



# Megan Barkdull

PH.D CANDIDATE, NSF GRADUATE RESEARCH FELLOW

Department of Ecology and Evolutionary Biology, Cornell University

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[mbarkdull.github.io](https://mbarkdull.github.io) | [mbarkdull](https://github.com/mbarkdull) | [meganbarkdull](https://twitter.com/meganbarkdull)

## Education

### Ph.D Candidate, Department of Ecology and Evolutionary Biology

ADVISOR: DR. CORRIE MOREAU

Cornell University

August 2019–expected May 2024

### Bachelor of Arts in Biology

ADVISOR: DR. EMILY HEFFERNAN

New College of Florida

August 2014–May 2018

- Honors Thesis: Population Genetics of the Threatened Florida Duskywing Skipper

## Publications

Double dagger (§) indicates co-first authors. Dagger (†) indicates mentored undergraduate co-author.

### Published:

1. Heffernan, E. V.†, **Barkdull, M.†**, N. K. Brady. 2023. Microsatellites for butterfly conservation: historical challenges, current relevance, and a guide to implementation. *Frontiers in Ecology and Evolution*. <https://doi.org/10.3389/fevo.2024.1344065>
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3. **Barkdull, M.**, & C. S. Moreau. 2023. Worker reproduction and caste polymorphism impact genome evolution and social genes across the ants. *Genome Biology and Evolution*. <https://doi.org/10.1093/gbe/evad095>
4. Heffernan, E., A. Markee., M. R. Truglio, **M. Barkdull**, S. Steele Cabrera, J. Daniels. 2023. Population Genetic Structure of a Rare Butterfly in a Fragmented South Florida Ecosystem. *Insects* <https://doi.org/10.3390/insects14040321>
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Manuscripts available upon request.

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- National Merit Scholar (\$62,414)

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3. Entomological Society of America meeting, St. Louis, MO. (2019). Markee, A.N†., Saarinen, E. V., **Barkdull, M.** Conservation genetics of the Florida duskywing skipper (*Ephyrades brunnea*): a multi-population assessment of a rare South Florida butterfly.
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## Research Positions

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Cornell University

August 2018–ongoing

- Investigated the genetic basis and consequences of worker caste polymorphisms using genome sequencing, comparative genomic methods, and transcriptomics.
- Conducted multiple field excursions to collect ant specimens to support research program.

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September 2018–August 2019

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- Responsible for assisting all lab members with wet lab work, including DNA extractions, microsatellite sequencing, Sanger sequencing, and library prep for MiSeq.
- Conducted field work to investigate the genetic mating system of the saxicolous Brazilian frog \**Cycloramphus boraceiensis*\*.

### Hawkmoth Sensory Behavior volunteer

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Cornell University

September 2018–December 2018

- Participated in weekly hawkmoth colony care tasks (feeding, plant care, pupae counts etc.).
- Assisted in hawkmoth feeding choice.

### Birdsong Evolution, research assistant

DRS. ARAYA-SALAS AND ODOM

Cornell Lab of Ornithology

May 2018–May 2019

- Coded individual song elements in birdsong spectrograms for downstream data analysis.

### Florida Duskywing Genetics Project, research assistant

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August 2017–May 2018

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- Performed next-generation sequencing in order to develop novel microsatellite markers

### NSF Research Experiences for Undergraduates Intern

DEPARTMENT OF INVERTEBRATE ZOOLOGY

American Museum of Natural History

May 2017–August 2017

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### Dakota Skipper Wolbachia Status, research assistant

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January 2017–May 2017

- Conducted DNA extractions and PCR amplifications of Wolbachia pathogen genes from the endangered Dakota Skipper butterfly to identify pathogen strains.

## Curatorial Skills & Experiences

## From Nabokov's Net exhibit contributor

CORNELL UNIVERSITY INSECT COLLECTION AND MANN LIBRARY

September 2023–March 2024

- Collaborated with CUIC and Mann library staff to design an exhibit featuring the butterfly specimens collected by Vladimir Nabokov during his time at Cornell.
- Designed visuals and wrote content for exhibit component focused on butterfly conservation and the role of natural history collections in conservation research.

## Six-Legged Science: Unlocking the Secrets of the Insect World exhibit contributor

CORNELL UNIVERSITY INSECT COLLECTION AND MUSEUM OF THE EARTH

January 2022–March 2022

- Helped design components of public-facing museum exhibit, including pulling specimens, databasing, and design work
- Helped coordinate and manage person visitors.

## Social Media co-manager

CORNELL UNIVERSITY INSECT COLLECTION

January 2022–Present

## Collections Management Workshop, participant

CORNELL UNIVERSITY INSECT COLLECTION

January 2021–May 2021

- Participant in a semester-long workshop series, led by Drs. Jason Dombroskie and Corrie Moreau, which focused on practical discussion of topics related to the care and management of natural history collections, including museum mission statements, managing loans, permits, managing volunteers and students,

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August 2020–Present

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- Supervised and trained undergraduate and graduate students on how to conduct databasing in the the collection.

## Entomological Collections Network annual meeting, attendee

November 2020–NA

- Virtually attended conferences sessions on a wide range of entomological collections management topics.

## Teaching

### Introduction to Evolution and Diversity Writing in the Major guest lecturer

BIOEE 1780

Cornell University

October 2023–NA

- Invited to give a guest lecture on my dissertation research and path to graduate school in Jasmine Peters' Writing in the Majors course.

### Conservation Biology guest lecturer

BISC 4575

Forham University

April 2023–NA

### Introduction to Evolution and Diversity gradener

BIOEE 1781

Cornell University

August 2022–December 2023

### Introduction to Evolution and Diversity teaching assistant

BIOEE1780

Cornell University

January 2020–May 2020

- Taught three weekly discussion/lab sections.

### Comparative Physiology teaching assistant

BIOG1440

Cornell University

August 2019–December 2020

- Taught three weekly discussion/lab sections, leading hands-on investigations of physiological concepts covered in lectures.

### Foundations of Biology teaching assistant

BIOL2100

New College of Florida

August 2017–December 2017

- Led review sessions prior to tests and quizzes.

### Cellular Biology teaching assistant

BIOL3500

New College of Florida

August 2016–December 2016

- Led content-delivery and problem-solving review sessions once per week.
- Assisted in exam grading and clerical tasks.

## Mentoring Experiences

### Mahalia Donaldson

PAID RESEARCH INTERN

Cornell University

August 2022–Present

- Conducted a research project to the evolution of genes related to aggression in ants spanning a range of aggression phenotypes.
- Learning scientific programming skills including Bash and R scripting, Git and Github version control
- Results of this project are in prep for an invited submission to Annals of the Entomological Society of America.

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- Conducted a research project to understand the relationship between herbivory and molecular evolution in ants.
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## Service

## Graduate Student Association treasurer

DEPT. OF ECOLOGY & EVOLUTIONARY BIOLOGY

Cornell University

August 2022–August 2023

- Manages funding from the university for graduate student and some department events.

## Graduate Student Association co-president

DEPT. OF ECOLOGY & EVOLUTIONARY BIOLOGY

Cornell University

July 2020–August 2022

- Liase between graduate student body and faculty leadership to communicate and address graduate student concerns

## Cornell Diversity Preview Weekend volunteer

Cornell University

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September 2020 and summer 2021–NA

- Volunteered for the workshops “Crafting a CV” and “Fellowships and Personal Statements” providing peer review to participants for the 2020 DPW event.
- Served as a peer mentor to a DPW participant during the Fall 2020 semester.

## EvoDay Planning Committee

Cornell University

\* POSTPONED TO SPRING 2022 DUE TO COVID19

Spring 2020–NA

## Department Seminar Series Committee

Cornell University

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August 2019–August 2020

- This committee plans and coordinates the department’s weekly seminar series
- Responsible for soliciting speaker nominations, constructing schedule of speakers, and assisting host labs with managing their speaker visits.

While on this committee, I initiated a push to increase the diversity of our invited speakers, based on the best practices identified by Hagan et al. (2020).

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- Genome Biology and Evolution, ad hoc reviewer
- Evolution, ad hoc reviewer
- Insectes Sociaux, ad hoc reviewer

## Society membership:

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- Society for Open, Reliable, and Transparent Ecology and Evolutionary Biology (SORTEE)
- Society for Integrative and Comparative Biology (SICB)
- Society for Molecular Biology and Evolution (SMBE)
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## Outreach

### Guest presenter for second grade class unit on arthropods

Ferndale Elementary School

VOLUNTEER

January 2024–NA

- Presented ant fun facts to 60 second grade students, and answered student questions about ants.

### Volunteer instructor for Ithaca Children’s Garden summer camp

Ithaca Children’s Garden

EVENT VOLUNTEER

July 2023–NA

### Panelist for “Women in Entomology: Meet the Superheroes of Insect Science”.

WSKG/PBS

PUBLIC TALK

October 2022–NA

- Discussed research and insect conservation.
- Panel can be viewed at <https://www.youtube.com/watch?v=HZ0WdZk84wM>

### Guest blogger for the Paleontological Research Institute/Museum of the Earth

Paleontological Research

Institute/Museum of the Earth

GUEST BLOGGER

July 2022–NA

- Guest blogged for the Paleontological Research Institute and Museum of the Earth. \*\*Barkdull, M.\*\* (2022). Insects under threat: the role of natural history collections in biodiversity conservation. <https://bit.ly/3ph2lsm>

### “Meet an Entomologist” volunteer

Six-legged Science Exhibit, Museum

of the Earth

EVENT VOLUNTEER

July 2022–NA

- Answered questions from visitors to the Museum of the Earth’s Six-legged Science exhibit.

### Panelist for “Exploring Insect Evolution: A Panel on New Research”

Darwin Days Week, Museum of the

Earth

PUBLIC TALK

February 2022–NA

- Gave a research talk for the event \*Exploring Insect Evolution: A Panel on New Research\* as part of the Museum of the Earth’s Darwin Days events.
- Talk can be viewed at <https://bit.ly/3s4jOGB>

### Cornell Insectapalooza volunteer

Dept. of Entomology, Cornell

University

EVENT VOLUNTEER

October 2019, 2022, 2023–NA

- Manned a table on ant diversity and discussed all things ant with members of the public, including young children, teens and adults.



## Education

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Cornell University

August 2019–expected May 2024

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DEPT. OF ECOLOGY & EVOLUTIONARY BIOLOGY

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August 2022–August 2023

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GUEST BLOGGER

Paleontological Research

Institute/Museum of the Earth

July 2022–NA

- Guest blogged for the Paleontological Research Institute and Museum of the Earth. \*\*Barkdull, M.\*\* (2022). Insects under threat: the role of natural history collections in biodiversity conservation. <https://bit.ly/3ph2lsm>

### “Meet an Entomologist” volunteer

EVENT VOLUNTEER

Six-legged Science Exhibit, Museum

of the Earth

July 2022–NA

### Panelist for “Exploring Insect Evolution: A Panel on New Research”

PUBLIC TALK

Darwin Days Week, Museum of the

Earth

February 2022–NA

- Gave a research talk for the event “Exploring Insect Evolution: A Panel on New Research” as part of the Museum of the Earth’s Darwin Days events.

- Talk can be viewed at <https://bit.ly/3s4jOGB>

### Cornell Insectapalooza volunteer

Dept. of Entomology, Cornell

University

EVENT VOLUNTEER

October 2019, 2022, 2023–NA

- Manned a table on ant diversity and discussed all things ant with members of the public including young children, teens and adults.

