Grace A. Crandall, MSc

she/her | graceac9@uw.edu | grace-ac.github.io
https://www.linkedin.com/in/grace-crandall9/

INTERESTS

Aquatic ecosystems, flora, and fauna; conservation; diseases and parasites; immunology; human health impacts; One Health; research; outreach; science communication

EDUCATION

Master of Science, University of Washington, Seattle, WA *June 2020*
School of Aquatic and Fishery Sciences
Thesis: "Influence of temperature on the physiological response of shellfish"

Bachelor of Science, University of Washington, Seattle, WA *June 2016*
School of Aquatic and Fishery Sciences
Capstone: "Reproductive maturation in geoduck clams (*Panopea generosa*)"

CERTIFICATES

Certificate in One Health, University of Washington, Seattle, WA *June 2020*
Center for One Health Research | https://deohs.washington.edu/cohr/about-center
Capstone: "Investigating impacts of *Hematodinium* -infected Alaska Tanner crabs on food web interactions and implications for Alaska Native subsistence practices"

TECHNICAL SKILLS

Computation: Proteomics and transcriptomics data analysis, R, Skyline, Linux environment familiarity, Bash and Python/Jupyter scripting, data management, supercomputing, GitHub, Slack, Google Suite applications, Microsoft Office applications

Molecular and Cellular Biology: Nucleic acid isolation and quantitation, qPCR, cellular histology analysis

Training: science outreach to diverse audiences practicing concepts and language around diversity, equity, and inclusion in the sciences and science education (Course: Outreach in Aquatic and Fishery Sciences to Diverse Audiences, Spring 2018); disease ecology concepts and study methods (Course: Ecology of Infectious Marine Diseases, Summer 2019)

RELEVANT EXPERIENCE

PhD Graduate Student Research Assistant *Sep 2023 - present*
Advised by:
Dr. Steven Roberts, University of Washington, Aquatic and Fishery Sciences
Dr. Drew Harvell, University of Washington, Friday Harbor Labs, and Cornell University

- Performing disease challenge experiments: *Pycnopodia helianthoides* and other sea star species
- Using transcriptomics to understand immune response of *Pycnopodia helianthiodes* and other sea star species when exposed to sea star wasting
- Writing research methods and findings for publication in scientific journals

Research Technician *April 2022 - Sep 2023*
Hourly, Part-time
Dr. Drew Harvell, Cornell, Ecology and Evolutionary Biology

- Performing molecular biology techniques including nucleic acid isolation and qPCR on eelgrass and environmental DNA in the San Juan Islands, monitoring for presence/absence of pathogen that causes Eelgrass Wasting Disease
- Assisting with field work in intertidal eelgrass beds monitoring for Eelgrass Wasting Disease presence and progression

Research Technician *July 2021 - present*
Hourly, Part-time
Dr. Drew Harvell, University of Washington, Friday Harbor Laboratories
- Performing experimental work studying sea star wasting disease in *Pycnopodia helianthoides*
- Transcriptomic analyses

Research Technician *June 2020 - July 2021*
Hourly, Part-time
Dr. Steven Roberts, School of Aquatic and Fishery Sciences, University of Washington, Seattle
- Writing manuscripts from thesis research and preparing for peer review publication
- Assisting current graduate students: performing molecular biology techniques including nucleic acid isolation and quantitation; cellular histology analysis

Graduate Student Research Assistant *Jan 2018 - June 2020*
Advisors: Dr. Steven B. Roberts and Dr. Pamela C. Jensen
- Analyzed large datasets to answer biological questions using bioinformatic tools
    - Modified bioinformatic pipelines and learned to use new R packages
    - Crab project: RNAseq analyses; differential gene expression analyses - GitHub repository: https://github.com/RobertsLab/paper-tanner-crab
    - Oyster project: DIA proteomic analyses - GitHub repository: https://github.com/grace-ac/paper-pacific.oyster-larvae
    - **Software/languages**: R, Python,Skyline, Bash, MS Office applications
- Performed molecular biology techniques including nucleic acid isolation and quantitation, qPCR
- Communicated findings at conferences, online notebook entries, manuscripts for publication, and a podcast entitled “DecaPod”
- Wrote manuscripts for peer review publication in scientific journals

Capstone Project, One Health *Feb 2020 - June 2020*
Advisors: Dr. Peter Rabinowitz, Vicki Ramirez, M.A., and Nancy Simcox, M.S.
- Worked with multidisciplinary advisor team to develop project
- Approached questions through a One Health lens (considering environment, animal, and human components and how they interact)
- Coursework: Introduction to epidemiology; Global health: impacts of climate change on human health; Introduction to One Health; seminar in One Health with experts presenting
- Performed a literature and article review to understand how *Hematodinium*-infected Tanner crabs impact the food web and subsistence fishing in Southeast Alaska

Teaching Assistant, School of Aquatic and Fishery Sciences *Jan 2020 - March 2020*
Biology of Fishes (FISH 311)
- Developed leadership and presentation skills in an academic classroom setting
- Worked as part of a TA team - developing and troubleshooting lab activities and lesson plans
- Taught students key concepts and skills:
    - Clearing and staining fish specimens
    - Using dichotomous keys and phylogenetic trees
    - Understanding relationships between and within different classification groups (*e.g.*, Orders, Families)
    - Internal anatomy fish dissections - organ identification and functional understanding
    - External anatomy - fins, spines, and rays identification and nomenclature
    - Skeletal components and how they relate to movement

- Feeding morphologies

Salsa Instructor, University of Washington Department of Recreation (IMA) *Oct 2016 - June 2019*
Manager: Jessica Norman

- Co-instructed salsa dancing to students of all skill levels - adjusted lesson plans on the spot to account for students' progress
- Instructed large groups of students and directed the course of the lesson

Lab Technician, School of Aquatic and Fishery Sciences *Sep 2016 - Dec 2017*
Dr. Steven Roberts Lab

- Gained research experience
  - Working with spreadsheets and data manipulation
  - Microscope work including histology analysis and shellfish larval counting
  - Organizing and keeping track of project progression

PRODUCTS

Publications

Venkataraman, Yaamini R, Amanda Shore, Sukanya Dayal, James Sanghyun Lee, Mahsa Alidoost Salimi, Grace Crandall, Malina M Loeher, Mark Stoops, Megan Swanger, Morgan E Eisenlord, Kathryn L Van Alstyne, Mark D Fast, Colleen A Burge, Maya L Groner. (2023). Characterizing host-pathogen interactions between Zostera marina and Labyrinthula zosterae. *Frontiers in Marine Science*, DOI: https://doi.org/10.17615/ge2d-fg45

Crandall, Grace, Rhonda Elliot Thompson, Benoit Eudeline, Brent Vadopalas, Emma Timmins Schiffman, Steven B. Roberts. (2022). Proteomic response of early juvenile Pacific oysters to temperature. *PeerJ*, DOI: 10.7717/peerj.14158

Crandall, Grace, Pamela C. Jensen, Sam White, Steven B. Roberts (2022). Characterization of the gene repertoire and environmentally driven expression patterns in Tanner crab (*Chionoecetes bairdi*). *Mar Biotechnol*, DOI: https://doi.org/10.1007/s10126-022-10100-8

Crandall, Grace (2020). Impacts of temperature on the molecular response of shellfish. University of Washington. https://digital.lib.washington.edu/researchworks/handle/1773/46010

Emma B. Timmins-Schiffman, Grace A Crandall, Brent Vadopalas, Michael E. Riffle, Brook L. Nunn and Steven Roberts (2017). Integrating discovery-driven proteomics and selected reaction monitoring to develop a non-invasive assay for geoduck reproductive maturation. *J. Proteome Res*. DOI: 10.1021/acs.jproteome.7b00288

Presentations

Western Society of Naturalists Nov 2024, Portland, OR
"Comparing sea star species with varying susceptibility to sea star wasting disease"
https://github.com/grace-ac/presentations/blob/main/2024/Crandall_WSN_2024.pptx

Society of Integrative and Comparative Biology Jan 2024, Seattle, WA
"*Pycnopodia helianthoides* immune response to Sea Star Wasting Disease"
https://github.com/grace-ac/presentations/blob/main/2024/Crandall_SICB_2024.pdf

Western Society of Naturalists Nov 2023, Monterey, CA
"*Pycnopodia helianthoides* immune response to Sea Star Wasting Disease"
https://github.com/grace-ac/presentations/blob/main/2023/Crandall_WSN_2023.pdf

Alaska Marine Science Symposium Jan 2020, Anchorage, AK

“Effects of Bitter Crab Disease on the gene expression in Alaska Tanner Crabs”
https://doi.org/10.6084/m9.figshare.11908350.v1

National Shellfisheries Association/ Pacific Coast Growers Association Sept 2019, Portland, OR
“Effects of Bitter Crab Disease on the gene expression of Alaskan Tanner Crabs”
https://doi.org/10.6084/m9.figshare.9898916.v1

Datasets

Reproductive Maturation in Geoduck clams (*Panopea generosa*) April 2016
This fileset includes a research paper describing reproductive maturation in geoduck clams with 200 images of gonadal histological sections and associated datasheets.
https://figshare.com/articles/dataset/Reproductive_Maturation_in_Geoduck_clams_Panopea_generosa_/3205975

Outreach

Podcast: DecaPod | discoverable on *Apple Music* or at https://bittercrab.wordpress.com/category/podcast/
Online Lab notebook and website: grace-ac.github.io

AWARDS

Honorable Mention in Applied Ecology Talk Nov 2023, Monterey, CA
Western Society of Naturalists

Best Masters Student Oral Presentation Jan 2020, Anchorage, AK
Alaska Marine Science Symposium

FELLOWSHIPS

Victor and Tamara Loosanoff Endowed Fellowship *Spring Quarter 2020*
This endowment was established in 1995 through an estate gift that honors the memory of Victor and Tamara Loosanoff. Victor Loosanoff (UW 1927), spent many years developing the National Marine Fisheries Service Laboratory in Milford, Connecticut and is recognized as the father of U.S. shellfish hatcheries. The fund supports fellowships for graduate students within the School of Fisheries who are studying the biology, ecology, propagation and causes of mortality of marine invertebrates.