

Thaddeus Roderic McRae

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POSITIONS

Associate Professor of Biology – Natural Sciences Department, Lee University, Cleveland, Tennessee (2017-present)

Assistant Professor of Biology – Natural Sciences Department, Broward College, Broward County, Florida (2012-2017)

Adjunct Assistant Professor – Department of Biology, University of Miami, Coral Gables, Florida (2012-2017)

Instructor and Graduate Teaching Assistant, University of Miami, Coral Gables, Florida (2005-2012)

Science and Math Teacher, North Hills Classical Academy, Grand Rapids, Michigan (2004-2005)

Assistant Director, Golden Eagle Wildlife Camps, Cornerstone University, Grand Rapids, Michigan (2003)

Instructor, Golden Eagle Wildlife Camps, Cornerstone University, Grand Rapids, Michigan (2001-2002)

Instructor and Teaching Assistant, Cornerstone University, 1997-2003

EDUCATION

Ph.D. – Biology, University of Miami, Coral Gables, Florida (2012)

B.A. – Biology, Cornerstone University, Grand Rapids, Michigan (2001)

TEACHING EXPERIENCE

Natural Sciences Department, Lee University, Cleveland Tennessee

Ecology, BIOS 362

Ecology Lab, BIOS 362L

Environmental Science, BIOS 112

Environmental Science Lab, BIOS 112L

Research, BIOS 391

Principles of Biology I, BIOS 161

Principles of Biology I Lab, BIOS 161L

Principles of Biology II Lab, BIOS 162L

Human Biology Lab, BIOS 110L

Outdoor Recreation, RECR 132

Cross-Cultural Experience Costa Rica, GNST 250

Tropical Ecology and Conservation in Costa Rica, BIOS 394

Natural Sciences Department, Broward College, Coconut Creek, Florida

General Biology, BSC1005

General Biology Lab, BSC1005L

Introduction to Biology 1, BSC2010

Introduction to Biology 1 Lab, BSC2010L

Introduction to Biology 2, BSC2011

Introduction to Biology 2 Lab, BSC2011L

Botany, BOT2010

Botany Lab, BOT2010L

Directed Independent Research, BSC2910

Department of Biology, University of Miami, Coral Gables, Florida

General Biology Lab, BIL 150

Evolution and Biodiversity Lab, BIL 160

Ecology Lab, BIL 236

Ecology Lab, BIL 331

Readings in Animal Behavior BIL 371

Invasive Vertebrates of South Florida, BIL 374

Projects in Animal Behavior, BIL 495

Teaching Assistant, Biology Department, Cornerstone University, Grand Rapids, Michigan

Introductory Biology

Botany

Field Ecology

Genetics Lab

Zoology

Vertebrate Zoology

Ornithology

PUBLICATIONS

- McRae, T.R. 2020. A review of squirrel alarm-calling behavior: What we know and what we do not know about how predator attributes affect alarm calls. *Animal Behavior and Cognition*.
<https://doi.org/10.26451/abc.07.02.11.2020>
- McRae, T. R., & S.M. Green. 2017. Vocalizations associated with predator-type do not elicit predator-specific escape responses in grey squirrels. *Behaviour*. <https://doi.org/10.1163/1568539X-00003454>
- McRae, T.R., S.M. Green. 2015. Gray squirrel alarm call composition differs in response to simulated aerial versus terrestrial predator attacks. *Ethology Ecology & Evolution*.
<https://doi.org/10.1080/03949370.2015.1087433>
- McRae, T.R., S.M. Green. 2014. Joint tail and vocal alarm signals of gray squirrels (*Sciurus carolinensis*) exhibit better association with threats than either modality alone. *Behaviour* 151(10):1433-1452. <https://doi.org/10.1163/1568539X-00003194>
- Simmons, B., T.R. McRae. 2014. Hidden Markov models of eastern gray squirrel (*Sciurus carolinensis*) alarm calls. *Adaptive Behavior* 22(3):180-188. <https://doi.org/10.1177/1059712314529981>

INVITED TALKS

- Central Park Squirrel Census, The Explorers Club, New York, New York (2018)
- University of Florida Tropical Research and Education Center, Homestead, Florida (2013)
- Department of Biological and Environmental Sciences, Troy University, Troy, Alabama (2012)
- Winter Science Seminar Series, Biological Sciences Department, Broward College, Davie, Florida (2012)

CONTRIBUTED TALKS

- Refuge-seeking behavior of gray squirrels (*Sciurus carolinensis*) differs by threat type. 2014. International Society for Behavioral Ecology Conference, New York, New York
- Predator-specificity of eastern gray squirrel alarm signals differs across sensory modalities. 2012. Ecological Society of America 97th Annual Meeting, Portland, Oregon
- Look and Listen: Predator-specificity of eastern gray squirrel alarm signals differs across sensory modalities. 2011. Animal Behavior Society 49th Annual Meeting, Albuquerque, New Mexico

POSTER PRESENTATIONS

- Gray squirrel alarm calls associated with predator type elicit a different escape response than simulated attacks by either predator type. 2018. Ecological Society of America 103rd Annual Meeting, New Orleans, Louisiana
- Concrete walls efficiently transmit a jumping spider's vibrational communication, so avoiding predation pressure does not limit signaling success. 2016. Ecological Society of America 101st Annual Meeting, Ft. Lauderdale, Florida, with undergraduate John Wiltshire
- Tail signals in eastern gray squirrels include both generic and predator-specific alarms. 2011. Ecological Society of America 96th Annual Meeting, Austin, Texas
- Tail signals in eastern gray squirrels include both generic and predator-specific alarms. 2011. Behavior 2011: Joint meeting of the Animal Behavior Society & International Ethological Conference, Bloomington, Indiana

RESEARCH MENTORING – UNDERGRADUATE STUDENTS

- Sarah Bertram, Lee University McNair Scholar, (summer 2022) Does daily activity of Southeastern US jumping spiders show niche differentiation?
- Ethan Ramey, Lee University independent research (spring 2022-summer 2022). Seasonality of Southeast jumping spiders as niche differentiation.

Thomas Cocks, Lee University independent research (fall 2021-spring 2022). Bioremediation of vulcanized rubber: a comparison of two mushroom species under different levels of nutrient supplementation.

Rachel Derwart, Lee University independent research, BIOS391 (spring 2022). Bird diversity at large trees in urban versus rural forests.

Thomas Cocks, Lee University Ledford Scholar (summer 2021) Biodiversity of canopy salticids.

McKenzie Holmes, Lee University McNair Scholar (summer 2020-summer 2021).

Moriah Auker, Lee University McNair Scholar (summer 2021)

Hannah Spooneybarger, Lee University independent research (spring 2021)

Tori Cook, Lee University WRAP scholar (fall 2020-spring 2021)

Sarah Wood, Lee University WRAP scholar (fall 2020-spring 2021)

Halee Long, Lee University independent research, BIOS 391 (summer 2020-fall 2020)

Ellie Carlson, Lee University independent research, BIOS 391 (summer 2020 – fall 2020) Response of captive-raised callitrichid monkeys to sounds of native-range predators vs non-predators.

Dillon Wheeler Lee University independent research, BIOS 391 (summer 2020)

Caleb Gruber, Lee University Ledford Scholar (summer 2018-fall 2019)

Jasmine Ngo, Lee University independent research (fall 2018)

Vanessa Montoya, Broward College undergraduate research (spring 2017)

Alex Guzman, Broward College undergraduate research (spring 2017)

Scarlett Rocha, Broward College undergraduate research (spring 2017)

William G., Broward College undergraduate research (fall 2016-spring2017)

Emily Hahm, University of Miami undergraduate research (spring 2016-fall 2016)

Shiv Makavana, University of Miami undergraduate research (fall 2015-summer 2016)

Jenny Arena, Broward College undergraduate research (spring 2016)

John Davidian, Broward College undergraduate research (spring 2016)

Nick Maniscalco, Broward College undergraduate research (spring 2016)

Jon Weiss, Broward College undergraduate research (fall 2015)

Pranay Imandi, University of Miami undergraduate research (fall 2015)

John Wiltshire, University of Miami undergraduate research (summer 2014-spring 2015)

Jarryd Colazzo, University of Miami undergraduate research (spring 2014-fall 2014)

Tatiana Eaves, Broward College undergraduate research (spring 2014)

Blake Simmons, University of Miami undergraduate research (spring 2013-fall 2013)

Mariah Landry, University of Miami undergraduate research (fall 2012-summer 2013)

Cristhian Barrios, University of Miami undergraduate research (fall 2012)

Stephanie Mlacker, University of Miami undergraduate research (winter 2011-summer 2012)

Amanda Wood, University of Miami undergraduate research (spring 2012)

Stephanie Diaz, NIH Bridges to the Baccalaureate, University of Miami, Coral Gables, Florida (summer 2011-spring 2012)

Henry Potter, University of Miami undergraduate research (fall 2011)

Jeffery Knight, University of Miami undergraduate research (spring 2010-spring 2012)

Saiham Emran, University of Miami undergraduate research (summer 2011-fall 2011)

KC McGaughey, University of Miami undergraduate research (summer 2010-summer 2011)

Yiwen Ji, University of Miami undergraduate research (summer 2010-summer 2011)

Doyin Akinwale, University of Miami undergraduate research (summer 2010-spring 2011)

Carmen Morales, University of Miami undergraduate research (summer 2010-fall 2010)

Andrew Fried, University of Miami undergraduate research (spring 2010)

Justin DiDonato, University of Miami undergraduate research (spring 2010)

Vincent Guarino, University of Miami undergraduate research (spring 2010)

Grosman, W.J and T.R. McRae. Effects of age on circadian rhythms in the jumping spider *Menemerus bivittatus*. 2017 Life Sciences South Florida Undergraduate Research Symposium
Diaz, S. and T.R. McRae. Environmental factors affecting group sizes of *Sciurus carolinensis*. 2011 Annual Biomedical Research Conference for Minority Students, St. Louis, Missouri

PRESS COVERAGE AND INTERVIEWS

Volunteers Counted All the Squirrels in Central Park. Smithsonian.com (2019)
<https://www.smithsonianmag.com/smart-news/new-census-counted-all-squirrels-central-park-180972480/>
How many squirrels live in NYC's Central Park? We finally have the answer. NationalGeographic.com (2019) <https://www.nationalgeographic.com/animals/2019/06/squirrel-census-new-york-city-central-park/>
Which Are Smarter, Red Squirrels or Gray Squirrels? Science Weighs In. NationalGeographic.com (2018) <https://news.nationalgeographic.com/2018/02/gray-red-squirrel-smarter-intelligence-animals/>
Squirrels Are Hardwired to 'Dance' When a Car's Coming. Howstuffworks.com (2017) <https://animals.howstuffworks.com/mammals/squirrels-are-hardwired-to-dance-when-cars-coming.htm>
Squirrel Terror, Daily Planet, Discovery Channel Canada (2015) <http://www.discovery.ca/Video?vid=535370>
Predicting the predator threatening a squirrel by analyzing its sounds and tail movements, ScienceDaily (2014) <http://www.sciencedaily.com/releases/2014/10/141021125943.htm>
Squirrel Alarm Calls Are Surprisingly Complex, Mary Bates, Zoologic, WIRED Science Blogs (2014) <http://www.wired.com/2014/06/squirrel-alarm-calls-are-surprisingly-complex/>

PROFESSIONAL SERVICE

CTE talk with Aaron Johnson and Chad Schrock: What is the core doing to our students? (2022)
Reviewer for Frontiers in Conservation Science (2022)
Reviewer for Ecosphere (2021)
CTE session with Bryan Poole on successful assessment strategies for hybrid and Zoom-only courses. Committee to explore potential biology degrees (2020)
Reviewer for Ecosphere (2020)
Lee Apologetics Club talk: Science and faith as a Christian doing scientific research (2020)
Reviewer for Nature: Scientific Reports (2019)
CTE session with Ben Christmann and Mark Scully: Christian Liberal Arts as a Formative Experience Part 2 (2019)
CTE session with Ben Christmann and Mark Scully: Christian Liberal Arts as a Formative Experience: Models and Aspirations (2019)
Reviewer for Ethology (2018)
Judge for Alpha Chi Academic Showcase, Lee University (2018)
Reviewer for American Midland Naturalist (2017)
Judge – Life Sciences South Florida Undergraduate Research Symposium (2017)
Community College Undergraduate Research Initiative (CCURI) - Broward College team (2016-2017)
Reviewer for Behavioral Ecology (2016)
Poster Judge – Life Sciences South Florida STEM Undergraduate Research Symposium (2016)
Professional Development Presenter, Technologies to Increase Student Success – Broward College (2015)
Reviewer for Behavioral Ecology (2014)
Reviewer for Wildlife in Practice (2014)

Professional Development Day presenter with Dr. David Perdian, Cell Phones as Clickers – Broward College (2014)
Reviewer for The Southeastern Naturalist (2012)
President, Biology Graduate Students Association – Department of Biology, University of Miami, Coral Gables, Florida (2011-2012)
Poster judge, 3rd Annual Graduate Symposium – Department of Biology, University of Miami, Coral Gables, Florida (2012)
Vice President, Biology Graduate Students Association – Department of Biology, University of Miami, Coral Gables, Florida (2010-2011)
Graduate Academic Affairs Committee – Department of Biology, University of Miami, Coral Gables, Florida (2007-2009)
Substantially rewrote curriculum for Ecology Laboratory – Department of Biology, University of Miami, Coral Gables, Florida (2008-2010)
Designed and taught an undergraduate course on invasive vertebrates with fellow graduate student Dennis Wasko – Department of Biology, University of Miami, Coral Gables, Florida (2008)

PROFESSIONAL SERVICE: COMMITTEES

Greenspace Committee (2021-present)
Lee University Human Subjects and Animals in Research Committee (2019-present)
Natural Sciences Department Van Coordinator (2019-present)
Natural Sciences Department Academic Events Committee (2019-present)
Title III Committee, Natural Sciences Department, Lee University (2018-2020)
Poster symposium Committee, NASCM Department, Lee University (2017-2018)
Honors Committee, Broward College (2015-2016)
Classroom Research Award Committee, Broward College (2014-2016)
Classroom Research Award Committee, Broward College (2014-2016)
North Campus Honors Committee – Broward College (2013-2015)

PROFESSIONAL DEVELOPMENT

ESA Statistical Series Webinar: Multi-species (Species Interactions) Occupancy Modeling (2022)
ESA Traditional Ecological Knowledge Webinar: Biocultural Restoration of Whitebark Pine on the Flathead Indian Reservation (2022)
Yale's Summer Institutes for Scientific Teaching (2022)
Yale's Summer Institutes for Scientific Teaching (2020)
CCCU's Best Practices in Study Away Workshop (2019)
Incorporating Environmental DNA (eDNA) into a Project – workshop at ESA meeting (2018)
Data Visualization Using R and ggplot – workshop at ESA meeting (2016)
Working with Time Series Data in Text Formats in R, run by NEON and Data Carpentry – workshop at ESA meeting (2016)
How to Set Up Automated Sensors Arrays for Measuring Micro-Environmental Characteristics and Synthesize to Larger Scales – workshop at ESA meeting (2016)
QEP Emerging Scholar – Broward College (2015-2016)
New and Continuing National Science Foundation Funding Opportunities for Students, Teachers, Postdocs, and Researchers – workshop at ESA meeting in Austin, Texas (2011)
Funding Challenges and Opportunities for Ecological Research at Undergraduate Institutions – workshop at ESA meeting in Austin, Texas (2011)
Career Skills Workshop: Survival Skills for Scientists II – Rosenstiel School of Marine and Atmospheric Science (RSMAS), University of Miami, Miami, Florida (2011)
Career Skills Workshop: Survival Skills for Scientists – Rosenstiel School of Marine and Atmospheric Science (RSMAS), University of Miami, Miami, Florida (2007)

CERTIFICATIONS

Chemical Immobilization of Animals Certification, Safe-Capture International (2006)

Naturalist Certificate, Au Sable Institute of Environmental Studies, Mancelona, Michigan (2003)

OUTREACH

My squirrel recordings were used in this NYT online interactive piece (2020):

<https://www.nytimes.com/interactive/2020/01/08/nyregion/central-park-squirrel-census.html>

Led groups of volunteer squirrel census participants in Central Park Squirrel Census (fall 2018)

MAST Academy high school internship mentor (2013-2014)

Provided research training and experience for a local high school student (summer 2012)

National Geographic Society and National Park Service – Biscayne 24-Hour BioBlitz – Demonstrated mammal trapping methods to the public and assisted with wildlife surveys on Elliott Key (2010)

PROFESSIONAL MEETINGS

Ecological Society of America 103rd Annual Meeting, August 5-10, 2018, New Orleans, Louisiana

Ecological Society of America 101st Annual Meeting, August 6-12, 2016, Ft. Lauderdale, Florida

Fairchild Tropical Biology Symposium, February 22, 2015, Fairchild Tropical Botanic Garden, Coral Gables, Florida

International Society for Behavioral Ecology, July 31-August 5, 2014, New York, New York

Fairchild Symposium on Tropical Biology, January 12, 2014, Fairchild Tropical Botanic Garden, Coral Gables, Florida

Animal Behavior Society 50th Annual Meeting, July 28-August 1, 2013, Boulder, Colorado

Fairchild Symposium on Tropical Biology, December 2, 2012, Fairchild Tropical Botanic Garden, Coral Gables, Florida

Ecological Society of America 97th Annual Meeting, August 5-10, 2012, Portland, Oregon

Animal Behavior Society 49th Annual Meeting, June 10-14, 2012, Albuquerque, New Mexico

Fairchild Symposium on Tropical Biology, February 18, 2012, Fairchild Tropical Botanic Garden, Coral Gables, Florida

Ecological Society of America 96th Annual Meeting, August 7-12, 2011, Austin, Texas

Behavior 2011, Joint meeting of the Animal Behavior Society & International Ethological Conference, July 25-30, 2011, Bloomington, Indiana

PROFESSIONAL SOCIETIES

Animal Behavior Society (2008-present)

Ecological Society of America (2011-present)

International Society for Behavioral Ecology (2011-present)