

# 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> Analysis of thermal plasticity and phenotypic effects of DNA methylation across threespine stickleback ecotypes	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	2020
Biological Science Technician (Aquatic Systems), St. Regis, MT	
US Forest Service, AmeriCorps, Student Conservation Association (SCA)	2019
Crew Leader / Biological Science Technician (Forestry), Tongass National Forest, AK	
National Park Service, AmeriCorps, SCA	2019
Biological Science Technician (Vegetation), Redwood National Park, CA	
University of North Florida, Advisor: Dr. Matthew R. Gilg	2016 – 2018
Ecological Genetics Research Assistant, Jacksonville, FL	

## PUBLICATIONS

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>

### In Review

3. **Kerns E.V.<sup>†</sup>**, 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>.
2. 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.T., 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>
1. **Kerns E.V.<sup>+</sup>**, Engel S.<sup>++</sup>, Codner P.A., Weber J.N. Egg hatching in the cestode *Schistocephalus solidus* shows no evidence of quorum sensing. *BioRxiv*.  
<https://doi.org/10.1101/2025.07.02.662852>

### In Preparation

1. **Kerns E.V.<sup>+</sup>**, Sasser K.T.<sup>+</sup>, Weber J.N. Testing connections between immunity, respiration, and thermal tolerance across populations and ecotypes of threespine stickleback (*Gasterosteus aculeatus*).

### Popular Press

1. **Kerns E.V.** Federal funding and my journey as a scientist. *Tampa Bay Newspapers*. Tampa Bay, FL. June 20, 2025. *McClintock Letters Initiative*.

<sup>†</sup>Corresponding author, <sup>+</sup>Co-first author, <sup>\*</sup>Undergraduate mentee

## PRESENTATIONS

### Oral Presentations

5. **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.
4. **Kerns E.V.**, Weber J.N. (2024, July). How do commonly used methods capture variation in DNA methylation of threespine stickleback (*Gasterosteus aculeatus*)? *Alaska Stickleback Retreat*. 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 K.T.<sup>+</sup>, **Kerns E.V.<sup>+</sup>**, Weber J.N. (2022, February). Fish in hot water: Thermal tolerance and interacting stressors. *The World's Greatest Eco-Evo Experiment*. Virtual.

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.

<sup>+</sup>Co-first author presentation

### 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, April). 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 Awards: \$13,120

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
NIH R01 Administrative Supplement under Climate Change and Health	2023
Notice of Special Interest. PI: Daniel Bolnick. Co-authors and Supporting	
Personnel: Benjamin Flanagan, <b>Emily Kerns</b> . \$382,330. <i>Unfunded</i>	
UW-Madison Integrative Biology Graduate Summer Research Award. \$7,520	2022
National Science Foundation Graduate Research Fellowship Program,	2022
<i>Honorable Mention</i>	
UNF Undergraduate Research Grant Recipient. \$1,300	2017

### Teaching and Service Awards: \$4,200

William C. Burns & Lemuel F. Fraser Teaching Enrichment Scholarship. \$1,000	2023
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AmeriCorps Education Award. \$1,600 2019, 2019

**Scholarships: \$42,900**

Rita and Kenneth Hoots Graduate Student Scholarship. \$2,000 2022

UNF Presidential Diamond Scholarship. \$24,000 2015 – 2018

Florida Bright Futures. \$14,400 2015 – 2018

Tennessee Valley Interstellar Workshop Scholarship. \$2,500 2017

**TEACHING EXPERIENCE**

**University of Wisconsin-Madison** **Madison, WI**

*Teaching Assistant*

Evolutionary Biology Discussion 2023, 2025

Animal Biology Laboratory 2024

Introductory Biology 2 Laboratory 2021

*Delta Teaching & Learning Practitioner Badge*

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**

*Supplemental Instructor*

General Biology 2 2018

**SERVICE AND OUTREACH**

**University of Wisconsin-Madison** **Madison, WI**

*Wisconsin Evolution*

Evolution Coordinating Committee 2024 – Present

Graduate Student and Postdoctoral Research Salon Organizer 2025 – Present

Evolution Seminar Series Committee 2024 – 2025

*Department of Integrative Biology*

Graduate Student Organization Outreach Coordinator 2024 – 2026

UW Science Expeditions: Exploration Station 2025

Wisconsin Science Festival: Science on the Square 2024

Wisconsin Science Festival: Community Expo 2024

*Undergraduate Research Mentees:*

Molly O'Neill May 2025 – Present

Anna Chung January 2025 – Present

Claire An November 2024 – Present

Daisy Hester June – September 2024

Sara Engel September 2022 – September 2023

*Badger Buddies, Biological Interactions Summer Research Program (WISCIENCE)*

Professional Development Mentor	2022
<b>Co-Reviewer:</b> eLife, Nature Ecology & Evolution, French National Research Agency (2025)	
<b>Aldo Leopold Nature Center</b> <i>Land Steward</i>	<b>Monona, WI</b> 2025 – Present
<b>Alaska Stickleback Project</b> <i>Graduate Student and Postdoctoral Presentations Co-Organizer</i>	<b>Virtual</b> 2023 – 2024
<b>PubNavigator: Science Communication Platform</b> <i>Associate Editor</i>	<b>Virtual</b> 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

Proficient in R, Python and Linux (Ubuntu) (2 years of experience)	
Experience with HTCondor Software Suite for high throughput computing	
Postdoctoral Fellowship Writing Series. <i>UW-Madison Office of Postdoctoral Studies</i>	2025
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