

# Emily V. Kerns

Birge Hall, 430 Lincoln Drive  
Madison, WI 53706  
Kerns3@wisc.edu

---

|       |                                                                                                                                                                                                                                                                     |             |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Ph.D. | University of Wisconsin-Madison, Madison, WI<br>Department of Integrative Biology<br><i>Thesis:</i> Analysis of plasticity and phenotypic effects of<br>DNA methylation across threespine stickleback ecotypes                                                      | 2021 – 2026 |
| B.S.  | University of North Florida, Jacksonville, FL<br>Biology, Concentration in Coastal and Marine Biology,<br>Minor in Chemistry<br><i>Capstone:</i> Investigation of how selection is acting on a hybrid<br>zone of <i>Fundulus grandis</i> and <i>F. heteroclitus</i> | 2015 – 2018 |

---

## RESEARCH EXPERIENCE

|                                                                                                                                                                                                    |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| University of Wisconsin-Madison, Madison, WI<br>Advisor: Jesse N. Weber<br>Doctoral Research Associate<br>Department of Integrative Biology                                                        | 2021 – 2026 |
| United States Forest Service, St. Regis, MT<br>Biological Science Technician (Aquatic Systems)<br>PacFish/InFish Biological Opinion Monitoring Program                                             | 2020        |
| US Forest Service, AmeriCorps, Student Conservation Association (SCA),<br>Tongass National Forest, AK<br>Crew Leader / Biological Science Technician (Forestry)<br>Tongass-Wide Young-Growth Study | 2019        |
| National Park Service, AmeriCorps, SCA, Redwood National Park, CA<br>Biological Science Technician (Vegetation)                                                                                    | 2019        |
| University of North Florida, Jacksonville, FL<br>Advisor: Matthew R. Gilg<br>Undergraduate Research Assistant<br>Department of Biology                                                             | 2016 – 2018 |

## PUBLICATIONS

4. 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. (2026). Eco-evolutionary dynamics of infection and immunity in experimentally founded lake populations of threespine stickleback. *American Naturalist*, *in press*.  
<https://doi.org/10.1086/741682>
3. **Kerns E.V.**<sup>†</sup>, Engel S.<sup>†\*</sup>, Codner P.A., Weber J.N. (2026, February). No evidence for quorum sensing during egg hatching in the cestode *Schistocephalus solidus*. *PeerJ* 14, e20667.  
<https://doi.org/10.7717/peerj.20667>
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, February). 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, March). 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

2. **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>. Submitted to *Molecular Ecology Resources*.
1. **Kerns E.V.**<sup>††</sup>, Sasser K.T.<sup>†</sup>, Weber J.N. Metabolic stability underpins thermal tolerance in benthic ecotypes of threespine stickleback (*Gasterosteus aculeatus*). *BioRxiv*.  
<https://doi.org/10.1101/2025.09.15.676414>. Submitted to *Proceedings of the Royal Society: B*.

### 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, \*Undergraduate mentee

## PRESENTATIONS

### Invited Seminars

2. **Kerns E.V.** (2025, November). Effects of inbreeding and introgression on iconic traits and resilience of McCloud River Redband trout. *Department of Ecology & Evolutionary Biology Seminar Series*. University of California Los Angeles. Los Angeles, CA.

1. **Kerns E.V.** (2025, October). How to connect phenotypic plasticity, epigenetics, and natural selection? Insights from thermal tolerance and DNA methylation experiments in threespine stickleback. *Evolution Seminar Series*. University of Wisconsin-Madison. Madison, WI.

### Conference Presentations

6. **Kerns E.V.**, Yu C., Weber J.N. (2026, June). Testing a novel framework for connecting phenotypic plasticity, epigenetics, and natural selection using experiments in threespine stickleback. *Evolution*. Cleveland, OH.
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 Project Retreat*. Montreal, Canada.
3. **Kerns E.V.**, Weber J.N. (2023, April). Does DNA methylation mediate flexible responses in threespine stickleback? *Alaska Stickleback Project 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. *Alaska Stickleback Project Retreat*. 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

6. **Kerns E.V.**, Yu C., Sasser K.T., Weber J.N. (2026, February). How to connect phenotypic plasticity, epigenetics, and natural selection? Insights from thermal tolerance and DNA methylation experiments in threespine stickleback. *UW-Madison Joint Biological Sciences Poster Session*. Madison, WI.
5. **Kerns E.V.**, Yu C., Sasser K.T., Weber J.N. (2025, October). How to connect phenotypic plasticity, epigenetics, and natural selection? Insights from thermal tolerance and DNA methylation experiments in threespine stickleback. *Wisconsin Epigenetics Symposium*. Madison, WI.
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: \$14,020

|                                                                                                                |            |
|----------------------------------------------------------------------------------------------------------------|------------|
| UCLA La Kretz Center Postdoctoral Fellowship in California Conservation Science. <i>Finalist</i>               | 2026       |
| UW-Madison Integrative Biology JDD Travel Award. \$800, \$900                                                  | 2024, 2026 |
| Society for the Study of Evolution, Graduate Research Excellence Grant, Rosemary Grant Advanced Award. \$3,500 | 2024       |
| UW-Madison Integrative Biology Graduate Summer Research Award. \$7,520                                         | 2022       |
| National Science Foundation Graduate Research Fellowship Program. <i>Honorable Mention</i>                     | 2022       |
| UNF Undergraduate Research Grant. \$1,300                                                                      | 2017       |

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

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

### Unfunded Applications: \$382,330

|                                                                          |      |
|--------------------------------------------------------------------------|------|
| NIH R01 Administrative Supplement under Climate Change and Health Notice | 2023 |
|--------------------------------------------------------------------------|------|

of Special Interest. PI: Daniel Bolnick. Co-authors and Supporting Personnel:  
Benjamin Flanagan, Emily Kerns. \$382,330

## TEACHING EXPERIENCE

### University of Wisconsin-Madison

Madison, WI

#### *Center for Integration of Research, Teaching, & Learning*

2025 Delta Program Teaching & Learning Practitioner Badge: Does integrating periodic utility value interventions in an introductory biology course increase undergraduate students' intrinsic interest in evolution, ecology, and animal biology?

Expeditions in Evidence-Based Teaching and Learning 2024

Teaching in Science and Engineering: The College Classroom 2023

Research Mentor Training 2022

#### *Teaching Assistant*

Animal Biology Laboratory 2024, 2025, 2026

Evolutionary Biology Discussion 2023, 2025

Introductory Biology 2 Laboratory 2021

### 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 – 2026

University Community Engagement Committee 2025 – 2026

Evolution Seminar Series Committee 2024 – 2025

#### *Department of Integrative Biology*

Graduate Student Organization Outreach Coordinator 2024 – 2026

UW Science Expeditions: Exploration Station 2025, 2026

>2,000 community members reached

Wisconsin Science Festival: Science on the Square 2024, 2025

>1,000 community members reached

Wisconsin Science Festival: Community Expo 2024

>600 community members reached

Graduate Program Manager Hiring Committee 2025

### *Undergraduate Research Mentees:*

|               |                                 |
|---------------|---------------------------------|
| Anna Chung    | January 2025 – May 2026         |
| Claire An     | November 2024 – May 2026        |
| Molly O'Neill | May – September 2025            |
| Daisy Hester  | June – September 2024           |
| Sara Engel    | September 2022 – September 2023 |

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

|                                 |      |
|---------------------------------|------|
| Professional Development Mentor | 2022 |
|---------------------------------|------|

### **Co-Reviewer:**

#### *Journals*

eLife, Nature Ecology & Evolution, Molecular Ecology Resources

#### *Funding agencies*

French National Research Agency (2025)

### **Alaska Stickleback Project**

**Virtual**

*Graduate Student and Postdoctoral Presentations Co-Organizer*

2023 – 2024

### **PubNavigator: Science Communication Platform**

**Virtual**

*Associate Editor*

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 |

## **SKILLS, WORKSHOPS, AND CERTIFICATIONS**

|                                                                                               |      |
|-----------------------------------------------------------------------------------------------|------|
| Proficient in R, Python, Linux, Bash, & HTCondor Software Suite for high throughput computing |      |
| Introduction to Equity-Minded Mentorship. <i>Equity in Graduate Education</i>                 | 2024 |
| <i>Resource Center</i>                                                                        |      |
| A Practical Approach to Project Management. <i>UW-Madison Graduate</i>                        | 2023 |
| <i>School Office of Professional Development</i>                                              |      |
| 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, Florida Lifetime Certification. <i>BoatU.S Foundation.</i>             | 2018 |