St. Louis, St. Louis, MO
Advisor: Robert Marquis, Ph.D.
Dissertation: The diversity, costs, and benefits of shelters built by lepidopteran caterpillars in a Costa Rican dry forest

2010-2011 Honors thesis student
University of Chicago, Chicago, IL
Advisor: Timothy Wootton, Ph.D.
Honors thesis: A non-neutral model of a complex ecological community

2006-2009 Field assistant and undergraduate researcher
University of Missouri-St. Louis, St. Louis, MO
Advisor: Robert Marquis, Ph.D.
Projects included a guided research project as a high school student on the gall diversity of white oaks, acting as a field assistant in studies of relationships between oak trees, their leaf-tying caterpillars, and the wider oak invertebrate community, and an REU project on the effects of leaf-tying caterpillars on an invasive weevil.

Instruction:

2020-present **Binghamton University**

HARP 170 (FRI Research Methods): I teach students the fundamentals of designing a research question, using the scientific literature to answer it, and communicating their findings.

BIOL 241 & 341 (FRI Ecological Genetics): In this two-course sequence, I teach students laboratory methods applicable to ecological genetics, as well as how to design, execute, and communicate the results of an independent laboratory research project.

BIOL 491 (Practicum in College Teaching): I teach upper-level undergraduates acting as peer mentors how to teach skills, provide constructive feedback, and design assessments.

2020 **University of Connecticut**

EEB 2245/2245W (Evolutionary Biology), Adjunct Faculty: I cotaught the lectures for this 190-person course. I also served as an instructor for the writing-intensive portion of the course.

EEB 5310 (Graduate Conservation Biology), Adjunct Faculty: I taught graduate students the fundamentals of conservation biology using a mixture of lectures, literature discussions, and research presentations and papers.

2018-2019 **University of Connecticut**

AH1200-002 (Introduction to Aikido), Teaching Assistant: I helped train students in aikido, a Japanese martial art.

2011-2017 **University of Missouri-St. Louis**

BIOL 1831, Introductory Biology: From Atoms to Organisms (for majors)**, Teaching Assistant and Retention Specialist:**

In addition to teaching laboratory and discussion sections, I trained and coordinated other teaching assistants teaching the course and redesigned the lab manual.

Spring 2017: One section of discussion (for Christopher Wolin, Ph.D.) to facilitate the transition to other graduate students teaching the discussions.

Spring 2016: Retention Specialist and discussion (3 sections). I redesigned the format of discussion to include learning and study skills and further developed study tools designed in the previous semester.

Fall 2015: I developed the Retention Specialist position (for working with students to holistically improve their success in the course) by monitoring student progress, teaching learning and study skills, and developing novel study tools and assignments.

Spring 2014: lab and discussion (for Michael Howard, Ph.D.)

Fall 2013: lab (for Christopher Wolin, Ph.D.)

Spring 2013: lab and discussion (for Elizabeth Kellogg, Ph.D.)

Summer 2012: lab (for Michael Howard, Ph.D.)

Fall 2011: lab (for Christopher Wolin, Ph.D.)

BIOL 4423, Entomology Lab, Teaching Assistant:

Fall 2012 and 2014 (for Robert Marquis, Ph.D.): I taught students the anatomy, ecology, and taxonomy of major insect groups.

2014 **Palo Verde Biological Station, Costa Rica**
OTS Tropical Biology course: I collaborated with César Nufio, Ph.D. to develop and implement a faculty field problem for the course.

2013 **Palo Verde Biological Station, Costa Rica**
OTS Tropical Biology course: Lepidoptera workshop
Universidad Técnica Nacional-Cañas: research presentation to an English class

2010 **University of Chicago**
Research In the Biological Sciences, Summer 2010
Lab assistant for a high-school summer biology program.
BIOS 13106 (non-majors plant biology course)
Winter 2010: lecture TA (for Manfred Ruddat, Ph.D.)

Grants and Awards:

2019 Center of Biological Risk Grant: Assessing direct and indirect global warming risks for tropical herbivores
NSF LSAMP Research Experience for Undergraduates mentorship at La Selva Biological Station, Costa Rica (students Christopher Martinez and Breanna Mora)

2018 Center of Biological Risk Grant: Thermal arenas and portable heating units for measuring warming risk in tropical arthropod communities
UConn Postdoc Seed Grant: Predicting climate-driven changes in tropical communities through temperature preferences and experimental warming

2017 NSF Doctoral Dissertation Improvement Grant: Costs and benefits of shelter-building by lepidopteran caterpillars in a tropical dry forest

2016 Outstanding Teaching Assistant Award for work in BIOL 1831
McGrath Book Award for service to the Harris World Ecology Center
2016-2017 Trans World Airlines Scholarship

2015 National Geographic Young Explorer grant
2015-2016 Trans World Airlines Scholarship

2014 Annual Student Award for the Appreciation for the Biology of Insect Pests for Baer & Marquis 2014 paper
2014-2015 Trans World Airlines Scholarship
dissertation grant (Emily Foster Memorial Fellowship), Organization for Tropical Studies
Jane Harris Scholarship in Ecology and Conservation and Stephen M. Doyle Memorial Scholarship, Harris World Ecology Center
Arnold B. Grobman Scholarship, Department of Biology

2013 Stephen M. Doyle Memorial Scholarship**,** Harris World Ecology Center
pilot grant (Lillian and Murray Slatkin Fellowship), Organization for Tropical Studies

2012 post-course research grant, Organization for Tropical Studies

Invited Presentations

2018 Connecticut Entomological Society (October 19): “The diversity and functions of Costa Rican caterpillar shelters”
University of Kentucky Natural Resources and Environmental Science field course (July 29): “Insect shelters vs. predators, parasitoids, and climate change”
Duke Talent Identification Program field course (July 13): “Tropical forests, insect shelters, and climate change”

2017 Universidad de Costa Rica Biology Department (May 24): “The functions of caterpillar shelters from the field to the herbarium”

2015 OTS Tropical Biology course at Palo Verde (June 14): “Shelter-building caterpillars and how they interact with their host plants and natural enemies”
Webster Groves Nature Study Society (March 16): "Caterpillar architecture: How shelter-building caterpillars interact with their host plants and natural enemies"

2014 Universidad de Costa Rica Biology Department (August 12): “Shelter-building caterpillars and their predators and parasitoids at Palo Verde”

Publications and Presentations:

Asterisks indicate undergraduate student co-authors. Daggers indicate equal first authors.

Publications:

Baer, C. S., C. Martínez*, B. Mora*, and C. García-Robledo. *In preparation*. Experimental heating causes taxonomic and functional shifts in rolled-leaf invertebrate communities.

Marquis, R. J., C. S. Baer, J. T. Lill, and G. Wang. 2022. The impact of construct building by caterpillars on arthropod colonists in a world of climate change. In R. J. Marquis and S. Koptur, editors. *Caterpillars in the Middle*. Springer International Publishing.

Bizzarri, L., C. S. Baer, and C. García-Robledo. 2022. DNA barcoding reveals generalization and host overlap in hummingbird flower mites: implications for the Mating Rendezvous Hypothesis. *The American Naturalist* 199:576-583. https://doi.org/10.1086/718474 (with corrigendum doi.org/10.1086/727510)

Baer, C. S. and R. J. Marquis. 2021. Experimental shelter-switching shows shelter type alters predation of caterpillars (Hesperiidae). *Behavioral Ecology* 32:1012-1021. https://doi.org/10.1093/beheco/arab057

García-Robledo, C. and C. S. Baer. 2021. Demographic attritions, elevational refugia, and the resilience of insect populations to projected global warming. *The American Naturalist* 198:113-127. https://www.doi.org/10.1086/714525

García-Robledo, C., C. S. Baer, K. Lippert*, and V. Sarathy*. 2020. Evolutionary history, not the ectotherm temperature-rule size explains size variation of tropical insects along elevational gradients. *Functional Ecology* 34:2513-2523. https://doi.org/10.1111/1365-2435.13666

Baer, C. S., and R. J. Marquis. 2020. Between predators and parasitoids: complex interactions among shelter traits, predation, and parasitism in a shelter-building caterpillar community. *Functional Ecology* 34:2186-2198. https://doi.org/10.1111/1365-2435.13641

García-Robledo, C. †, E. K. Kuprewicz†, C. S. Baer, E. Clifton, G. Hernández, D. L. Wagner. 2020. The Erwin Equation of Biodiversity: from little steps to quantum leaps in the discovery of tropical diversity. *Biotropica* 52:590-597. https://doi.org/10.1111/btp.12811

Baer, C. S., D. Derrick, and C. Garcia-Robledo. 2020. Portable heaters for microhabitat heating experiments. *Methods in Ecology and Evolution* 11:727-732. https://doi.org/10.1111/2041-210X.13391

Baer, C. S. 2018. Shelter building and extrafloral nectar exploitation by a member of the *Aristotelia corallina* species complex (Gelechiidae) on Costa Rican acacias. *Journal of the Lepidopterists' Society* 72:44-52.

Marquis, R. J., D. Salazar, C. S. Baer, J. Reinhardt, G. Priest, and K. Barnett. 2016. Ode to Ehrlich and Raven, or how herbivorous insects might drive plant speciation. *Ecology* 97:2939-2951.

Baer, C. S. and R. J. Marquis. 2014. Native leaf-tying caterpillars influence host plant use by the invasive Asiatic oak weevil through ecosystem engineering. *Ecology* 95:1472-1478.

Wang, H. G., R. J. Marquis, and C.S. Baer. 2012. Both host plant and ecosystem engineer identity influence leaf-tie impacts on the arthropod community of *Quercus*. *Ecology* 93:2186-2197.

Conference Presentations:

Baer, C. S. and T. Telang*. "Evolutionary and ecological patterns of shelter-building across North American butterfly caterpillars", 9th International Conferences on the Biology of Butterflies, 2023.

Baer, C. S. "Assessing caterpillar heat tolerance and CUREing seasonal gaps in data coverage.", 107th Ecological Society of America meeting, 2022.

Baer, C. S., C. Martínez*, B. Mora*, and C. Garcia-Robledo. "Microhabitats and refugia provide insights into insect biodiversity and global warming", Entomology Society of America meeting, 2019.

Baer, C. S. and C. Garcia-Robledo. "Invertebrate temperature preferences and limits respond differently to elevation, guild, and evolutionary history along a tropical elevation gradient", 104th Ecological Society of America meeting, 2019.

Baer, C. S. and R. J. Marquis. "Between a predator and a parasitoid: complex interactions between caterpillars, shelter traits and natural enemies in a tropical dry forest", 103rd Ecological Society of America meeting, 2018.

Baer, C. S. and R. J. Marquis. "Trading spaces: Changing shelters changes predation of *Urbanus dorantes* and *U. proteus* (Hesperiidae)", 7th Annual St. Louis Ecology, Evolution and Conservation Retreat, 2017.

Baer, C. S., H. Franko*, and R. J. Marquis. "The effects of drought on tropical dry forest shelter-building caterpillars", 54th Annual Association for Tropical Biology and Conservation meeting, "Tropical biotic interactions in the Anthropocene" symposium, 2017.

Baer, C. S. and G. Priest. "Not just food: Shelter-building by herbivorous insects", 3rd Annual UMSL Biology Research Symposium, 2016.

Marquis R. J., G. H. Wang, R.A. Lankau, C. Baer. "Canopy stratum, leaf quality, and plant architecture effects on attack by leaf-tying caterpillars on white oak, *Quercus alba*", 94th Ecological Society of America meeting, 2009.

Wang, G. H., R. J. Marquis, R.A. Lankau, C. Baer. "The contingencies of ecosystem engineering: Impacts of host plant species and leaf-tying caterpillar species", 94th Ecological Society of America meeting, 2009.

Posters:
Baer, C. S. and R. J. Marquis. "Parasitism and predation in a tropical community of shelter-building caterpillars", UMSL Graduate Research Symposium and St. Louis Ecology, Evolution, and Conservation Retreat, 2016.

Franko, H.*, C. S. Baer, and R. J. Marquis. "The effect of precipitation on parasitism rates on shelter-building caterpillars", UMSL Undergraduate Research Symposium, 2016.

Baer, C. S. and R. J. Marquis. "Shelter or side effect?: Connecting differences in parasitism rates and construct shape in two species of shelter-building caterpillars", UMSL Graduate Research Symposium, 2014.

Baer, C. S. and R. J. Marquis. "Shelters of the silver-spotted skipper vary in shape depending on host plant", St. Louis Ecology, Evolution and Conservation Retreat, 2013.

Baer, C. S. and R.J. Marquis. "Leaf-tying caterpillars increase abundance of Asiatic oak weevil on deciduous trees through ecosystem engineering", St. Louis Ecology, Evolution and Conservation Retreat, 2012.

Organizations:
Biology Graduate Student Association:
2016-2017 **BGSA Symposium Committee Member**
Helped organize the symposium and secured supplemental funding from the College of Arts & Sciences and the Graduate School for our annual research symposium.
Outreach organizer and mentor: Organized BGSA science outreach presentations at Sumner High School and the Missouri Botanical Garden. I also participated in an

outreach and mentoring program at Jennings High School and a program preparing high school students from several St. Louis high schools for a study-abroad trip to Costa Rica.

2015-2016 **BGSA Symposium Committee Member**
Secured supplemental funding from the College of Arts & Sciences and the Graduate School for our annual research symposium.
Plant Sale Committee Member
Helped organize the annual plant sale fundraiser.

2014-2015 **Vice President**
Assisted BGSA President with member and event organization.
Plant Sale Committee Member
Helped organize the annual plant sale fundraiser.

2013-2014 **President**
Organized BGSA meetings and members, worked with the biology faculty and other university organizations on common interests

2012-2013 **Student Government Association Representative**
Represented the organization at meetings of the university's student government.

2011-2012 **Assistant Webmaster**
Helped with redesigning the organization's website.

Whitney R. Harris World Ecology Center:

2016-2017 **Chair of the Whitney R. Harris World Ecology Center Student Committee and Representative to the Whitney R. Harris World Ecology Center Executive Committee**
Led the student committee and represented graduate student interests and concerns to the Harris Center leadership.

2015-2016 **Representative to the Whitney R. Harris World Ecology Center Executive and Student Committees**
Represented graduate student interests and concerns to the Harris Center leadership and designed a student recruitment flyer.