

# Emily V. Kerns

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Ph.D.	University of Wisconsin-Madison. Madison, WI Department of Integrative Biology, Minor in Genetics Advisor: Dr. Jesse N. Weber <i>Thesis:</i> Investigating thermal plasticity, ecotype variation, and phenotypic effects of DNA methylation in threespine stickleback	2021 – Present
B.S.	University of North Florida, Jacksonville, FL Biology, Concentration in Coastal and Marine Biology, Minor in Chemistry Advisor: Dr. Matthew R. Gilg <i>Capstone:</i> Investigation of how selection is acting on a hybrid zone of <i>Fundulus grandis</i> and <i>F. heteroclitus</i>	2015 – 2018

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## RESEARCH EXPERIENCE

United States Forest Service Biological Science Technician (Aquatic Systems), St. Regis, MT	2020
US Forest Service, AmeriCorps, Student Conservation Association (SCA) Crew Leader / Biological Science Technician, Tongass National Forest, AK	2019
National Park Service, AmeriCorps, SCA Biological Science Technician (Vegetation), Redwood National Park, CA	2019
University of North Florida, Advisor: Dr. Matthew R. Gilg Ecological Genetics Research Assistant, Jacksonville, FL	2016 – 2018

## PUBLICATIONS

- Engel S.\*, **Kerns E.V.**, Codner P., Weber J.N. No evidence of density-dependent hatch rates in the cestode *Schistocephalus solidus*. *In prep.* \*Undergraduate mentee
- Kerns E.V.**, Weber J.N. Variable performance of widely used bisulfite sequencing methods and read mapping software for DNA methylation. *BioRxiv*.  
<https://doi.org/10.1101/2025.03.14.643302>

3. Bolnick D.I., Barrett R.D.H., Choi E., Eckert L., Hendry A.P., **Kerns E.V.**, Lind Å. J., Milligan-McClellan K., Peichel C.L., Sasser K., Thornton A.R., Wolf C., Steinel N.C., Weber J.N. Destabilized host-parasite dynamics in newly founded populations. *BioRxiv*. <https://doi.org/10.1101/2024.06.24.600494>
2. Hardy A.L., Gaither M.R., Lotterhos K.E., Greaves S., Cipolla K.J., **Kerns E.V.**, Trujillo A.P., Gilg M.R. (2025). Asymmetrical hybridization and environmental factors influence the spatial genetic structure of a killifish hybrid zone. *Evolution* 79(2), 232-248. <https://doi.org/10.1093/evolut/qpae160>
1. Gilg M.R., **Kerns E.V.**, Gutierrez-Bayona N.E., Kooyomjian C., Hinojosa N.A. (2022). Dynamic cohort analysis reveals fluctuating patterns of selection within a hybrid zone between the killifish *Fundulus heteroclitus* and *F. grandis*. *Evolutionary Biology* 49, 1-14. <https://doi.org/10.1007/s11692-021-09553-x>

## PRESENTATIONS

### Oral Presentations

4. **Kerns E.V.**, Weber J.N. (2024, July). How do commonly used methods capture variation in DNA methylation of threespine stickleback (*Gasterosteus aculeatus*)? *Evolution*. Montreal, Canada.
3. **Kerns E.V.**, Weber J.N. (2023, April). Does DNA methylation mediate flexible responses in threespine stickleback? *Alaska Stickleback Retreat*. Montreal, Canada.
2. Sasser T., **Kerns E.V.**, Weber J.N. (2022, February). Fish in hot water: Thermal tolerance and interacting stressors. *The World's Greatest Eco-Evo Experiment*. Virtual. Co-first author presentation
1. Gilg M.R., **Kerns E.V.**, Gutierrez-Bayona N.E., Kooyomjian C., Hinojosa N.A. (2019, July). Dynamic cohort analysis reveals evidence of directional selection in a killifish hybrid zone. *Joint Meeting of Ichthyologists and Herpetologists*. Snowbird, UT.

### Poster Presentations

4. **Kerns E.V.**, Sasser T., Weber J.N. (2022, October). How do DNA methylation and gene expression mediate plasticity of threespine stickleback (*Gasterosteus aculeatus*)? *Wisconsin Epigenetics Symposium*. Madison, WI.
3. **Kerns E.V.**, Sasser T., Weber J.N. (2022, June). How do DNA methylation and gene expression mediate plasticity of threespine stickleback (*Gasterosteus aculeatus*)? *Evolution*. Cleveland, OH.
2. **Kerns E.V.**, Cipolla K., Gonzalez D., Gilg M.R. (2019, July). Landscape genetics of a *Fundulus spp.* hybrid zone in northeast Florida. *Joint Meeting of Ichthyologists and Herpetologists*. Snowbird, UT.

1. Kerns E.V., Gilg M.R. (2018, February). Hybrid zone analysis of *Fundulus grandis* and *F. heteroclitus*. *Florida Undergraduate Research Conference*. Cocoa, FL.

#### Guest Lectures

2. Evolutionary Medicine. (2025, May). University of Wisconsin-Madison Evolutionary Biology 410, taught by Dr. Jesse N. Weber. Madison, WI.
1. Evolutionary Medicine. (2023, May). University of Wisconsin-Madison Evolutionary Biology 410, taught by Dr. Jesse N. Weber. Madison, WI.

#### HONORS AND AWARDS (Research Funds: \$13,120; Total Funds: \$60,220)

Society for the Study of Evolution, Graduate Research Excellence Grant,	2024
Rosemary Grant Advanced Award, \$3,500	
UW-Madison Integrative Biology JDD Travel Award, \$800	2024
William C. Burns & Lemuel F. Fraser Teaching Enrichment Scholarship, \$1,000	2023
NIH R01 Administrative Supplement under Climate Change and Health Notice of Special Interest. PI: Daniel Bolnick. Co-authors and Supporting Personnel: Benjamin Flanagan, Emily Kerns. \$382,330. <i>Declined</i> .	2023
National Science Foundation Graduate Research Fellowship Program, <i>Honorable Mention</i>	2022
Rita and Kenneth Hoots Graduate Student Scholarship, \$2,000	2022
UW-Madison Integrative Biology Graduate Summer Research Award, \$7,520	2022
AmeriCorps Education Award, \$1,600	2019, 2019
UNF Presidential Diamond Scholarship, \$24,000	2015 – 2018
Florida Bright Futures, \$14,400	2015 – 2018
UNF Undergraduate Research Grant Recipient, \$1,300	2017
Tennessee Valley Interstellar Workshop Scholarship, \$2,500	2017

#### TEACHING EXPERIENCE

University of Wisconsin-Madison	Madison, WI
<i>Teaching Assistant</i>	
Evolutionary Biology Discussion	2023, 2025
Animal Biology Laboratory	2024
Introductory Biology 2 Laboratory	2021
<i>Delta Teaching Program Courses Completed</i>	
Expeditions in Evidence-Based Teaching and Learning	2024
Teaching in Science and Engineering: The College Classroom	2023
Research Mentor Training	2022
University of North Florida	Jacksonville, FL
<i>Supplemental Instructor</i>	
General Biology 2	2018

## SERVICE AND OUTREACH

University of Wisconsin-Madison	Madison, WI
<i>Wisconsin Evolution</i>	
Evolution Coordinating Committee	2024 – Present
Evolution Seminar Series Committee	2024 – 2025
<i>Department of Integrative Biology</i>	
Graduate Student Organization Outreach Coordinator	2024 – 2025
<i>Undergraduate Research Mentees:</i>	
Anna Chung	January 2025 – Present
Claire An	November 2024 – Present
Daisy Hester	June – September 2024
Sara Engel	September 2022 – September 2023
<i>Badger Buddies, Biological Interactions Summer Research Program (WISCIENCE)</i>	
Professional Development Mentor	2022
Alaska Stickleback Project	Virtual
<i>Graduate Student and Postdoctoral Presentations Co-Organizer</i>	2023 – 2024
PubNavigator: Science Communication Platform	Virtual
<i>Associate Editor</i>	2020 – 2022

## PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science	2024 – Present
American Society of Naturalists	2024 – Present
Society for the Study of Evolution	2022 – Present

## WORKSHOPS AND CERTIFICATIONS

Familiar with R, Python, and Linux (2 years of experience)	
Introduction to Equity-Minded Mentorship. <i>Equity in Graduate Education Resource Center</i>	2024
A Practical Approach to Project Management. <i>UW-Madison Graduate School Office of Professional Development</i>	2023
Implicit Bias. <i>Fair Play Graduate Student and Postdoc Workshop</i>	2022
Wilderness First Aid. <i>Wilderness Medical Associates International</i>	2019
Shoreline Survival Training. <i>US Forest Service</i>	2019
Boating Safety Course for the State of Florida Lifetime Certification. <i>BoatU.S Foundation</i>	2018