Ruby Krasnow

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EDUCATION

University of Maine School of Marine Sciences, Orono, ME — Jan. 2025 – present
Ph.D. in Marine Biology

Clark University, Worcester, MA — Dec. 2024
B.A. in Biology, Minor in Mathematics
summa cum laude (GPA: 4.0)

Marine Biological Laboratory (University of Chicago), Woods Hole, MA — Fall 2023
Semester in Environmental Science (SES)

RESEARCH EXPERIENCE

NOAA Ernest F. Hollings Internship — Apr. 2024 – Dec. 2024
Northeast Fisheries Science Center, Woods Hole, MA

- Initiated systematic review of methods used to model crustacean size at maturity
- Evaluated the performance of both clustering- and piecewise regression-based size at maturity modeling approaches
    - Performed simulation testing using artificial datasets with known parameters
- Quantified and visualized spatial variation in Jonah crab size at maturity using a novel methodology based on Gaussian mixture model clustering and spatial logistic regression

Independent Research Project — June – Aug. 2023
Marine Biological Laboratory & Woods Hole Oceanographic Institution, Woods Hole, MA

- Cultivated and imaged juvenile sugar kelp sporophytes for growth analysis
- Improved on published Dynamic Energy Budget (DEB) model for sugar kelp
- Developed and coded novel approach of reparameterizing nonlinear temperature response curves in DEB model to account for intraspecific variation in thermal tolerance
    - Enables single model to be applied to many geographic regions
    - The updated model predicted kelp blade length within 1 cm of observed mean
- Rewrote existing R code using 'tidyverse' functions and implemented parallel processing, reducing runtime by orders of magnitude

Quantitative Marine Ecology Research - NSF BRITE REU — June – Aug. 2023
NSF-funded Research Experience for Undergraduates (REU)
Bioinformatics Program and Department of Biology, Boston University, Boston, MA

- Analyzed trawl survey data on Jonah crab and other benthic species in the Gulf of Maine
- Developed R code for novel spatial extension of Empirical Dynamic Modeling, a nonparametric method of representing and forecasting nonlinear dynamical systems
- Employed a variety of spatiotemporal data science techniques, including OLS/GLS, linear mixed-effects models, GAM(M)s, and autoregressive/ARIMA time series models

Aquaculture Research Intern May – Aug. 2022
University of Maine/Darling Marine Center, Walpole, ME

- Designed and conducted project investigating effects of cultivation method and environmental conditions on oyster mortality, growth, appearance, and biofouling
- Deployed 6 treatment groups of oysters, led multiple sampling and measurement days
- Collected and analyzed environmental data: temperature, salinity, chlorophyll (standard fluorescence protocol with acetone extraction), turbidity, particulate organic matter
- Served as acting manager at commercial oyster farm
    - Ensured survival of over $1 million in oysters

Energy Democracy & Sustainability Intern Oct. 2020 – Apr. 2022
Energy Alabama, Huntsville, AL

- Researched rural electric cooperatives (RECs) to create a scorecard comparing Alabama's 22 RECs on criteria such as democratic governance and clean energy
    - Collected data from REC websites, tax documents, bylaws, court cases, state/federal legislation, media coverage, and direct outreach to each REC
- Designed more efficient spreadsheet templates for recording and analyzing REC data, accelerating development of similar scorecards in five other states
- Authored 72-page report on findings and significance of the Alabama REC scorecard

ACADEMIC HONORS AND AWARDS

Open Bioinformatics Foundation Event Fellowship	Apr. 2025
posit::conf(2025) Opportunity Scholarship	Apr. 2025
Phi Beta Kappa Society	Mar. 2025
Howard Bonar Jefferson Award	Apr. 2024
NOAA Ernest F. Hollings Scholarship	Apr. 2023
Clark University Dean's List - First Honors	All semesters
Valedictorian – New Century Technology High School	Aug. 2021
National Merit Scholarship	Mar. 2021

PUBLICATIONS

Krasnow, R., Kiffney, T., Coleman, S., Cuddy, R., & Brady, D. (*in press*). Quantifying oyster aquaculture lease acceptance: a case study on repurposed Maine lobster pounds. *Aquaculture Reports.*

Krasnow, R. (2025). Making partial differential equations accessible to ecologists. *Nature Reviews Biodiversity*, *1*, 87–87. https://doi.org/10.1038/s44358-025-00017-0 (full text link)

Krasnow, R., Kiffney, T., Cuddy, R., & Brady, D. (2025). Interacting effects of environment and cultivation method on biofouling of farmed oysters (*Crassostrea virginica*). *Journal of the World Aquaculture Society, 56*(3), e70012. https://doi.org/10.1111/jwas.70012

Krasnow, R., Kaufman, L., & Deyle, E. (2025). Making the most of available data: a case study of converging analyses to model an emerging fishery for Jonah crab (*Cancer borealis*). *Fish & Fisheries.* https://doi.org/10.1111/faf.70011

Chammout, H., Adkins, D. L., Al-Olimat, A. K., …, Krasnow, R., … & Kagey, J. D. (2024). G.3.2 is a novel allele of the gene connector enhancer of ksr (cnk) in Drosophila melanogaster. *microPublication Biology*. https://doi.org/10.17912/micropub.biology.001290

Krasnow, R., Gonzalez, S., & Lindell, S. (2024). Improving growth models of cultivated sugar kelp, Saccharina latissima, by accounting for intraspecific variation in thermal tolerance. *Journal of the World Aquaculture Society*, *55*(5), e13085. https://doi.org/10.1111/jwas.13085

OTHER ARTICLES

Peters, J., Lewis, A., Wilson, A., Kowalski, C., Brookson, C. B., Koren, G., Moustahfid, H., O'Grady, H., McLachlan, J., Zobitz, J., Lofton, M., Krasnow, R., & Sabet, S. S. (2025). Resources for Reviewing Code. *Ecological Forecasting Initiative.* https://ecoforecast.org/resources-for-reviewing-code

Krasnow, R. (2025). A Tasty Enigma. *The Marine Biologist*, *33*, 12–16. (https://www.mba.ac.uk/our-membership/our-magazine/)

Gruson, H., Butland, S., & Krasnow, R. (2025). The Dynamic Relationship of Forks with Their Upstream Repository. *rOpenSci.* https://doi.org/10.59350/5n1pv-3sg04.

Krasnow, R. (2022). Reviving lobster pounds as oyster farms. *The Working Waterfront*. https://www.islandinstitute.org/working-waterfront/reviving-lobster-pounds-as-oyster-farms/

PRESENTATIONS

Krasnow, R. (May 2025). *morphmat:* An R package to estimate crustacean size at maturity. Oral presentation. *UMaine School of Marine Sciences Graduate Symposium*, Walpole, ME.

Krasnow, R. & Shank, B. (Sept. 2024). Modeling spatial variation in Jonah crab (*Cancer borealis*) size at maturity. Poster. *American Fisheries Society Annual Meeting*, Honolulu, HI

Krasnow, R. & Shank, B. (Aug. 2024). Modeling spatial variation in Jonah crab (*Cancer borealis*) size at maturity. Poster. *Ecological Society of America Annual Meeting*, Long Beach, CA

Krasnow, R. & Shank, B. (Aug. 2024). Modeling spatial variation in Jonah crab (*Cancer borealis*) size at maturity. Poster. *NOAA Science & Education Symposium*, Silver Spring, MD

Krasnow, R., Kiffney, T., Coleman, S., Cuddy, R., & Brady, D. (Jan. 2024). Quantifying oyster aquaculture lease acceptance: a case study on repurposed Maine lobster pounds. Oral presentation. *Northeast Aquaculture Conference & Exposition*, Providence, RI

Krasnow, R., Gonzales, S., & Lindell, S. (Dec. 2023). Improving Models of Kelp (*Saccharina latissima*) Aquaculture by Accounting for Regional Variation in Thermal Tolerance. Oral presentation. *Semester in Environmental Science Research Symposium*, Marine Biological Laboratory, Woods Hole, MA

Krasnow, R. (Nov. 2023). Nonlinear Population Dynamics of Jonah Crab (Cancer borealis) in the Gulf of Maine. Poster. *Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS)*, Phoenix, AZ

Krasnow, R. (Aug. 2023). Nonlinear Dynamics of Jonah Crab in the Gulf of Maine: An Ecosystem Approach to Modeling an Emerging Fishery. Oral presentation. *BRITE REU Symposium*, Boston University, Boston, MA

Krasnow, R. (Apr. 2023). Modeling Macroalgae: Applications of Mathematics in Kelp Aquaculture. Poster. *Spring ClarkFEST*, Clark University, Worcester, MA

Krasnow, R. (Feb. 2023). Modeling Macroalgae: Applications of Mathematics in Kelp Aquaculture. Poster. *Math for All - Boston Satellite Conference*, Boston College, Boston, MA

Krasnow, R., Cuddy, R., Kiffney, T., Marsh, J., & Brady, D. (Sept. 2022). Effects of environment and cultivation method on growth, appearance, and biofouling in oyster aquaculture. Poster. *Fall ClarkFEST*, Clark University, Worcester, MA

Krasnow, R., Cuddy, R., Kiffney, T., Marsh, J., & Brady, D. (Aug. 2022). Effects of gear selection on oyster (*Crassostrea virginica*) mortality, growth, shape, and biofouling within a repurposed lobster pound. Poster. *SEA Fellows Symposium*, Downeast Institute, Beals, ME.

Krasnow, R. (2021). High School Participation in the Alabama Environmental Movement. Oral presentation. *Water is Life: Youth + Climate*, Alabama Rivers Alliance webinar series

PROFESSIONAL ENGAGEMENT & SERVICE

Data Editor for Peer Community In (PCI Ecology, PCI Evolutionary Biology) 2025 – present

- Ensure code, data, and metadata are properly archived and adhere to FAIR guiding principles (Findability, Accessibility, Interoperability, and Reusability)
- Check computational reproducibility of results described in the manuscript

Peer Reviewer

- Journal of Open-Source Software (2) 2024 – present
- Clark University Scholarly Undergraduate Research Journal (2) 2021 – 2023

SORTEE Fundraising Committee

- Volunteer member of the SORTEE (Society for Open, Reliable, & Transparent Ecology & Evolutionary Biology) Fundraising Committee
- Identify potential sources of financial support for SORTEE's open science initiatives
- Write and edit grant proposals

AFS Climate Ambassador Program Nov. 2022 – Sept. 2024
American Fisheries Society (AFS), remote
- Only undergraduate accepted into the AFS Climate Ambassador Program, a 2-year climate-focused leadership and communication skills program for aquatic scientists
- Application prompted AFS Policy Director to develop personalized intern position
- Inform target audiences about climate change and associated impacts on fish and fisheries, including development of outreach materials and presentations

Student Representative Sept. 2022 – May 2023
Clark University Board of Trustees: Academic Affairs Committee
- Only undergraduate student selected to serve on the committee
- The Academic Affairs committee considers all aspects of academic policy and makes recommendations to the full Board. Items considered include current curricula, program quality, resources, outcomes assessment, starting new programs, discontinuing or modifying existing programs, and the recruitment and retention of university faculty

Aquaculture Consultant Dec. 2020 – Sept. 2022
Alabama Sustainable Agriculture Network
- Food & Farm Forum Planning Committee (2021, 2022)
- Served as aquaculture specialist for ASAN staff; encourage outreach efforts to local aquaculture companies

Society memberships
Ecological Forecasting Initiative since 2024
- Student and Early Career Association

Ecological Society of America since 2024
- Student Chapter; Open Science Section

American Fisheries Society since 2022
Society for Women in Marine Science since 2022

OTHER BACKGROUND

University of Maine Varsity Track & Field Jan. 2025 – Present
NCAA Div. I, America East Conference
- Balancing graduate student academic and research responsibilities with 20+ hours of training/athletic commitments per week

Team Captain, Clark University Varsity Cross Country Aug. 2021 – Dec. 2024
NCAA Div. III, New England Women's & Men's Athletic Conference (NEWMAC)
** denotes first in Clark cross country program history*
- 2025 John and Kay Bassett Senior Scholar Athlete Award
  - Presented annually to the senior athlete with the highest GPA
- Clark University 2024-2025 and 2022-2023 Female Athlete of the Year
- Competitor in 2024 & 2022 NCAA DIII Cross Country National Championships*
- School record holder in women's 5K and 10K (outdoor track) and 6K (XC)
- 2x NCAA DIII Women's Cross Country All-Regional Team* and All-Academic Athlete*
- 2x New England Coaches' Association All-New England Team*

- 3x Team MVP
- 2x NEWMAC All-Conference & Academic All-Conference
- 2022 Fall NEWMAC All-Sportsmanship Team
- 3x NEWMAC Runner of the Week (9/1/24, 9/8/24, 10/14/24)