

MATTHEW C. KUSTRA

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EDUCATION

- 2018 – *Current* **University of California, Santa Cruz**
Department of Ecology and Evolutionary Biology
Ph.D. Candidate; planned defense: April 2024
Advisor: Dr. Suzanne Alonzo
- 2014 – 2018 **University of Virginia**, Charlottesville, VA
B.S. in Biology, with Highest Distinction, and B.A. in Computer Science

FELLOWSHIPS, GRANTS, AND HONORS (Total = \$181,500)

Fellowships (Total = \$177,000)

- 2022 ARCS Fellow (\$10,000)
2018 Dissertation Year Fellowship (\$24,000)
2018 NSF Graduate Research Fellowship (\$138,000)
2017 NSF Research Experiences for Undergraduates, University of North Carolina at Charlotte (\$5,000)

Grants (Total = \$4,000)

- 2022 American Society of Naturalists Student Research Award (\$2,000)
2022 International Society for Behavioral Ecology Travel Award (\$800)
2017 Rocky Mountain Biological Laboratory REU Travel Grant (\$1,200)

Honors

- 2023 Society for the Study of Evolution Hamilton Award finalist (\$500)
2020 “Honors” for PhD qualifying exam
2018 “Highest Distinction” for undergraduate thesis
2017 2nd place in the “Biomedical, Natural Sciences, and Public Health” category at the All-Campus Poster Research Symposium in Charlotte, NC
2016 Intermediate Honors (awarded to students in the top 20% of class rank after sophomore year)

PUBLICATIONS

—Submitted or In Prep Manuscripts—

1. **Kustra, M. C.**, & Alonzo, S. H. *In prep.* Non-directional cryptic female choice can maintain variation in sperm traits.

—Published—

7. **Kustra, M. C.**, & Alonzo, S. H. (2023). The coevolutionary dynamics of cryptic female choice. *Evol. Lett.* qrad025. <https://doi.org/10.1093/evlett/qrad025>.
6. **Kustra, M. C.**, Stiver, K., Marsh-Rollo, S., Hellmann, J. K., & Alonzo, S. H. (2023). Social environment influences the temporal dynamics of sneak-spawning in a fish with alternative reproductive tactics. *Am. Nat.* <https://doi.org/10.1086/725057>.
5. **Kustra, M. C.**, & Carrier, T. J. (2022). On the spread of microbes that manipulate reproduction in marine invertebrates. *Am. Nat.* 200 (2): 217-235. <https://doi.org/10.1086/720282>.
4. Kahrl, A. F., **Kustra, M. C.**, Reedy, A. M., Bhave, R., Seears, H. A., Warner, D. A., & Cox, R. M. (2021). Selection on sperm count, but not on sperm morphology or velocity in a wild population of Anolis lizards. *Cells*.10 (9): 2369. <https://doi.org/10.3390/cells10092369>.
3. Cronin, M.R., Alonzo, S. H., Adamczak, S. K., Baker, D. N., Beltran, R. S., Borker, A. L., Favilla, A. B., Gatins, R., Goetz, L. C., Hack, N., Harencar, J.G., Howard, E.A., **Kustra, M. C.**, Maguiña, R., Martinez-Esteevez, L., Mehta, R. S., Parker, I. M., Reid, K., Roberts, M. B., Shirazi, S. B., Tatom-Naecker, T. M., Voss, K. M., Willis-Norton, E., Vadakan, B., Valenzuela-Toro, A. M., & Zavaleta, E. S. (2021). Anti-racist interventions to transform ecology, evolution and conservation biology departments. *Nat. Ecol. Evol.* 5: 1213 – 1223. <https://doi.org/10.1038/s41559-021-01522-z>.
2. **Kustra, M. C.**, & Alonzo, S. H. (2020). Sperm and alternative reproductive tactics: a review of existing theory and empirical data. *Philos. Trans. R. Soc. B.* 375: 20200075. <https://doi.org/10.1098/rstb.2020.0075>.
1. **Kustra, M. C.**, Kahrl, A. F., Reedy, A. M., & Cox, R. M. (2019). Sperm morphology and count vary with fine-scale changes in local density in a wild lizard population. *Oecologia*.191: 555-564. <https://doi.org/10.1007/s00442-019-04511-z>.

PRESENTATIONS

- Kustra, M. C.** & Alonzo, S.H. (2023). The coevolutionary dynamics of non-directional cryptic female choice. [ORAL PRESENTATION] American Society of Naturalists. Asilomar, CA.
- Kustra, M. C.** & Carrier, T.J. (2022). On the spread of microbes that manipulate reproduction in marine invertebrates. [ORAL PRESENTATION] Stanford/UCSC Species Interactions Workshop. Santa Cruz, CA.
- Kustra, M. C.**, Stiver, K., Marsh-Rollo, S., Hellmann, J. K., & Alonzo, S. H. (2022). Temporal dynamics of sneak spawning in a fish with multiple alternative reproductive tactics. [ORAL

PRESENTATION] International Society for Behavioral Ecology Congress. Stockholm, Sweden.

Kustra, M. C. & Alonzo, S.H. (2021). The coevolutionary dynamics of non-directional cryptic female choice. [ORAL PRESENTATION] Virtual Evolution.

Kustra, M. C. & Alonzo, S.H. (2021). Non-Directional Cryptic Female Choice Can Maintain Variation in Ejaculate Traits. [ORAL PRESENTATION] American Society of Naturalists Virtual Asilomar.

Kustra, M. C. 2020. The Evolutionary Consequences of Cryptic Female Choice. [ORAL PRESENTATION] Graduate Proposal Seminar. Virtual.

Kustra, M. C., Kahrl, A. F., Reedy, A. M., & Cox, R. M. (2018). Local Density of Conspecifics Affects Sperm Phenotypes in Wild *Anolis sagrei* Lizards. [ORAL PRESENTATION] Society for Integrative and Comparative Biology annual meeting. San Francisco, CA.

Kustra, M. C., Macrander, J., Reitzel, A. M. (2017). Every sperm protein is sacred: a characterization of a cnidarian sperm proteome. [ORAL PRESENTATION] Biological Sciences Oral Research Symposium. Charlotte, NC.

TEACHING EXPERIENCE

Santa Cruz R User Base Co-leader *Sept. 2019 – Current*
Department of Ecology and Evolutionary Biology, University of California, Santa Cruz

Co-lead a weekly R workshop for postdocs, graduate students, and undergraduate students. I have made lessons on topics such as conducting basic statistics, basic programming, making graphs using ggplot2, supercomputing, and R markdown.

Graduate Teaching Assistant *Sept. 2018 – April 2021*
Department of Ecology and Evolutionary Biology, University of California, Santa Cruz

- *Introduction to ecology and evolution (Fall 2018).*
- *Marine invertebrate zoology (Winter 2019).*
- *Modeling evolution and ecology (Winter 2021).*

Undergraduate Teaching Assistant *Aug. 2016 – May 2018*
Department of Biology, University of Virginia

- *Introductory to biology laboratory: Cell Biology and Genetics (Fall 2016, 2017).*
- *Introductory to biology laboratory: Organismal and Evolution (Spring 2017, 2018).*

PROFESSIONAL EXPERIENCE

Institute of Marine Science, Fisheries Data Analyst *Nov. 2022 – Current*

University of California, Santa Cruz

I write R scripts to analyze and visualize fishery data. This project is helping inform California Department of Fish and Wildlife's implementation of the Marine Life Management Act and other policies. Specifically focusing on the socioeconomic and behavioral impacts of domoic acid-related management measures on the state's crab and urchin fisheries and seafood supply systems.

Fish Innovations Lab, R Shiny web app developer
Mississippi State University

June 2021 – Current

I am developing a R Shiny web app for USAID-Feed the Future Initiative project, “Increasing sustainability of fisheries for resilience of Cambodian communities.” This tool empowers community fisheries management councils in Cambodia to better assess trends in their fishery and make more informed management decisions. This [web app](#) features interactive graphs, maps, and allows users to translate between English and Khmer.

AMPEL BioSolutions, Investigative Research Analyst Intern
Charlottesville, VA

May 2018 – Aug. 2018

I characterized the genetic signature of circulating plasma cells in Systemic Lupus Erythematosus and helped identify candidate drugs that target this genetic signature.

OUTREACH AND MENTORSHIP

Ecology and Evolutionary Biology Mentor Match

Sept. 2021 – Current

As a mentor in this program, I assist my assigned mentee with applying to graduate programs in Ecology and Evolutionary Biology.

Science Internship Program Mentor

May 2020 – Aug. 2022

University of California, Santa Cruz

I have led teams of high school students in summer research projects on animal behavior in the ocellated wrasse as well as modeling sexual selection. As part of this program, I mentored the students in reading scientific papers, formulating research questions, conducting research, performing basic statistical analyses, and programming simulations. Through this program I have mentored seven students.

Peer-to-Peer Mentor

Oct. 2020 – Oct. 2021

University of California, Santa Cruz

As a mentor for the Peer-to-Peer Mentorship Program, I helped first-year graduate students transition into grad school and build connections within the Ecology and Evolutionary Biology community.

Consilience Research Art Gallery
University of California, Santa Cruz

March 2021

I worked with an undergraduate artist to develop artwork inspired by my research with the ocellated wrasse.

Santa Cruz Museum of Natural History Docent

Oct. 2018 – Dec. 2019

I led inquiry-based learning field trips at Neary Lagoon for third grade classes. Students act as community scientists by making observations of wildlife and recording bird count data.

Evolution Education 2nd Annual Teacher Workshop

July 2016

Evolution Education is a project organized by the Cox lab and funded by the NSF that aims to improve K-12 science education by integrating research into the classroom. I presented a Data Nugget that I co-wrote using data from the Cox lab (<http://datanuggets.org/2017/11/is-it-better-to-be-bigger/>).

SERVICE

Faculty Search Graduate Student Representative
University of California, Santa Cruz

Oct. 2022 – Feb. 2023

I served as the graduate student representative on an animal behavior faculty search committee.

MANUSCRIPT REVIEWER

Evolution (x1)

The American Naturalist (x1)