Grace A. Crandall, MSc

grace.crandall9@gmail.com | (831) 252-0096 | https://github.com/grace-ac
LinkedIn: https://www.linkedin.com/in/grace-crandall-529a06140/

INTERESTS

Climate change; marine ecosystems; marine flora and fauna; human health impacts; One Health; research; physiology; genetics/genomics; 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*)"

TECHNICAL SKILLS

Computation: Proteomics and transcriptomics data analysis, Skyline, Linux environment familiarity, Bash and Python/Jupyter scripting, R, 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: transcriptomic analysis and visualization, ecology of PNW marine ecosystems (Course: Ecology of Infectious Marine Diseases, Summer 2019); bioinformatics (Course: Bioinformatics, Autumn 2018; Master's thesis work)

RELEVANT EXPERIENCE

Graduate Student Research Assistant *Jan 2018 - June 2020*
Advisors: Dr. Steven Roberts and Dr. Pam 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
- Approaching 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

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Teaching Assistant *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

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
    - Working as a team member

CERTIFICATES

Certificate in One Health, University of Washington, Seattle, WA *June 2020*

Center for One Health Research
https://deohs.washington.edu/cohr/about-center

> "The Center for One Health Research (COHR) at the University of Washington investigates the health linkages among humans, animals and their shared environments. One Health emphasizes the connections across these three elements and seeks a healthy coexistence between humans and animals in sustainable ecosystems."

Capstone: "Investigating impacts of *Hematodinium* -infected Alaska Tanner crabs on food web interactions and implications for Alaska Native subsistence practices"

PRODUCTS

Publications

Crandall, Grace, Pamela C. Jensen, Sam White, Steven B. Roberts. (*in preparation*). The effects of temperature and *Hematodinium sp.*-infection (bitter crab disease) on Southern Tanner crabs (*Chionoecetes bairdi*).

Crandall, Grace, Rhonda Elliot Thompson, Benoit Eudeline, Brent Vadopalas, Emma Timmins Schiffman, Steven B. Roberts. (*in preparation*). Proteomic response of early juvenile Pacific oysters to temperature.

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

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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. Journal of Proteome Research. doi: 10.1021/acs.jproteome.7b00288

Presentations

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 iTunes*
Online Lab notebook: grace-ac.github.io
Crab Project Online Portal: bittercrab.science

AWARDS

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.