

CHELSEA N. MILLER

Phone: (815) 901-6801

cnmiller@holdenfg.org

cnicolem9@gmail.com

26450 Oriole Ave.

Euclid, OH 44132

chelseanicolemiller.com

EDUCATION

- PhD Ecology and Evolutionary Biology** **May 2020**
The University of Tennessee, Knoxville
Department of Ecology and Evolutionary Biology
Dissertation: “Seed dispersal differences and determinants of ranges of narrow endemic and widespread eastern North American trilliums”
- MS Statistics** **May 2020**
The University of Tennessee, Knoxville
Intercollegiate Graduate Statistics Program
- BS Biology** **May 2013**
University of Central Arkansas
Biology Department
Minor in Interdisciplinary Studies

PUBLICATIONS

Journal Publications (§ = undergraduate coauthor)

Miller, C. N., B. Barnes, S. Kinz[§], S. Spinner, J. T. Vogt, E. McCarty, and K. J. K. Gandhi. 2023. Woodboring beetle (Buprestidae; Cerambycidae) responses to Hurricane Michael in variously damaged southeastern US pine plantations. *Forest Science*, 1-14. <https://doi.org/10.1093/forsci/fxac058>.

Miller, C. N., M. Papeş, E. Schilling, and C. Kwit. 2021. Reproductive traits explain occupancy of predicted distributions in a genus of eastern North American understory herbs. *Diversity and Distributions* 2021;00: 1–18. <https://doi.org/10.1111/ddi.13297>.

Miller, C. N., S. R. Whitehead, and C. Kwit. 2020. Effects of seed morphology and elaiosome chemical composition on attractiveness of five *Trillium* species to seed-dispersing ants. *Ecology and Evolution* 2020;00: 1–14. DOI:10.1002/ece3.6101.

Miller, C. N., H. Brabazon[§], I. M. Ware, N. H. Kingsley[§], and J. M. Budke. 2019. Bringing an Historic Collection into the Modern Era: Curating the J. K. Underwood Seed Collection at the University of Tennessee Herbarium (TENN). *Collection Forum* 32(1-2): 14-30.

Miller, C. N., and C. Kwit. 2018. Overall seed dispersal effectiveness is lower in endemic *Trillium* species than in their widespread congeners. *American Journal of Botany* 105(11): 1-11.

Valenta, K., **C. N. Miller**, S. K. Monckton, S. A. Styler, D. J. Jackson, A. D. Melin, C. A. Chapman, and M. J. Lawes. 2016. Fruit ripening signals and cues in a Madagascan dry forest: haptic indicators reliably indicate fruit ripeness to dichromatic lemurs. *Evolutionary Biology*, 1-12.

Journal Papers in Review

Kwit, C., M., Patton, **C. N. Miller**, and C. Lash. In review September 2022. Advancing the profile of quality of seed treatment by frugivores and seed dispersers in seed dispersal effectiveness.

Book Chapters

Gandhi, K. J. K., **C. N. Miller**, P. J. Fornwalt, and J. M. Frank. 2021. Bark beetle outbreaks alter biotic components of forested landscapes. In: Gandhi, K. J. K., and Hofstetter, R. 2021. *Bark Beetle Management, Ecology, and Climate Change*.

FUNDED GRANT PROPOSALS (TOTAL: \$145,922.75)

Miller, C. N. Living collections as common gardens: integrating phenology and species interactions into future predictions of spring ephemeral distributions. 2020. National Science Foundation Postdoctoral Research Fellowship in Biology (\$138,000).

Miller, C. N. Modified species distribution modeling to detect dispersal limitation in endemic *Trillium*. 2018. L.R. Hesler Herbarium Student Research Award (\$1,822.75).

Miller, C. N. Investigating rarity in southeastern myrmecochores using distribution modelling and a study of seed dispersal ecology. 2018. UTK EEB Department (\$350).

Miller, C. N., H. Korotkin, C. Lash, A. Bruce., C. Kwit, and B. Ownley. 2016. Does the presence of entomopathogenic fungi on myrmecochorous seeds affect seed-handling and dispersal behaviors in *Aphaenogaster* ants? Botanical Society of America Graduate Student Research Award (\$500).

Miller, C. N. Investigating rarity in southeastern trilliums: combining comparative *in situ* and *ex situ* approaches. 2016. UTK EEB Department (\$750).

Miller, C. N. Seed biology and dispersal of rare, state-endangered southeastern trilliums: combining comparative *in situ* and *ex situ* approaches. 2015. Catherine H. Beattie Fellowship, Garden Club of America (\$4,500).

AWARDS, HONORS, AND SCHOLARSHIPS

| | |
|---|-------------|
| National Science Foundation Postdoctoral Research Fellowship in Biology (\$138,000) | 2022 - 2024 |
| Outstanding Dissertation Award, Dept. EEB, UTK | 2020 |
| Oscar Roy Ashley Fellowship, UTK (\$4,000) | 2019 - 2020 |
| Ecological Society of America Student Section Travel Grant | 2019 |
| Graduate Student Council Travel Award, UTK | 2019 |
| Plant Research Center Travel Award, UTK | 2019 |
| Graduate Researchers in Evolutionary Biology and Ecology Travel Award, UTK | 2019 |
| Graduate Student Council Travel Award, UTK | 2018 |
| TENN Herbarium Graduate Research Assistantship, UTK (\$10,320) | 2017 - 2018 |
| Association of Southeastern Biologists Graduate Student Award | 2017 |
| Plant Research Center Travel Award, UTK | 2017 |
| Graduate Researchers in Evolutionary Biology and Ecology Travel Award, UTK | 2017 |
| Graduate Student Council Travel Award, UTK | 2015 |
| Graduate Teaching Assistantship, UTK (\$117,500) | 2014 - 2020 |
| Travel Abroad Grant, UCA (\$2,500) | 2012 |
| Travel Abroad Grant, UCA (\$3,000) | 2011 |
| Norbert O. Schedler Honors College Scholarship, UCA (\$65,000) | 2009 - 2013 |

TEACHING EXPERIENCE (TOTAL: 13 SEMESTERS/TERMS)

The University of Tennessee, Knoxville, U.S.

Spring 2019 - May 2020

Head Teaching Assistant, Ecology and Evolutionary Biology - *3 semesters, 1 summer term*

- **BIOL 269: Ecology Field-Based Laboratory**, an upper-level undergraduate course averaging 60 students per semester, covering experimental design, manuscript preparation, oral presentations, field and laboratory ecology methods, and statistical analysis.
- Prepared and presented oral lectures, designed and implemented field-based laboratory exercises, in-class assignments, readings, quizzes, homework, and group projects
- Graded homework, quizzes, group manuscripts, and oral presentations

The University of Tennessee, Knoxville, U.S.

Fall 2017

Co-Head Teaching Assistant, Ecology and Evolutionary Biology - *1 semester*

- **BIOL 115: Introduction to Plant Diversity**, a mid-level undergraduate course averaging 120 students per semester, introducing botanical taxonomy and physiology, microscopy, and experimental design
- Prepared and presented oral lectures, designed and implemented laboratory and greenhouse explorations and exercises, in-class assignments, readings, quizzes, homework, and lab practicals
- Graded homework, quizzes, lab exercises, and lab practicals

The University of Tennessee, Knoxville, U.S.

Fall 2014 – Fall 2018

Teaching Assistant, Ecology and Evolutionary Biology - *7 semesters, 1 summer term*

- **BIOL 101: Introduction to Biology I** (2 semesters, 1 summer term)
- **BIOL 102: Introduction to Biology II** (1 semester)
- **BIOL 150: Organismal and Ecological Biology** (2 semesters)
- **BIOL 260: Ecology Lecture** (1 semester)
- **BIOL 426: Plant-Animal Interactions** (1 semester)
- Prepared and presented oral lectures, designed and implemented laboratory and exercises, in-class assignments, readings, quizzes, homework, lab practicals, and/or exams
- Graded homework, quizzes, lab exercises, lab practicals, and/or exams independently or with a faculty instructor

RESEARCH AND PROFESSIONAL EXPERIENCE

NSF Postdoctoral Fellowship, Holden Arboretum, Kirtland, OH, U.S. **2022 - present**

Advisor: Dr. Katie Stuble

- Design and implement an NSF-funded proposal to integrate phenology and biotic interactions into trait-based species distribution models to improve predictions of climate change-induced plant range shifts across a network of botanical gardens and arboreta.
- Collect data on phenology and plant-animal interactions in living gardens of spring ephemeral plants.
- Collect, organize, clean, and georeference publicly available occurrence data for plant species using georeferencing software.
- Perform species and trait distribution modeling using R.
- Collaborate broadly with diverse professionals across network of botanical gardens and arboreta (Holden Arboretum, Chicago Botanic Garden, Dawes Arboretum, Missouri Botanical Garden, Huntsville Botanical Garden).
- Recruit and train public garden volunteers in the processes of data georeferencing, species distribution modeling, and phenology data collection.
- Perform statistical analyses using R, write and publish scientific manuscripts, present at regional and national meetings, mentor undergraduate and graduate students.

Postdoctoral Research, The University of Georgia, Athens, U.S. **2020 - 2022**

Advisor: Dr. Kamal Gandhi

- Led projects studying the effects of catastrophic wind disturbances (hurricanes, tornadoes) on forest insect dynamics.
- Mastered taxonomic identification of Coleopterans; identified >20,000 specimens.
- Hiked into remote field sites, set up baited Lindgren funnel traps and panel traps for subcortical woodboring and bark beetles.
- Became familiar with forestry and forest entomology methodologies.
- Performed statistical analyses using R, wrote and published scientific manuscripts and a book chapter, presented at regional and national meetings, mentored undergraduate and graduate students.

Dissertation, The University of Tennessee, Knoxville, U.S. **2014 - 2020**

Advisor: Dr. Charles Kwit

- Designed and implemented a project studying variation in seed dispersal efficacy among rare and common plants in genus *Trillium*. Located and hiked to remote field sites, performed seed dispersal observations totaling > 300 hrs, collected living colonies of *Aphaenogaster* ants, conducted laboratory preference experiments.

- Designed and implemented a project studying interspecific variation in seed chemistry and morphology. Hiked to remote field sites, collected seed from wild populations, mastered use of ecological chemistry techniques (i.e., gas- and liquid-chromatography mass spectrometry).
- Designed and implemented a project estimating fundamental and realized niches of rare and common *Trillium* species. Collected and cleaned data from online databases, mastered use of Maxent algorithm and ecological niche modeling, synthesized data from various public sources.
- Performed statistical analyses using R and Matlab, wrote and published scientific manuscripts, wrote and obtained scientific grants and fellowships, presented at regional and national meetings, mentored undergraduate students.

Research Assistantship, The University of Tennessee, Knoxville, U.S.

2017

Advisor: Dr. Jessica Budke

- Herbarium RA
- Organized, curated, and digitized an historic seed collection.
- Mastered photographic microscopy (z-z stacking), coordinated the development of a dedicated webpage for seed images, mastered herbarium curation methods, wrote and published a scientific case study.

Camp Robinson Military Base, North Little Rock, AR, U.S.

2013 - 2014

Assistant Natural Resources Manager, Natural Resources Dept.

- Led field/laboratory components of management and research projects conducted by Natural Resources Dept.
- Implemented aquatic macroinvertebrate sampling, rapid bioassessment of streams, small mammal trapping, herpetological sampling, invasive vegetation management, game species monitoring, standard habitat transects.
- Seasonal wild land management burns and pest management duties.
- Hiked into remote field sites with gear.
- Analyzed data and prepared written project updates for Natural Resources Dept.

Virginia Dept. of Game and Inland Fisheries, Wachapreague, VA, U.S.

2013

Waterbird & Wading Bird Technician

- Monitored populations of marine water and wading birds: nest, egg, chick, and incubating adult counting techniques and band resighting.
- Mastered use of binoculars and sighting scope in the field, bird identification skills, hand-held GPS.
- Daily travel via motorboat; hiked into remote field sites with gear.
- Hand-captured immature birds for banding.

Masoala National Park, Madagascar

2012

Biological Technician

- Assisted in a population dynamics field survey of endemic carnivores in rainforests of Northeastern Madagascar (Masoala National Park).
- Collaborated with Malagasy WCS workers and civilians.
- Traveled via boat and foot to remote field sites; camped for >6 weeks in rainforest (extremely rugged terrain).
- Performed camera trap survey transects, forest habitat transects, nocturnal lemur transects, small mammal trapping.

University of Central Arkansas, Conway, AR, U.S.

2009 - 2013

Biological Technician, Aquatic Ecology Lab

- Participated in studies of macroinvertebrates in the sediment of Gulf streams with emphasis on effects of natural gas fracking. Recorded aquatic habitat transects, collected aquatic samples.
- Participated in studies of leaf decomposition in wetland habitats. Planted leaf bags, mastered use of HOBO loggers.
- Participated in studies of the movement patterns of Cyprinidae in intermittent headwater streams. Hiked to remote field sites, camped in rugged terrain, collected, tagged, and recorded mass, length, and sex of fish.
- Assisted in follow-up study to 2009 Arkansas Game and Fish snakehead eradication in Brinkley, AR. Identified common freshwater fish, mastered use of electroshocker.

PRESENTATIONS AND INVITED LECTURES (*UPCOMING PRESENTATIONS)

***Miller, C. N.** 2023. A tale of two *Trillium*: differences in endemism, life history, and mutualism efficacy in sessile and pedicellate species. 84th Annual Meeting of the Association of Southeastern Biologists Conference. Winston-Salem, NC. **Invited seminar.** Symposium: Revisiting some of the plants that William Bartram wrote about in his ‘Travels’ to North Carolina, 1775 and 1776.

***Miller, C. N.** 2023. Integrating phenological traits into species distribution models for key spring ephemeral species. Sustainability Lecture Series, Lake Erie College. **Invited lecture.**

Miller, C. N., S. Spinner, B. Barnes, E. McCarty, J. T. Vogt, and K. Gandhi. 2021. Subcortical beetles in wind-disturbed pine stands. North American Forest Insect Work Conference. University of Minnesota. [Virtual] conference. Poster presentation.

Miller, C. N., S. Spinner, B. Barnes, E. McCarty, J. T. Vogt, and K. Gandhi. 2021. Subcortical beetles in wind-disturbed pine stands. Forest Pest Management Lecture Series, PPTH 470. West Virginia University, Davis College of Agriculture, Natural Resources, and Design. Morgantown, WV. [Virtual] **invited seminar**. Oral presentation.

Miller, C. N., S. Spinner, B. Barnes, E. McCarty, J. T. Vogt, and K. Gandhi. 2021. Subcortical beetles in wind-disturbed pine stands. National Wind Disturbance Conference. University of Georgia, Athens, GA. [Virtual] **invited seminar**. Oral Presentation.

Miller, C. N., S. R. Whitehead, and C. Kwit. 2020. Effects of seed morphology and elaiosome chemical composition on attractiveness of five *Trillium* species to seed-dispersing ants. Invited seminar. 105th Annual Meeting of the Ecological Society of America. Salt Lake City, UT. Oral presentation.

Miller, C. N., S. R. Whitehead, and C. Kwit. 2019. Composition of elaiosome phytochemical profiles and fatty acid concentrations drive seed disperser preference in myrmecochorous species of *Trillium*. 104th Annual Meeting of the Ecological Society of America. Louisville, KY. Poster presentation.

Miller, C. N., S. R. Whitehead, and C. Kwit. 2019. Elaiosome chemical attributes may explain disperser preference for the seeds of widespread *Trillium* species compared to their co-occurring endemic congeners. 5th Annual Women in STEM Symposium. Knoxville, TN. Poster presentation.

Miller, C. N., and C. Kwit. 2018. Comparisons of seed dispersal effectiveness between sympatric endemic and widespread *Trillium* congeners in the southeastern US. 103rd Annual Meeting of the Ecological Society of America. New Orleans, LA. Oral presentation.

Miller, C. N., and C. Kwit. 2017. Ant-seed dispersal and rarity in southeastern US trilliums. 78th Annual Meeting of the Association of Southeastern Biologists Conference. Montgomery, AL. Oral presentation.

Miller, C. N., and C. Kwit. 2015. Plant advantages in myrmecochory: redirecting directed dispersal. Natural Areas Association Conference. Little Rock, AR. Oral presentation.

PROFESSIONAL TRAINING

| | |
|---|------|
| ESA ComSciCon Workshop , New Orleans, LA, U.S. | 2018 |
| Generalized Joint Attribute Modeling (GJAM) , Knoxville, TN, U.S. | 2017 |
| MBI-NIMBioS-CAMBAM Summer Graduate Program , Knoxville, TN, U.S. | 2017 |
| <ul style="list-style-type: none">• “Connecting Models with Biological Data.” <i>Competitive entry program.</i> | |
| TAG (TN-AL-GA) Plant Conservation Alliance Meeting , Chattanooga, TN, U.S. | 2017 |
| GEOLocate Software Tutorial (Tulane University) , Concord, NC, U.S. | 2016 |
| <ul style="list-style-type: none">• SERNEC @ Association of Southeastern Biologists meeting. | |

PROFESSIONAL AFFILIATIONS

| | |
|--|----------------|
| Ecological Society of America , Member | 2017 - present |
| Association of Southeastern Biologists , Member | 2017 - present |
| Botanical Society of America , Member | 2017 – 2018 |

PROFESSIONAL SERVICE

| | |
|---|-------------|
| Graduate Researchers in Evolutionary Biology and Ecology , President | 2017 – 2018 |
| <ul style="list-style-type: none">• Department of Ecology and Evolutionary Biology, UTK, <i>Elected representative.</i> | |
| Engaging Knoxville in Ecology and Evolutionary Biology , Member | 2015 – 2019 |
| <ul style="list-style-type: none">• Department of Ecology and Evolutionary Biology, UTK. | |
| Graduate Affairs Committee , Member. | 2016 – 2017 |
| <ul style="list-style-type: none">• Department of Ecology and Evolutionary Biology, UTK, <i>Elected representative.</i> | |
| Undergraduate Affairs Committee , Member. | 2015 – 2016 |
| <ul style="list-style-type: none">• Department of Ecology and Evolutionary Biology, UTK, <i>Elected representative.</i> | |
| EEB Seminar Committee , Member. | 2014 – 2015 |
| <ul style="list-style-type: none">• Department of Ecology and Evolutionary Biology, UTK, <i>Elected representative.</i> | |

Peer-Reviewed Articles for:

- Annals of Botany
- Biotropica
- Botany
- Ecology and Evolution
- Ecosphere
- Perspectives in Plant Ecology, Evolution, and Systematics

COMMUNITY SERVICE

- Holden Forests and Gardens Wildflower Hike**, Leader. 2023
- Cleveland Footpath Foundation, Cleveland, OH.
- Warnell Graduate Student Symposium**, Oral Presentation Judge. 2021, 2022
- D. B. Warnell School of Forestry and Natural Resources, University of Georgia, Athens.
- Kids U. Vertebrate Zoology**, Instructor. 2019
- Knoxville, TN.
 - Hands-on vertebrate zoology.
- Southern Appalachian Science and Engineering Fair**, Judge. 2019
- University of Tennessee Institute of Agriculture, Knoxville, TN.
- Pittman Center Elementary Science Fair**, Poster Judge. 2019
- Pittman Center, TN.
- Kids U. Snakes Alive!**, Instructor. 2018
- Knoxville, TN.
 - Hands-on vertebrate zoology
 - 4th – 8th graders.
- Natural History and Mathematics**, Instructor. 2018
- Farragut Middle School, Knoxville, TN.
 - 8th graders.

REFERENCES

Katie Stuble, Ph.D.
Community Ecologist
Postdoctoral Mentor
kstuble@holdenfg.org
(440) 946-4400

Kamal Gandhi, Ph.D.
UGA Associate Professor
Postdoctoral Mentor
kjgandhi@uga.edu
(706) 247-4025

J. T. Vogt, Ph.D.
Project Leader/Supervisory Scientist

Postdoctoral Mentor
Southern Research Station
USDA, USFS
james.t.vogt@usda.gov
(706) 559-4272

Charles Kwit, Ph.D.
UTK Assistant Professor
Dissertation Advisor
ckwit@utk.edu
(865) 809-5337