Ruby Krasnow

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EDUCATION

Clark University, Worcester, MA — Expected: Dec. 2024
Bachelor of Arts in Biology
Minor in Mathematics
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 — May 2024 - present
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 extensive 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

OTHER INTERNSHIP EXPERIENCE

Energy Democracy & Sustainability Intern Oct. 2020 – April 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

Intern July 2020 – May 2021
Conservation Alabama, Huntsville, AL

- Managed Instagram account and compiled analytics reports with data-driven suggestions for improvement, resulting in monthly follower growth of over 14% for eight consecutive months
- Performed database management and data cleaning
- Drafted copy for monthly e-newsletter and other digital member communications
- Redesigned all three organizational websites

PROFESSIONAL ENGAGEMENT

AFS Climate Ambassador Program Nov. 2022 – Present
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

Professional memberships
Ecological Forecasting Initiative since 2024

- Highly engaged member of the EFI Student Association

Society for Open, Reliable, & Transparent Ecology & Evolutionary Biology since 2024

Ecological Society of America	since 2024
Northeast Algal Society	since 2023
New England Estuarine Research Society	since 2023
American Fisheries Society	since 2022
Society for Women in Marine Science	since 2022

ACADEMIC HONORS AND AWARDS

Howard Bonar Jefferson Award	April 2024
NOAA Ernest F. Hollings Scholarship	April 2023
Clark University Dean's List - First Honors	All semesters
Valedictorian – New Century Technology High School	Aug. 2021
National Merit Scholarship	March 2021

PUBLICATIONS

Krasnow, R., Gonzalez, S., and 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.* https://doi.org/10.1111/jwas.13085

PUBLICATIONS IN REVIEW

Krasnow, R**.** Making partial differential equations accessible to ecologists. *In review, Nature Reviews Biodiversity.*

Krasnow, R., Kiffney, T., Coleman, S., Cuddy, R., and Brady, D. Quantifying oyster aquaculture lease acceptance: a case study on repurposed Maine lobster pounds. *In review, Aquaculture Reports.*

Krasnow, R., Kaufman, L., and Deyle, E. A holistic approach to modeling the growing fishery for Jonah crab (*Cancer borealis*) in the Gulf of Maine. *In review, ICES Journal of Marine Science.*

OTHER ARTICLES

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

Krasnow, R. (2020). Solar Power in Alabama. *Alabama Conservationist*. https://conservationalabama.wordpress.com/2020/09/23/solar-power-in-alabama/

PRESENTATIONS

Krasnow, R. and 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. and 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., and Brady, D. (Jan. 2024). Quantifying oyster aquaculture lease acceptance: a case study on repurposed Maine lobster pounds. Oral presentation. *Northeast Aquaculture Conference & Exposition and Milford Aquaculture Seminar*, 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., and 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., and 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

LEADERSHIP AND SERVICE

Peer Reviewer Sept. 2021 – May 2023

Clark University Scholarly Undergraduate Research Journal (SURJ)
- Evaluate scientific papers proposed for acceptance into the journal
- Provide constructive criticism on all aspects of a paper, from grammar and citations to the validity of the author's methodology and significance of their conclusions

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 and Youth Leader 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
- Advised staff on how to incorporate youth into ASAN's programming and advocacy work

SKILLS

Computer: R (advanced), RStudio, Git/GitHub, Microsoft Office, Google Suite
Languages: English (fluent), Spanish (conversational)

OTHER BACKGROUND

Extracurricular Activities (Clark University)
- Women in STEM August 2021 – Present
- Diversity and Inclusion in Math August 2021 – Present
    - Student chapter of the Association for Women in Mathematics
- Jazz Ensemble (Principal clarinet) August 2021 – May 2023

Team Captain, Clark University Varsity Cross Country (NCAA Div. III) 2021 – Present
New England Women's & Men's Athletic Conference (NEWMAC)
** denotes first in Clark cross country program history*
- NEWMAC Runner of the Week (9/1/24)
- Qualified for 2022-2023 and 2023-2024 DIII New England Outdoor Track Championships in 5K and 10K
- Clark University 2022-2023 Female Athlete of the Year
- 2022-2023 MVP
- School record holder in women's 5K and 10K (outdoor) and 6K (XC)
- 2022 NCAA DIII Women's Cross Country All-Academic Athlete
    - Awarded by U.S. Track & Field and Cross Country Coaches Association
- Competitor in 2022 NCAA DIII Cross Country National Championships*

- 2022 NCAA DIII All-Regional Team*
- 2022 New England Coaches' Association All-New England Team*
- 2022 NEWMAC All-Conference, All-Sportsmanship, & Academic All-Conference Teams
- Named 2021-2022 MVP as a freshman walk-on with no prior cross country experience