

# ERIC A. RIDDELL

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| CONTACT INFORMATION | <b>Department of Biology</b><br><b>University of North Carolina at Chapel Hill</b><br><b>Chapel Hill, NC 27599</b>   | <i>e-mail:</i> riddell@unc.edu<br><i>phone:</i> (404)-313-0682<br><i>website:</i> <a href="http://ecophysiology.org">ecophysiology.org</a><br><i>pronouns:</i> he/him |
| EXPERTISE           | An integrative biologist studying the mechanisms driving species' responses to climate change; integrative, organismal perspective that uses field studies (population surveys), laboratory experiments (respirometry), and 'big data' (transcriptomics, global environmental data, biophysical simulations).  |   |
| APPOINTMENTS        | <b>Assistant Professor</b> , University of North Carolina, Chapel Hill<br><i>Department of Biology</i>   | 2023 - <i>Current</i>   |
|                     | <b>Assistant Professor</b> , Iowa State University<br><i>Department of Ecology, Evolution, Organismal Biology</i>  | 2020 - 2023   |
|                     | <b>Postdoctoral Scholar</b> , University of California, Berkeley<br><i>Museum of Vertebrate Zoology</i>  | 2017 - 2020   |
|                     | <b>Graduate Teaching Assistant</b> , Clemson University<br><i>Department of Biology</i>  | 2012 - 2017   |
| EDUCATION           | Ph.D., Clemson University, Biological Sciences<br>B.S., Sewanee: University of the South, Biology  | May 2017<br>May 2010  |
| CURRENT FUNDING     | <b>Total:</b> \$3,388,563 <b>To Riddell:</b> \$1,281,150<br><b>US-Israel Binational Science Foundation</b> (PI; \$232,000), Community physiology: Linking organisms across trophic scales using physiology to predict vulnerability to climate change. (Co-PI: Ofer Levy [Tel Aviv University], \$175,727 to Riddell)<br><b>NSF-IOS: Integrated Ecological Physiology</b> (Co-PI; \$976,192), Evolving thicker skin: Understanding how adaptations to a universal trade-off dictate the climate vulnerability and ecology of an imperiled vertebrate clade. (PI: Molly Womack [Cornell University]; \$494,262 to Riddell)<br><b>NSF-DEB: Systematic and Biodiversity Science</b> (Co-PI; \$976,607), Hidden dimensions of diversity in woodland salamanders: Investigating ecophysiological evolution in a classic non-adaptive radiation. 2021-24. (PI: Martha Muñoz [Yale University, \$284,800 to Riddell)<br><b>NSF-PACSP: Partnerships to Advance Conservation Science and Practice</b> (Co-PI; \$1,203,764), Collaborative Research: Burrows as buffers – does microhabitat selection and behavior mediate desert tortoise resilience to climate change? 2022-2025. (PI: Melissa Merrick [San Diego Zoo], \$326,361 to Riddell). |   |

PREVIOUS  
FUNDING

**Center for Global & Regional Environmental Research, University of Iowa** (PI; \$29,748), Linking predators and prey through physiological performance to predict the effects of climate change. 2021-22. (\$29,748 to Riddell)

**Smithsonian Postdoctoral Fellowship** (\$48,000), Generating physiological landscapes for conservation planning. Smithsonian Institute. (Offer declined). 2017.

**NSF-Doctoral Dissertation Improvement Grant** (\$15,000), Linking genes to cues: How molecular mechanisms explain individual variation of adaptive plasticity to an environment cue. 2016.

**Wade Stackhouse Fellowship** (\$20,000), Clemson University. 2015-2016

**Grant-in-Aid of Research**(\$12,600), Highlands Biological Station, 2012-2017

**Physiological Ecology Grant** (\$500), Ecological Society for America. 2015

**Frank and Helen Gaige Grant** (\$500), ASIH. 2015

**Student Research Grant** (\$1,000), SICB, 2015

**Sigma Xi Research Grant** (\$400), Sigma Xi, The Scientific Research Society, 2014

AWARDS

2023 **George A. Bartholomew Award**, *Society-wide award recognizing a young investigator for contributions to physiology and integrative biology*, Society for Integrative and Comparative Biology (SICB)

2017 **Raymond B. Huey Award**, Best Student Presentation, SICB

**Distinguished Graduate Student Award**, Clemson University

2016 **Outstanding Graduate Researcher**, Clemson University

2015 **Best Graduate Student Presentation**, SEEC

**Commitment to Research Award**, Clemson University

2014 **Honorable Mention** for Graduate Research Fellowship Proposal, NSF

2013 **Honorable Mention** for Graduate Research Fellowship Proposal, NSF

**Bruce Family Scholarship** in Herpetology, Highlands Biological Station

PEER-REVIEWED  
PUBLICATIONS

*underline = mentee*

*Published or In Press*

- 2023 26. C.K. Porter, F.G. Romero, D.C. Adams, R.C. K. Bowie, and **E.A. Riddell**. Adaptive and non-adaptive convergent evolution in feather reflectance of Channel Islands songbirds. *Proceedings of the Royal Society B*, 290: 20231914.
25. I.J. Burger, E. Carter, L. Magner, M.M. Munoz, M.W. Sears; B. Fitzpatrick, **E.A. Riddell**. Assessing hybrid vigor using the thermal sensitivity of physiological trade-offs in tiger salamanders. *Functional Ecology*, In press.
24. **E.A. Riddell**, I.J. Burger, T.L. Tyner-Swanson, J. Biggerstaff, M.M. Muñoz, O. Levy, and C.K. Porter. Parameterizing mechanistic niche models in biophysical ecology: a review of empirical approaches. *Journal of Experimental Biology* 226.22.

23. Ballinger M.A., K.L. Mack, S.M. Durkin, **E.A. Riddell**, and M.W. Nachman. Environmentally stable *cis*-regulatory changes underlie rapid climatic adaptation. *Proceedings of the National Academy of Sciences U.S.A.*, 39: e2214614120.
22. Buckley, L; B. B. Ortiz, I. Caruso; A. John; O. Levy, A. Meyer; **E.A. Riddell**, Y. Sakairi, J. Simonis. TrenchR: an R package for transparent microclimate and biophysical ecology. *PLoS Climate*, 2.8: e0000139.
21. **E.A. Riddell**, M.M. Mutanen, C.K. Ghalambor. Hydric effects on thermal tolerance influence climate vulnerability of a high-latitude click beetle. *Global Change Biology*, gcb.16830.
20. Mason, N.M., **E.A. Riddell**, F. Romero, C. Cicero, R.C.K. Bowie. Plumage balances camouflage and thermoregulation in horned larks (*Eremophila alpestris*). *The American Naturalist*, 201:E23-40.
- 2022 19. Briscoe, N., S. Morris, P. Mathewson, L. Buckley, M. Jusup, O. Levy, I. Maclean, S. Pincebourde, **E.A. Riddell**, J. Roberts, R. Schouten, M.W. Sears, M. Kearney. Mechanistic forecasts of species responses to climate change: the promise of biophysical ecology. *Global Change Biology*, gcb.16557.
18. **Riddell, E.A.**, J. Patton, S.R. Beissinger. Thermal adaptation of pelage in desert rodents balances cooling and insulation. *Evolution*, evo.14643.
17. Newman, J.\* , **E.A. Riddell\***, M.W. Sears, K. Barrett. Integrating physiology into correlative models can alter predictions of habitat suitability under climate change for a threatened amphibian. *Ecography*, e06082. \*Equal contribution
16. Perryman, D.C., M.M. Pandit, **E.A. Riddell**, T.L. Sanders, I.A. Kanda, J.L. Grindstaff. Effect of supplemental feeding on nesting success and physiological metrics in Eastern Bluebirds (*Sialia sialis*). *Journal of Avian Biology*, e02920.
15. Ramirez, R.W., **E.A. Riddell**, S.R. Beissinger, B.O. Wolf. Keeping your cool: Thermoregulatory performance in desert cricetid rodents. *Journal of Experimental Biology*, 225 (5): jeb243131.
14. Gunderson, A.R., **E.A. Riddell**, M.W. Sears, and E.B. Rosenblum. The thermal costs and benefits of replicated color evolution in the White Sands Desert lizard community. *The American Naturalist*, 199: 666-678.
- 2021 13. Beissinger, S.R. and **E.A. Riddell**. Why are species' traits weak predictors of range shifts? *Annual Reviews of Ecology, Evolution, and Systematics*, 52:47-66.
12. **Riddell, E.A.**, K. Iknayan, L. Hargrove, S. Tremor, J.L. Patton, R. Ramirez, B.O. Wolf, & S.R. Beissinger. Exposure to climate change drives stability or collapse of desert mammal and bird communities. *Science*, 371: 633-636.

- 2020 11. **Riddell, E.A.** & M.W. Sears. Terrestrial salamanders maintain habitat suitability under climate change despite trade-offs between water loss and gas exchange. *Physiological and Biochemical Zoology*, 93: 310-319. *Invited*.
- 2019 10. **Riddell, E.A.**, K. Iknayan, B.O. Wolf, B. Sinervo, & S.R. Beissinger. Cooling requirements fueled the collapse of a desert bird community from climate change. *Proceedings of the National Academy of Sciences U.S.A.*, 10.1073.
9. **Riddell, E.A.**, E.Y. Roback, C.E. Wells, K. Zamudio, & M.W. Sears. Thermal cues drive plasticity in desiccation resistance in a montane salamander with implications for climate change. *Nature Communications* 10: 4091.
8. Sears, M.W., **E.A. Riddell**, & M.J. Angilletta. The world still isn't flat: Lessons learned from organismal interactions with environmental heterogeneity in terrestrial environments. *Integrative and Comparative Biology*, icz130.
- 2018 7. **Riddell, E.A.**, J.P. Odom, J.D. Damm, & M.W. Sears. Plasticity reveals hidden resistance to extinction under climate change in the global hotspot of salamander diversity. *Science Advances* 4, eaar5471.
6. **Riddell, E.A.**, J. McPhail, J.D. Damm, & M.W. Sears. Trade-offs between water loss and gas exchange structure habitat suitability of a woodland salamander. *Functional Ecology* 32: 916-925.
5. Carlo, M.C., **E.A. Riddell**, O. Levy, & M.W. Sears. Recurrent sublethal warming in the nest reduces embryo survival and post-hatching growth. *Ecology Letters* 21: 104-116.
- 2017 4. **Riddell, E.A.** & M.W. Sears. Physical calculations of resistance to water loss improve species range models: reply. 2017. *Ecology* 98: 2965-2968.
3. **Riddell, E.A.**, E.K. Apanovitch, J.P. Odom, & M.W. Sears. Physical calculations of resistance to water loss improve predictions of species range models. *Ecological Monographs*, 87: 21-33.
- 2015 2. **Riddell, E.A.**, & M.W. Sears. Geographic variation of resistances to water loss within two species of lungless salamanders: implications for activity. *Ecosphere* 6: Article 86.
- 2013 1. **Riddell, E.A.**, & D.P. Cavanaugh. Incidental capture of an alternative prey by a dietary specialist, the endangered Snail Kite. *Florida Field Naturalist* 41:49-50.

*In Review or Revision*

Burress E.D., M.R. Gade\*, **E.A. Riddell**, and M.M. Muñoz. Functional innovations and mountains act synergistically to drive the paradoxical evolution of lungless salamanders. *Evolution*, In review.

PUBLICATIONS

Iowa; Co-author of “Climate Change Impacts on Ecosystems”

INVITED

2024 University of Indiana, Biology Department

SEMINARS

Yale University, Climate Day in EEB Department

2023 University of North Carolina, Chapel-Hill, *Biology Department*  
Society for Integrative and Comparative Biology, George A. Bartholomew  
Award Lecture, Annual Meeting in Austin, TX 2023

US Fish and Wildlife, Southwest Climate Change Webinar

2022 University of Massachusetts, Amherst, *Biology Department*

Oregon State University, *Department of Integrative Biology*

2021 Inside Scientific™, “*Physiology of extinction*”, invited by Sable Systems  
International

Mojave National Parks and Preserves, “*Climate Change Responses*”

University of Minnesota, *Department of Ecology, Evolution, & Behavior*

2020 Cornell University, *Dept. of Ecology and Evolutionary Biology*

Louisiana State University, *Dept. of Biology*

Ecological Society of America, *Symposium of Humidity, Cancelled*

2019 Iowa State University, *Dept. of Ecol., Evol., and Organismal Biology*

Oregon State University, *Dept. of Integrative Biology*

American Ornithological Society, *Symposium on Avian Declines*

2018 University of California, Berkeley, *Dept. of Env., Policy, & Management*

University of California, Santa Cruz, *Dept. of Ecol. & Evol. Biology*

University of California, Berkeley, *Energetics Seminar, Department of  
Integrative Biology*

2017 University of California, Davis, *Center for Population Biology*

University of California, Berkeley, *Museum of Vertebrate Zoology*

University of Virginia, *Department of Biology*

SERVICE

*Editorships*

2020-2024 *Associate Editor, Functional Ecology*

*Conferences*

2012-Present *Member, Society for Comparative and Integrative Biology*

2021-Present *Member, Society for the Advancement of Chicanos/Hispanics and  
Native American in Science*

2015-2017 *Social Chair, SICB Division of Ecology and Evolution*

2014-2017 *Representative, SICB Student-Postdoctoral Affairs Committee*

*University of North Carolina*

2024-Present *Member, Highlands Biological Station Scientific Advisory Board*

2023 *Poster Judge, Biology Undergraduate Symposium*

*Iowa State University*

2022 - Current *Member*, Midwest ADVANCE Advocates Team  
2021 - Current *Member*, Curriculum Committee for EEB Program  
2020 - Current *Member*, Diversity, Equity, and Inclusion Committee for EEOB  
2020 - Current *Co-Chair*, Sub-committee for Student Support Resources  
2020 - Current *Co-Chair*, Sub-committee for Departmental DEI Training

*University of California, Berkeley*

2019 - 2020 *Member*, Project Fe: Sexual Violence and Harassment Awareness Project  
2019 *Organizer*, Wildlife and Conservation Biology Seminar Committee

*Clemson University*

2012 - 2016 *Member*, Biology Annual Student Symposium Committee  
2015 *Chair*, Clemson Dean's Advisory Board  
2014 *President*, Biological Sciences Graduate Student Association  
2012 *Member*, Clemson Dean's Advisory Board

*Grant Reviewer*

National Science Foundation, IOS-IEP February Panel (2024)  
National Science Foundation, Integrative Organismal Systems (2023)  
Natural Environmental Research Council, Standard Grant (2021)  
National Science Foundation, Division of Environmental Biology (2021)  
National Science Foundation, Division of Environmental Biology (2020)

*Journal Reviewer*

*14 reviews in 2023, including handled as Associate Editor*  
Science, Nature, PNAS, Ecology Letters, Evolution Letters, Nature Communications, Ecological Monographs, Global Change Biology, Molecular Ecology, Biosciences, Ecology, Functional Ecology, Ecography, Journal of Biogeography, Journal of Experimental Biology, Oikos, PeerJ, Diversity, Ecology and Evolution, Herpetologica, Animal Ecology, Integrative and Comparative Biology and many more.

TEACHING

*Iowa State University*

2022 *Instructor*, Human & Other Animal Physiology (BIOL 335)  
*Instructor*, Ecological and Evolutionary Physiology (EEB 698)  
2021 *Instructor*, Human & Other Animal Physiology (BIOL 335)  
*Instructor*, Individual-Based Modeling (EEOB 590C)

*University of California, Berkeley*

2019 *Co-Instructor*, Trail Design

*Clemson University*

2013-2017 *Co-Instructor*, Physiological Ecology (BIOL 4090)  
2016-2017 *Teaching Assistant*, Evolutionary Biology  
2016 *Teaching Assistant*, Vertebrate Biology

2012-2015      *Teaching Assistant, Comparative Physiology*  
2012-2014      *Teaching Assistant, Human Physiology*

MENTORING

\*graduated

*Postdoctoral Scholars*

Cody Porter, *Advisor*, Iowa State University, 2022 - Current  
Braulio Assis, *Advisor*, University of North Carolina, 2023 - Current

*Doctoral Students*

Issi Burger, *Advisor*, University of North Carolina, 2022 - Current  
Savannah Weaver, *Advisor*, University of North Carolina, 2023 - Current  
Tamara Tyner, *Advisor*, Iowa State University, 2022 - Current  
Kevin Cortes, *Advisor*, Iowa State University, 2020 - 2022  
Guillermo Costoya, *Committee Member*, University of Nevada, 2023 - Current  
Ceren Ordas, *Committee Member*, Iowa State University, 2022 - Current  
Nolan Clements, *Committee Member*, Oregon State, 2023 - Current  
Ryan Mahar\*, *Committee Member*, University of Montana, 2020 - 2023  
Julie Rej, *Committee Member*, Tulane University, 2021 - Current  
Silas Fischer, *Committee Member*, University of Toledo, 2020 - Current

*Master's Students*

Erika Ibarra-Garibay, *Committee Member*, Iowa State University, 2021 - Current  
Colton Poore\*, *Advisor*, Iowa State University, 2020 - 2022  
Christiana-Jo Quinata\*, *Committee Member*, Iowa State University, 2021 - 2022

*Undergraduate Students (McNair Scholar Program)*

Dawood Ghauri\*, Iowa State University, 2020 - 2022  
Alejandro Medina-Valencia\*, Iowa State University, 2020 - 2022

*Undergraduate Students (Honors Program)*

Justin Biggerstaff\*, Iowa State University, 2022 - Current

*Undergraduate Students (NSF REU Mentor)*

Emma Roback, Clemson University, 2016  
Jared McPhail, Clemson University, 2015

*Undergraduate Students (Research Assistants)*

Hailey Christoph, Iowa State University, 2021 - Current  
Mikaela Gaskill, Iowa State University, 2021 - Current  
Paige Hollenburg, Iowa State University, 2020 - 2021  
Megan Banke, University of California, Berkeley, 2018  
Faye Romero, University of California, Berkeley, 2018  
Jason Damm, Clemson University, 2016  
Charles Matthews, Clemson University, 2013-2014  
Jennifer Tutunjian, Clemson University, 2015  
Jonathan Odom, Clemson University, 2013-2014  
Carlie Blankenship, Clemson University, 2013  
Justyn Plaskon, Clemson University, 2013

Meghan Matlack, Clemson University, 2013  
 Meredith Rutledge, Clemson University, 2013  
 Christopher Gerstle, Clemson University, 2013  
 Josh Vanev, Clemson University, 2013

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| PRESENTATIONS           | 2023 | SICB Annual Meeting, Austin, TX.  |
| (Presenter only)        | 2022 | SICB Annual Meeting. Online.  |
|                         | 2021 | SICB Annual Meeting. Online.  |
|                         | 2020 | SICB Annual Meeting, Austin, TX.  |
|                         | 2019 | SICB Annual Meeting, Tampa, FL.<br>MVZ Herpetology Seminar, UC Berkeley   |
|                         | 2018 | MVZ Herpetology Seminar, UC Berkeley<br>SICB Annual Meeting, San Francisco, CA.   |
|                         | 2017 | Southeastern Society of Biologists, Tuscaloosa, AL.<br>SICB Annual Meeting, New Orleans, LA.  |
|                         | 2016 | Plethodontid Conference, Highlands Biological Station, Highlands, NC.<br>SICB Annual Meeting, Portland, OR.   |
|                         | 2015 | Ecological Society of America Annual Meeting, Baltimore, MD.<br>Southeastern Ecology and Evolution Conference, Athens, GA.<br>SICB Annual Meeting, West Palm Beach, FL. |
|                         | 2014 | Clemson Biological Sciences Annual Student Symposium, Clemson, SC.<br>SICB Annual Meeting, Austin, TX.<br>Highlands Biological Station, Highlands, NC.                  |
|                         | 2013 | SICB Annual Meeting, San Francisco, CA.   |
|                         | 2012 | Clemson Biological Sciences Annual Student Symposium, Clemson, SC.<br>Audubon Society of Naples, FL.  |
|                         | 2011 | Sewanee Biology Department, Sewanee, TN.  |
| WORKSHOPS<br>ATTENDED   | 2022 | <i>Preventing Sexual Harassment and Assault in Field Settings</i> , Building a Better Fieldwork Future, Led by Haldre Rogers, ISU                                       |
|                         |      | <i>Implicit Bias and Microaggressions</i> , Led by ADVANCEGeo, ISU  |
|                         | 2021 | <i>Men Allies for Gender Equity</i> , Led by Dr. Roger Green, ISU   |
|                         |      | <i>Identity and Inclusion</i> , Led by Dr. Scott Taylor, ISU  |
|                         | 2020 | <i>Improving workplace climate</i> , Led by ADVANCEGeo, ISU   |
|                         | 2019 | <i>Developing an engaging course</i> , GSI Teaching and Resource Center, UC Berkeley  |
|                         |      | <i>Creating Inclusive Classrooms</i> , GSI Teaching and Resource Center, UC Berkeley  |
|                         | 2018 | <i>Looking In/Looking Out: Exploring Diversity in the Workplace</i> , Multicultural Educational Program, UC Berkeley  |
| COMMUNITY<br>ENGAGEMENT | 2022 | <i>Mentor</i> , Biology Research Experience for Teachers, ISU   |
|                         | 2021 | <i>Volunteer</i> , Society for the Advancement of Chicanos and Native American Students (SACNAS) Grant Writing Workshop   |



2020 *Volunteer*, Society for the Advancement of Chicanos and Native American Students (SACNAS) Grant Writing Workshop

2019 *Coordinator*, Salamander Outreach to Oakland Unified School District

2019 *Volunteer*, Hastings Reserve K-12 Nature Education  
*Volunteer*, SICB Mentorship Program

2017 *Coordinator*, Pendleton High School Outreach

2016 *Volunteer*, Highlands Biological Station Biodiversity Booth  
*Coordinator*, Pendleton High School Outreach

2015 *Volunteer*, Bring Your Daughter to Work Day  
*Coordinator*, Pendleton High School Outreach

2014 *Coordinator*, Clemson University High School Biology Merit Exam  
*Coordinator*, Pendleton High School Outreach

2013 *Volunteer*, Clemson University Darwin Day  
*Volunteer*, Life Science Outreach