DEANA CHRISTINA CROUSER

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Citizenship: United States of America | Veterans Preference: None
Clearance: Willing to Obtain | Availability: Immediate | Job Type: Permanent, Full-Time

SUMMARY OF QUALIFICATIONS

Dedicated, highly skilled, and results-driven fisheries biologist, with a specialization in **Zooplankton Ecology** and years of dedicated service in performing quantitative analysis of marine phytoplankton, zooplankton, and fish interrelationships. With a solid educational background encompassing a B.S. in Oceanography and an Associate of Science degree, my interdisciplinary knowledge equips me to tackle complex marine ecological challenges. Adept at utilizing advanced research methods, ecological data collection, data analysis, and interpretation to inform decision-making and protect marine resources. SCUBA certified and deeply passionate about the Alaska's Large Marine ecosystems. Demonstrated ability to communicate complex scientific concepts to diverse audiences and mobilize support for marine conservation efforts.

Areas of Expertise: Coastal and Estuarine Ecology, Biological Research, Oceanography, Data Analysis and Reporting

SOFTWARE & OPERATING SYSTEMS

Microsoft Office: Excel, Outlook, PowerPoint, Word, Access Internet Explorer, Safari, Google Chrome, iOS, Windows 10, R Studio, Python, Linux, and SQL, Open-source AI and ML algorithms, GitHub, Oracle SQL Developer, ArcGIS

RELEVANT SKILLS AND ABILITIES

Collecting specimens during ecosystem assessment cruises from Puget Sound to Alaska's Large Marine Ecosystems including in the North Pacific and Arctic regions, through my undergraduate work at the **University of Washington** (2019), as well as time spent on **EcoFOCI Spring and Fall Mooring Cruises** from 2021-2022**,** the 2023 **EcoFOCI Spring Larval Survey**, and the 2023 **Arctic Distributed Biological Observatory Cruise;**

Identifying zooplankton to assist with field and laboratory processing of ecological specimens though my undergraduate research at the University of Washington, in addition to my current duties at NOAA's Alaska Fisheries Science Center;

Recording and managing zooplankton ecological data, both digital and physical, through the use of spreadsheets and databases for NOAA's FOCI program for all of Alaska's Large Marine Ecosystems;

Facilitating ecosystem assessment data reporting by executing quality control auditing procedures, data extraction and aggregation as a **contractor with Lynker Technologies in support of NOAA's Alaska Fisheries Science Center**;

Relating results of zooplankton investigations to broader ecosystem functioning such as climate, oceanography, and fisheries through my current ecological study on zooplankton which investigate the **Effects of global warming on long-term changes in copepod size in the Bering Sea;**

Communicating with internal and external stakeholders and researchers regarding ecological studies on zooplankton in the North Pacific and Arctic regions as an **invited speaker at NOAA's EcoFOCI Seminar Series**, **UW's Friday Harbor Laboratories Larval Biology course, and UW's Environmental Monitoring and Technology course;**

Developing novel research techniques or methodologies in Image Analysis to support research on zooplankton ecology and dynamics through my work at the University of Washington and NOAA's AFSC.

Using modern analytical software such as R, Python, and MATLAB to analyze and disseminate zooplankton data and report scientific findings through the drafting of scientific and technical reports through my work at the University of Washington and NOAA/Lynker.

I am also trained, certified and/or experienced in cold-water safety, medical emergencies at sea (First Aid & CPR), and SCUBA (PADI).

RELEVANT KEY WORDS

- ✓ Data dissemination
- ✓ Collecting specimens
- ✓ Identifying zooplankton
- ✓ Workflow Automation
- ✓ Ecological Research
- ✓ Data Analysis
- ✓ Image analysis
- ✓ Quantitative Analysis
- ✓ Effective Communication
- ✓ Interdisciplinary Collaboration
- ✓ Data Management
- ✓ Project Management
- ✓ Biological Research
- ✓ Ecosystem Assessment
- ✓ Data extraction
- ✓ Laboratory Techniques
- ✓ Exploratory Analyses
- ✓ Zooplankton dynamics
- ✓ Modern analytics software
- ✓ Scientific writing
- ✓ Statistical procedures
- ✓ QC auditing procedures
- ✓ Data aggregation

PROFESSIONAL EXPERIENCE

NOAA Alaska Fisheries Science Center (AFSC) | Lynker **09/2019 – Present**
7600 Sand Point Way NE, Seattle, WA 98115, United States **GS-09 / ZP-2**
Full-Time, Hours Per Week: 40

ZOOPLANKTON ECOLOGIST

Data Management:

- ❖ Responsible for the loading and management of zooplankton data into databases as zooplankton team member, to ensure data accuracy, and accessibility for ecological research, fisheries science, and ecosystem assessment data reporting. I have expedited the processing, analysis, validation, and loading of ecological data into our Oracle database.

- ❖ Developed quality control auditing procedures for zooplankton data, drafted annual technical reports summarized quantitative analysis of data error rates and recommended protocol changes to minimize occurrences. This adopted procedure has reduced data entry errors by 80%, saving over $10,000/Year, and increased data accuracy for collaboration with external stakeholders.

- ❖ Closed a 20-year gap in available ecological data through data management, loaded 50+ datasets from ecosystem assessment cruises into the FOCI database to ensure comprehensive data coverage.

- ❖ Regularly communicate with internal and external stakeholders, facilitating data extraction of ecological data for drafting of scientific reports.

Image Analysis and Research:

- ❖ As a project manager, I led efforts for a NOAA-University-Industry team to be accepted into 2021 NOAA GPU Hackathon, which enabled the group to work with developers to generate FOCI's first working algorithm to support the study of zooplankton ecology and dynamics in the North Pacific and Arctic regions through in-situ image analysis. This collaboration, which encompassed a global interdisciplinary team of 14 data scientists and ecologists, led to the development of a Python-based algorithm and training dataset with 42 classes of zooplankton species. Utilizing my technical competence and expertise in fishery biology, I was able to bridge communication gaps between scientific, and technical domains.

- ❖ Responsible for the construction of a training dataset which utilized my taxonomic expertise in identifying zooplankton species, algorithm testing, analysis, and with continuous library refinement achieved a remarkable algorithm validation rate increased from 73.03% to 96.43%.

- ❖ Established novel collaboration with a computer scientist to develop a modern analytics software (MATLAB) application for ex-situ image analysis, which accurately measures and records specimen size, enabling a 10-year, 10,000+ specimen time series in the North Pacific Bering Sea.

- ❖ Processed collected ecological data using statistical procedures through modern analytics software to investigate ecological roles of zooplankton in marine ecosystems, their responses to environmental changes, and interactions with other species.

- ❖ Analyzed and reported preliminary scientific findings at the Alaska Marine Science Symposium and North Pacific Marine Science Organization (PICES) to contribute insights to marine conservation efforts, and sustainable management practices. Currently in the process of drafting a scientific report for publication in the Journal of Plankton Research.

Ecosystem Assessment Cruises:

- ❖ Experience with complex field sampling operations, collecting specimens across a variety of marine ecosystems including the North Pacific and Arctic as part of ecosystem assessment cruises, identifying zooplankton, recording ecological data into spreadsheets and databases, and performing real-time data processing of ecological specimens to facilitate rapid zooplankton analysis while at sea.

- ❖ Utilized modern analytics software (R and Python) to streamline oceanographic data aggregation, and the dissemination of zooplankton data, which has improved ecosystem assessment data reporting in the field. Created user-friendly guides and manuals detailing processes, and provided comprehensive training for FOCI to enhance the accuracy and efficiency of data processing procedures, and summation communication at sea.

Knowledge, Skills, and Abilities:

- ✓ In-depth knowledge of biological science, limnology, and physiology, including interactions between zooplankton, other organisms, and the environment.
- ✓ Understanding zooplankton species, their life cycles, behaviors, and ecological roles within marine food webs is profound.
- ✓ Proficiency in developing, and conducting scientific research, including data collection, analysis, and interpretation.
- ✓ Proficient in planning, and executing field sampling expeditions, including collecting specimens from various marine regions.
- ✓ Strong analytical skills, including statistical procedures, quantitative analysis, and data processing using modern analytics software tools such as R, Python and Excel.
- ✓ Strong organizational skills for managing data, specimens, and ecological research activities in the field and laboratory.
- ✓ Proven collaboration capacity with multidisciplinary teams, including computer scientists, and researchers from various fields.

Supervisor: Dr. Elizabeth Logerwell, NOAA (206-526-4231); Dean Szumylo, Lynker (508-523 - 9443)

University of Washington, School of Oceanography **06/2018 – 9/2018**
1501 NE Boat St, Seattle, WA 98195, United States **02/2021 – Current (Intermittent)**
Full-Time, Hours Per Week: 40

RESEARCH ASSISTANT – Biological Oceanography

Research Experience:

- ❖ Awarded the prestigious National Science Foundation Research Experience for Undergraduates Internship during the summer of 2018, which provided valuable research experience and exposure to limnology, general zoology, ecology, oceanography and biological science as it relates to the study of zooplankton ecology and dynamics.

- ❖ Led in the development of research strategies and project objectives through formulated hypothesis and research questions which complimented ongoing research by the group's primary investigator, Dr. Julie Keister. Evaluated research outcomes, adjusted strategies accordingly, and supported the formulation of project roadmaps and long-term research plans to achieve research goals.

- ❖ Conducted ecological research in the North Pacific Puget Sound marine ecosystem. Responsible for collecting specimens, recording ecological data into spreadsheets and databases, and identifying zooplankton to assist with field and laboratory processing of ecological specimens.
- ❖ Used modern analytics software (R, Python, Excel) for the statistical and quantitative analysis of ecological data to understand the relationship between oceanographic conditions, and the ecosystem's living marine resources including zooplankton, jellies, and fish.

- ❖ Recognized for outstanding ecological research contributions, and featured on the University of Washington's homepage, demonstrating strong knowledge of zooplankton dynamics and ecology, showcasing the impact of my work.
    - o Search: Deana Crouser Sea Lessons, for more information.

Image Analysis:

- ❖ Acquired proficiency in the design and construction of environmental sensors, specifically cameras, and the development of deployment methods, such as, drifter apparatus for the collection of ecological data and image analysis. Employed these skills to capture images and videos of zooplankton in their natural environment, contributing valuable data to the teams' research endeavors.

- ❖ Utilized net-derived data, and modern analytics software (Python and R) for in-situ image analysis. Conducted literature reviews, and gathered relevant scientific articles for the development of a research paper exploring the "Effects of low oxygen levels on copepod size distribution with depth in Hood Canal", which is intended for publication.

- ❖ Mentored and guided JISAO/CICOES intern in their research project exploring zooplankton dynamics through the use of in-situ image analysis, fostering their professional development during a global pandemic.

- ❖ Acted as point of contact for graduate student, addressing questions and concerns regarding the implementation of artificial intelligence (AI) and machine learning (ML) effectively. Championed for a collaborative and inclusive work environment, promoting teamwork, and knowledge sharing.

Project Management and Communication:

- ❖ Coordinated interdisciplinary efforts across research projects, fostering cross-functional collaboration through participation in 2021 NOAA GPU Hackathon. Managed research project timelines, ensuring deadlines were met. Created and maintained project schedules, optimized task allocation, and resource management.

- ❖ Collaborated effectively with team members and researchers to exchange ideas and information. Engaged in clear and concise communication with colleagues and superiors. Facilitated discussions and presented findings during invited research presentations and maintained open lines of communication with peers and superiors to address project-related challenges promptly.

Knowledge, Skills, and Abilities:

- ✓ Exposure to the NSF REU Fellowship program showcasing a solid foundation in research methodologies and the ability to contribute to scientific publications.
- ✓ Profound understanding of biological science, ecology, marine ecosystems, and oceanographic conditions gained through research and hands-on experience.
- ✓ Experienced in laboratory techniques related to fishery biology, including 500+ hours microscopy, sample preparation, and recording ecological data in spreadsheets and databases (Tableau).
- ✓ Considered an expert in performing image analysis as an individual who supervised performance of this task, and is consulted by other workers to assist in the training of this task.
- ✓ Strong written and verbal communication skills, as demonstrated by being featured on the University of Washington homepage, and ability to present complex scientific concepts to diverse audiences.
- ✓ Collaborative team player, comfortable working alongside peers and supervisors in novel research settings.
- ✓ Effective problem solver, capable of addressing challenges and adapting research methods.

Supervisor(s): Dr. Julie Keister (jkeister@uw.edu), Dr. Daniel Grunbaum (random@uw.edu)

University of Washington, School of Oceanography **01/2019 – 09/2019**
1501 NE Boat St, Seattle, WA 98195, United States
Full-Time, Hours Per Week: 40

RESEARCH ASSISTANT – Chemical Oceanography

Conducted stable and radioisotope carbon measurements to investigate biogeochemical cycles. Demonstrated proficiency in traditional CO2 (to DIC) conversion techniques and analytical equipment. Maintained high precision and accuracy during data collection and analysis—executed experiments according to established protocols and research objectives. Assisted in designing and planning experiments to achieve specific research goals. Evaluated research outcomes critically and adjusted strategies as needed. Collaborated with the research team to identify potential challenges and devise solutions, contributed to long-term research planning and project roadmap development. Conducted intricate stable and radioisotope carbon measurements involving a complex 50+ step process, lasting over an hour for each sample.

Supervisor(s): Dr. Paul Quay (pdquay@uw.edu)

EDUCATION

B.S. Oceanography, University of Washington, College of the Environment (3.46 GPA)	**2017 – 2019**
General Studies, Edmonds Community College, Lynnwood (3.20 GPA)	**2016 – 2017**
Environmental Engineering, University of Tennessee, Chattanooga (3.09 GPA)	**2016**
Associate of Science, Dalton State College, Dalton, Georgia (3.08 GPA)	**2013 – 2015**

PUBLICATIONS: IN PREPARATION

- **2019,** Undergraduate Thesis Paper, "Effects of Low Oxygen Levels on Copepod Size Distribution with Depth in Hood Canal" - Intended Journal: Journal of Plankton Research
- **2022,** NPRB Research Project, "Effect of global warming on long-term changes in copepod size in the Gulf of Alaska and Bering Sea." - Intended Journal: Journal of Plankton Research

OTHER PUBLICATIONS (NO REFEREED JOURNALS)

DG Kimmel, D Crouser. 2020-2022. Current and Historical Trends for Zooplankton in the Bering Sea / Western Gulf of Alaska. Ecosystem Status Report. In Stock assessment and fishery evaluation report for the groundfish resources of the GOA and BS/AI. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306 Anchorage, AK 99501

PRESENTATIONS

- **2023,** North Pacific Marine Science Organization (PICES) talk, "Changes in copepod size in response to warm and cold conditions in the eastern Bering Sea during Spring."
- **2023,** Alaska Marine Science Symposium Poster Presentation, "Changes in copepod size in response to warm and cold conditions in the eastern Bering Sea: NPRB Project number 2008."

- **2022,** Ocean Sciences Meeting Poster Presentation, "Deep learning approach for automatically processing zooplankton image data."
- **2022,** Salish Sea Ecosystem Conference Traditional Presentation, "Effects of Low Oxygen Levels on Copepod Size Distribution with Depth in Hood Canal

INVITED PRESENTATIONS

- **Crouser, D.C. 2022.** "Image Classification and Machine Learning in Oceanography" University of Washington's Friday Harbor Laboratories Spring Larval Biology Class, Jul 2023.
- **Crouser, D.C. 2022.** "Environmental Monitoring at NOAA's Alaska Fisheries Science Center" Ocean 161 Introduction to Environmental Monitoring and Technology, University of Washington, Jan & Oct 2022-2023.
- **Crouser, D.C. 2021.** "Plankton Automation: Bringing AI and Machine Learning to Zooplankton Ecology," 3rd Annual NOAA AI Workshop – Hackathon Showcase & Discussion. September 2021.
- **Crouser, D.C. 2021**. "Let's Talk about Fish Food! Zooplankton in the Eastern Bering Sea", University of Washington, Students Explore Aquatic Sciences (SEAS) Open House. May 2021.
- **Crouser, D.C. 2021**. "Let's Talk about Fish Food! Zooplankton in the Eastern Bering Sea", NOAA LIVE! Alaska Webinar Series. February 2021.
- **Crouser, D.C. 2020.** "Effects of Climate Change on Zooplankton Communities" NOAA's EcoFOCI Seminar Series, Seattle, WA. December 2020.
- **Crouser, D.C. 2020.** "Conversations with a Zooplankton Ecologist," The Bronx High School of Science Marine Science Class, July 2020.

PROFESSIONAL MEMBERSHIP AND SERVICE EXPERIENCE

Member, Association for the Sciences of Limnology and Oceanography (ASLO) **2022 – Present**

Board Member, Public Sensors (PublicSensors.org) **2020 – Present**

- Provide consultation regarding science education communication for K-12 students.
- Assist in creating video tutorials and handouts for sensor building.
- Participate in outreach events to introduce minority students to oceanography, building sensors, and the scientific method by guiding at-home science experiments.

Member, American Fisheries Society **2019 – Present**

- Team member of the AFS Climate Ambassador Program, a network of skilled climate science
- Communicators whose goal is to raise awareness as to the effects of climate change.

Member, Society of Women in Marine Science (SWIMS) **2019 – Present**

- Active participant in the SWIMS Mentoring program

Volunteer, Washington Ocean Acidification Center Cruise **2019**

- Collected and prepared 191 Dissolved Inorganic Carbon samples for processing.

Board Member, Women in Science and Engineering Collective (WiSE) **2019**

- Planned 2nd annual Pre-Collegiate Summit for 9th-12th-grade girls and minorities interested in STEM fields.
- Developed hands-on demonstrations of various areas of STEM and led 16 laboratory tours to introduce students to research.

- Guest Speaker for Issaquah High School WiSE club following Pre-Collegiate Summit.

Outreach Director, Women in Chemical Engineering **2018 – 2019**

- Panelist at Lake Sammamish High School Pathway to STEAM Night, 300+ students
- Coordinated 8 outreach events for 1000+ K-12 students, creating 20 student volunteer opportunities.
- Represented Women in Chemical Engineering in the Women in Science and Engineering Collective, a group of representatives from women-focused registered student organizations in science and engineering disciplines like Chemistry, Aerospace, Mechanical Engineering, and the Society of Women Engineers.

Historian and Member, Society of Advancing Chicano and Native Americans in Science (SACNAS, UW) **2017 – 2019**

- Attended outreach events as a volunteer representing SACNAS, 600+ students
- Maintained social media accounts and websites and photographed outreach activities and general meetings.
- Received Undergraduate Travel Scholarship to attend the 2018 SACNAS National Conference in San Antonio, Texas.

Member, Women in Chemical Engineering **2017 – 2018**

- Organized and volunteered at 'Introduce a Girl Series' 2017-19, providing science-themed demonstrations to 250+ K 12 girls/year.
- Organized and demonstrated the physics of atmospheric science at Engineering Discovery Days (2018-2019) for 1000+ K-12 students/year.

Member, American Institute of Chemical Engineers **2017 - 2018**

- Demonstrated the power of polymers at Engineering Discovery Days (2017) to show 1000+ K-12 students engineering principles.

MENTORING

Mentor of UCSC Department of Ecology and Evolutionary Biology student **2021**

Mentor of JISAO/CICOES Intern from Monterey Peninsula College **2019**

RESEARCH CRUISE EXPERIENCE

UAF's Sikuliaq, Arctic, Distributed biological Observatory Cruise **2023**

NOAA'S Oscar Dyson (R-224), Gulf of Alaska, Spring Larval Cruise **2023**

NOAA'S Oscar Dyson (R-224), Bering/Chukchi Sea, Fall Mooring/DBO Cruise **2022**

NOAA'S Oscar Dyson (R-224), Bering Sea, Spring Mooring Cruise **2022**

NOAA'S Oscar Dyson (R-224), Bering Sea, Spring Mooring Cruise **2021**

UW's Rachel Carson, Puget Sound, Washington Ocean Acidification Cruise **2019**

UW's Rachel Carson, Hood Canal, Senior Thesis Cruise **2019**

UW's Rachel Carson, Hood Canal, Summer Internship Cruise **2018**

HONORS AND AWARDS

Lynker's Annual Excellence Award **2023**

PICES Ocean Monitoring Service Award **2021**

AFSC Staff Member of the Quarter (Q2) **2021**

University of Washington's Dean's List **2019**