C. J. CAMPBELL

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RECENT POSITIONS AND APPOINTMENTS

Quantitative Ecologist, Bat Conservation International 2023 – present

XPrize Finalist, Limelight Rainforest 2024
Lead of bat bioacoustics and bioinformatics

Graduate Fellow, University of Florida, Gainesville FL 2018 – 2023
Threadgill Dissertation Fellow, 2023
University of Florida Biodiversity Institute Fellow, 2022 – 2023
Graduate Student Funding Award Fellowship, 2018 – 2022

Research Fellow 2016
National Science Foundation Japanese Society for the Promotion of Science.
Department of Biogeochemistry, Japan Agency for Marine Science and Technology,
Yokosuka, Kanagawa, Japan

Graduate Research Assistant, University of Maryland 2015 –2018
University of Maryland Center for Environmental Science Appalachian Laboratory,
Frostburg, MD

EDUCATION

University of Florida, Department of Biology, Zoology Ph.D. 2023
Advisor: Hannah B. Vander Zanden

University of Maryland Center for Environmental Science M.S. 2018
Appalachian Laboratory / Frostburg State University,
Applied Ecology and Quantitative Biology.
Advisor: David M. Nelson

University of Vermont B.S. 2012
Environmental Science: Conservation Biology and Biodiversity.
Honors College Graduate

PUBLICATIONS

11. Wieringa, JM; Nagel, J; **Campbell, CJ**; Nelson, DM; Carstens BC; Gibbs, HL. 2024. Geographic sources of bats killed at wind-energy facilities in the eastern United States. ***PeerJ*** 12, e16796. doi: 10.7717/peerj.16796
10. **Campbell, CJ**; Barve, V; Belitz, M; Doby, J; White, E; Seltzer, C; Di Cecco, G; Hurlbert, A; Gurlanick, R. 2023. Identifying the Identifiers: How community processes generate

consensus taxonomic knowledge in iNaturalist and why it matters for biodiversity science. ***BioScience*** 73(7), 533-541. doi: 10.1093/biosci/biad051

9. McCleery, R; Guralnick, R; Kang, K;, Beatty M; Potash, A; Jones, M; **Campbell, CJ**; Belitz, M; Idec, J; Fletcher, R 2023. Uniting experiments and big data to advance conservation. ***Trends in Ecology and Evolution***. doi:10.1016/j.tree.2023.05.010

8. Wieringa, JG; Nagel, J; **Campbell, CJ**; Nelson, DM; Carstens, BC; Gibbs, H L. 2023. Combining stable isotopes, trace elements, and distribution models to assess the geographic origins of migratory bats. ***Ecosphere*** 14 (6), e4588.

7. Smith, LM; Doonan, TJ; Gore, JA; **Campbell, CJ**. 2022. Tricolored bats at a southern range edge exhibit partial migration northward in autumn. ***Movement Ecology*** 10(56). doi: 10.1186/s40462-022-00358-x

6. **Campbell, CJ**; Nelson, DM; Gates, J E; Gibbs, H L; Stevenson, E R; Johnson, B; Nagel, J; Trott, R; Wieringa, J G; Vander Zanden, H B. 2022. White-nose syndrome pathogen detected on migratory tree-roosting bats. ***Journal of Wildlife Diseases*** 58 (3): 652–657. doi: 10.7589/JWD-D-21-00160

5. **Campbell, CJ**; Fitzpatrick, MC; Vander Zanden, H; Nelson, DM. 2020. Advancing interpretation of stable isotope assignment maps: comparing and summarizing origins of known-provenance migratory bats. ***Animal Migration*** 7(1), 27–41**.** doi: 10.1515/ami-2020-0004

4. Katzner, TE; Nelson, DM; Diffendorfer, JE; Duerr, AE; **Campbell, CJ**; Leslie, D; Vander Zanden, HB; Yee, JL; Sur, M; Huso, MMP; Braham, MA; Morrison, ML; Loss, SR; Poessel, SA; Conkling, TJ; Miller, TA. 2019. Wind energy: An ecological challenge. ***Science*** *366*(6470):1206–1207. doi: 10.1126/science.aaz9989

3. Nelson, DM; Nagel, J; Trott, R; **Campbell, CJ**; Pruitt, L; Good, RE; Iskali; G, Gugger, PF. 2018. Carcass age and searcher identity affect morphological assessment of sex of bats. ***The Journal of Wildlife Management***. *82*(8), 1582-1587.

2. **Campbell, CJ**; Nelson, DM; Ogawa, NO; Chikaraishi, Y; Ohkouchi, N. 2017. Trophic position and dietary breadth of bats revealed by nitrogen isotopic composition of amino acids. ***Scientific Reports*** 7:15932.

1. Roman, J; Altman, I; Dunphy-Daly, M; **Campbell, C**; Jasny, M; Read, A. 2013. The Marine Mammal Protection Act at 40: Status, recovery, and future of U.S. marine mammals. ***The Annals of the New York Academy of Sciences*** 1286:29-49.

SUBMITTED AND IN REVIEW OR REVISION. * indicates authors with equal contributions.

Campbell, CJ; Nelson, DM; Nagel, J; Clerc, J; Weller, TJ; Weiringa, JG; Fraser, E; Longstaffe, FJ; Hale, AM; Lout, M; Pruitt, L; Guralnick, R; Vander Zanden, HB. Unusual migratory strategy a key factor driving interactions at wind energy facilities in at-risk bats. **BioRXiv**. https://doi.org/10.1101/2024.01.28.577637.

Campbell, CJ; Cheng, T; Akre, K; Adams, A; Solick, D; Bennett, A; Newman, C; Frick, W. Maximizing benefits to bat populations through management of power line corridors.

Campbell, CJ; Gardner, JH; Rushing, CS; Norvell, R; Farr, CM; Savides, K. Quantifying rosy-finch migration with stable hydrogen isotope feather markers highlights the need for inter-state collaboration to reach conservation goals.

Carpenter, B*; **Campbell, CJ***; Fanning, A; McBride, M. Diverse breeding origins of long-distant migrant game bird highlight the need for international coordination for monitoring and management of Wilson's Snipe.

Campbell, CJ; Cheng, T; Vander Zanden, HB. Migratory bats resistant to white-nose syndrome as cryptic vectors of fungal disease spread.

Rubin, J; **Campbell, CJ**; Carvalho, APS; St Laurent, RA; Crespo, GI; Pierson, TL; Guralnick, RP; Kawahara, AY. Macroevolutionary constraint and selection on anti-bat moth tails.

Nagel, J; Nelson, DM; **Campbell, CJ**; Trott, R; Wieringa, JG; Carstens, BC; Gibbs, HL; Baerwald, E; Carson, D; Clerc, J; Green, D; Hale, A; Johnson, B; Meekins, C; Pruitt, L; Romano, B; Stevenson, ER; Weaver, A; Williams, J; Gugger, PF. Range-wide population genetic structure and effective sizes of three migratory tree bat species impacted by wind-energy development in North America.

Adams, A.M. Trujillo, L.A.; **Campbell, C.J.**; Akre, K.L.; Arroyo-Cabrales, J.; Burns, L.; Coleman, J.T.H.; Morris, K. M.; Ortega, J.; Reichard , J.D.; Reichert, B.; Segers, J.L.; Whitby, M.D.; Frick, W.F.. The State of the Bats in North America.

THESES

Campbell, C. J. 2023. New methods to understand the patterns and consequences of animal migration in a changing world. Doctoral dissertation, Department of Biology, University of Florida, Gainesville, FL.

Campbell, C. J. 2018. Refining assessment of geographic origins of animals inferred from stable isotope data. Masters thesis, Department of Biology, Frostburg State University, Frostburg, MD.

Campbell, C. 2012. Livestock depredation by large carnivores: An analysis of human-wildlife conflict in Ehi-rovipuka, Namibia. Honors thesis: Environmental Sciences, Biology. University of Vermont, Burlington, VT.

OPEN SOURCE SOFTWARE

AUTHOR

geoshift: Metrics to Compare Temporally-Explicit Species Distribution Models. 2022.
Release: https://doi.org/10.5281/zenodo.7126857
Development: https://github.com/cjcampbell/geoshift

isocat: Isotope Origin Clustering and Assignment Tools. 2018.
Release: https://CRAN.R-project.org/package=isocat
Development: https://github.com/cjcampbell/isocat

CONTRIBUTOR

phenesse: Estimate Phenological Metrics using Presence-Only Data. 2019.
Release: https://CRAN.R-project.org/package=phenesse
Development: https://github.com/mbelitz/phenesse

HONORS AND AWARDS

2023	Threadgill Dissertation Fellowship, College of Liberal Arts and Sciences, University of Florida ($8,000)
2022– 2023	University of Florida Biodiversity Institute Fellowship ($21,000)
2021	Michael L. May Interdisciplinary Grant (co-PI, $1,000)
2021	Riewald Fund Research Grant ($300)
2019	University of Florida Biodiversity Institute Summer Fellowship ($4,000)
2019	Michael May Graduate Student Fellowship in Biology ($4,000)
2018 – 2023	Graduate Student Funding Award Fellowship, Department of Biology, University of Florida ($120,000)
2017	Student Presentation Award, North American Society for Bat Research Annual Symposium
2016	NSF East Asia and Pacific Summer Institute Research Fellowship ($5,400)
2016	Japanese Society for the Promotion of Science Research Fellow ($5,200)
2016	Best Student Poster, North American Society for Bat Research Annual Symposium
2012	Honors Graduate of the College of Arts and Sciences
2011	Benjamin A. Gilman International Scholarship ($5,000)
2010	Round River Conservation Studies Ed Abby Scholarship ($1,000)
2008 – 2012	Presidential Scholarship, University of Vermont ($10,500)
2008	National Merit Scholar Commendation

ADDITIONAL RESEARCH POSITIONS

Endangered Bat Monitoring Crew Leader, May – July 2015
Arkansas State University / U.S. Forest Service, Jonesboro, AR

Bat Research and Management Technician, Jan – May 2015
New York Department of Environmental Conservation, Albany, NY

Herpetofauna Ecology Research Assistant, Nov – Dec 2014
Florida International University, Sarapiqui, Costa Rica

Endangered Bat Species Monitoring Senior Research Technician, May – Aug 2014
Arkansas State University / U.S. Forest Service, Jonesboro, AR

Field Ecologist, June – August 2014
Mitigation Surveying Services LLC, Benton, AR

Mammal Diversity Project Field Assistant, Jan – Apr 2014
Smithsonian Conservation Biological Institute, Chiapas, Mexico

Endangered Bat Species Survey and Research Technician, May – Aug 2013
Arkansas State University / U.S. Forest Service, Jonesboro, AR

Conservation Ecology Research Assistant, 2009 – 2013

Gund Institute of Ecological Economics, University of Vermont, Burlington, VT

Student Research Assistant, Feb – May 2011
Round River Conservation Studies, Wereldsend, Kunene Region, Namibia

Invasive Species and Biocontrol Volunteer, 2007 – 2009
Nashua River Watershed Association, Groton, MA.

Biodiversity and Administrative Intern, 2008
Massachusetts Audubon Society, Princeton and Worcester, MA.

SELECTED PRESENTATIONS

Migration is a key factor driving distribution and interactions with energy development in at-risk bats. CJ Campbell, David M. Nelson, Juliet Nagel, Jeff Clerc, Robert Guralnick; Hannah B. Vander Zanden. October 12, 2023. North American Society for Bat Research, Winnipeg, Manitoba, CAN.

Identifying the Identifiers: How iNaturalist facilitates collaborative, research-relevant data generation and why it matters for biodiversity science. CJ Campbell; Vijay Barve; Michael Belitz; Joshua Doby; Elizabeth White; Carrie Seltzer; Grace Di Cecco; Allen H. Hurlbert; Robert Guralnick. April 18, 2023. University of Florida Biodiversity Institute Symposium, Gainesville, FL.

High-resolution seasonally-explicit distribution models reveal bat migration at the macroecological scale. C. J. Campbell, Michael W. Belitz, Robert P. Guralnick, Robert J. Fletcher, and Hannah B. Vander Zanden. August 9, 2022. North American Society for Bat Research, Austin, TX.

Revealing rosy-finch migrations using stable isotope analyses. Campbell, C. J. February 22, 2022. Rosy-finch working group symposium (virtual meeting).

The R package 'isocat', a toolset for comparing and summarizing origins of animals inferred from stable isotope data. Campbell, C. J.; Fitzpatrick, M.C.; Vander Zanden, H.; Nelson, D. M. May 20, 2021. Oral Presentation. Applications of Stable Isotope Techniques to Ecological Studies (IsoEcol; virtual meeting).

A framework for predicting migratory behavior and wind-development impacts: Uniting morphological and life-history characteristics with distribution-based migration models. Caitlin J. Campbell and Hannah Vander Zanden. Oral Presentation. December, 2020. 13th Wind Wildlife Research Meeting, online.

A review of cave and mine use by tree-roosting bats. Caitlin J. Campbell and Hannah Vander Zanden. Poster presentation. February, 2020. 25th Annual Meeting of the Southeastern Bat Diversity Network and 30th Annual Colloquium on the Conservation of Mammals in the Southeastern U.S., Athens, GA.

Are some bats snowbirds?: Stable hydrogen isotopes to determine probable origins of wintering tri-colored bats in Florida caves. Lisa M. Smith, Terry J. Doonan, J. A. Gore, Caitlin J. Campbell. February, 2020. 25th Annual Meeting of the Southeastern Bat Diversity Network and 30th Annual Colloquium on the Conservation of Mammals in the Southeastern U.S., Athens, GA.

Hydrogen isotopes reveal complex seasonal migratory structure in at-risk tree-roosting bats in North America. Caitlin J. Campbell, David M. Nelson. Oral presentation. October, 2019. North American Society for Bat Research, Kalamazoo, MI.

Hydrogen isotopes reveal complex seasonal migratory structure in at-risk tree-roosting bats in North America. Caitlin J. Campbell, David M. Nelson. Oral presentation. July 31, 2019. International Bat Research Conference, Phuket, Thailand.

Hydrogen isotopes reveal complex seasonal migratory structure in at-risk tree-roosting bats in North America. Caitlin J. Campbell, David M. Nelson. Oral presentation. July 24, 2019. International Congress for Conservation Biology, Kuala Lumpur, Malaysia.

Range-Wide Migratory Patterns of North American Tree-Roosting Bats. Caitlin J. Campbell, Matthew Fitzpatrick, and David M. Nelson. Oral presentation. October 19, 2017. North American Society for Bat Research Annual Symposium, Knoxville, TN.

Range-wide migratory movements of North American tree bats inferred from stable isotopes. Caitlin J. Campbell, Matthew Fitzpatrick, and David M. Nelson. Poster presentation. August 11, 2017. Ecological Society of America Annual Meeting, Portland, OR.

Amino acid nitrogen isotopes reveal the trophic position and dietary strategies of bats. Caitlin J. Campbell, David M. Nelson, Nanako Ogawa, Yoshito Chikaraishi, and Naohiko Okhouchi. October 13, 2016. Poster presentation. North American Society for Bat Research Annual Symposium, San Antonio, TX.

Hydrogen Isotope Ecology: Analysis and Application to the Study of Bat Movement. Jake Blakely, Kamren Jefferson, Crystal Tippett, Caitlin J. Campbell, and David Nelson. Poster presentation by undergraduate volunteers, May 6, 2016. Undergraduate Research Symposium, Frostburg State University, Frostburg, MD.

A Continent-wide Approach to Link Movement Ecology and Genetic Structure of Migratory Foliage-roosting Bats. Caitlin J. Campbell, Paul F. Gugger, and David M. Nelson. Poster presentation, January 11, 2016. New England Bat Working Group Meeting, Baltimore, MD.

TEACHING EXPERIENCE

COURSES

Teaching Assistant, Global Change Ecology and Sustainability, Spring 2019 – Fall 2020. Department of Biology, University of Florida

Instructor, X-Lab, Fall 2018. Cross-Disciplinary Laboratory including Biology, Chemistry, and Physics; University of Florida

Graduate Assistant Teaching Fellow*,* January 2016 – May 2016. Frostburg State University Department of Biology, Frostburg, MD

GUEST LECTURES

Assessing the capacity for migratory bats to serve as long-distance vectors of white-nose syndrome pathogen Pseudogymnoascus destructans, April 5 2021. Behavioral Drivers of Disease (ZOO4926), Department of Biology, University of Florida, Gainesville, FL.

Bat migration in a changing world, November 29, 2022. Animal Migration: Journeys by Air, Land and Water (ZOO4926), Department of Biology, University of Florida, Gainesville, FL.

Bats! A Brief Introduction to Microchiroptera. July 6, 2016. Department of Biogeochemistry, Japanese Agency of Marine Science and Technology, Yokosuka, Kanagawa, Japan.

WORKSHOPS

UF Carpentries Club 2-day intensive courses

Data analysis and visualization in R for ecologists
Organizer and instructor, September 19-20, 2022

Data analysis in R
Instructor, February 22–23, 2022

Introduction to R
Instructor, January 31–February 1, 2022
Instructor, September 27–28, 2021
Helper, January 25–26, 2021

Introduction to Geospatial Analysis in R
Helper, March 22–23, 2021

Introduction to Python, Shell, and Git
Helper, April 11–12, 2022

From Haircuts to Origin Models: A Guide to Emerging Tools to Study Animal Movement by Stable Isotope Analysis. Workshop Presenter, February 21, 2019. Combined annual meeting of the Southeastern Bat Diversity Network (SBDN) and Annual Colloquium on the Conservation of Mammals in the Southeastern U.S.. https://github.com/cjcampbell/AnimalOrigins_SBDN/

MENTORSHIP EXPERIENCE

UNDERGRADUATE RESEARCH TECHNICIANS

University of Florida
Sierra Scauzillo (Wildlife Ecology and Conservation; 2020 – 2022)

Frostburg State University
Becca Phillips (2017); Sarah Sprouse (2017)*;* Kamren Jefferson (2016); Jake Blakely (2016); Crystal Tippet (2016); Becca Hiller (2015-2016)

SERVICE AND COMMUNITY ENGAGEMENT

MANUSCRIPT PEER REVIEWS

2024: *Acta Chiropterologica, Herpetological Conservation and Biology, Ornithology*
2023: *Acta Chiropterologica, Diversity and Distributions, Journal of Wildlife Management (2)*
Previously*: Animal Migration, Science of The Total Environment, Journal of Mammalogy (2), Journal of Wildlife Management*

MEDIA

Project BatCast, University of Florida: twitter.com/UF/status/1479467172053364741

OUTREACH

iNaturalist identifications, 2019-present. Active identifier of bat observations posted to public science platform iNaturalist (inaturalist.org), provides outreach and advice on bat identification and coexistence. Identified > 13,000 observations, ranked fourth most active bat identifier globally.

Project BatCast, 2021-present. Outreach research initiative to engage with the public on bat biology and conservation. cjcampbell.github.io/BatCast; twitter.com/uf_bats

iDigTRIO Bat House Emergence Tour Guide, February 24, 2022. Outreach event as part of iDigTrio Biology Career Conference and Fair at University of Florida: idigtrio.org

University of Florida Carpentries Organization Board Member, 2021-2022. Organizers of Software and Data Carpentry workshops at the University of Florida: uf-carpentries.org

Biology Graduate Student Experience Panelist, Outreach event to provide new graduate students advice and support on navigating graduate school and research. Event sponsored by the Biology Graduate Student Association Mental Health Committee. February 27, 2019.

Graduate School Panel Biology Representative, Outreach event to provide undergraduate students advice about STEM graduate programs. Event co-sponsored by graduate student career-building club POLY/PMSE and chemistry fraternity Alpha Chi Sigma. Nov 15, 2019.

Graduate Student Writing Group, Founder and coordinator. Semi-weekly inter-institutional meetings of graduate students from University of Maryland Center for Environmental Science Appalachian Laboratory and the Department of Biology of Frostburg State University to workshop writing skills. Fall 2015 – Spring 2018.

Bat Ecology and Conservation, University of Maryland Center for Environmental Science Appalachian Laboratory Open House. Public outreach to community and families including bat ecology, behavior, ecosystem services, and conservation status. May 7, 2016.

Endangered Bats of Maryland, Presentation to local elementary school in rural Appalachia on natural history, ecology, threats, and legal status of local bats, Oct 2, 2015

Herpetofauna of Sarapiquí, Costa Rica. Educational presentation, live animal handling, and public outreach at La Selva Biological Station Open House, Nov 9, 2014

Living with Bears, Authored article for local online paper on coexisting with black bears in Massachusetts: **"**Your New Groton Neighbors, The Bears, May Be Dropping By." TheGrotonLine.com. Nov 21, 2013

Community Conservation Technology Training, Week-long collaboration with Ehi-rovipuka conservancy conservation officers: training on data collection and database management, open-source document managers, email and outreach. Round River Conservation Studies, March 2012.

Invasive Species and Biocontrol Volunteer, Nashua River Watershed Association, Groton, MA, 2007-2009