

**Meghan M. Holst**

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**EDUCATION**

<u>University of California, Davis</u> Ph.D. Ecology, Conservation Biology	2020-Present Expected Completion: Fall 2023
<u>San Francisco State University</u> M.S. Biology, Physiology and Behavioral Biology	2018-2020
<u>Oregon Coast Community College, Aquarium Science Program</u> Certificate Aquarium Science <i>Honors</i>	2014-2015
<u>Oregon State University</u> B.S. Biology, Marine Biology Option <i>Cum Laude</i>	2010-2014
<u>Off-Campus Undergraduate Programs</u> Coastal Marine Ecology, Hatfield Marine Science Center Tropical Marine Ecology, CIEE Bonaire, Dutch Caribbean	3-6/2013 9-12/2013

**PROFESSIONAL EXPERIENCE**

<b>Graduate Student Researcher</b> University of California, Davis	9/2022
<ul style="list-style-type: none"> <li>• Manage the Dutch Slough Restoration project funded by California Department of Water Resources</li> <li>• Lead field sampling of fish via seining for continued fish recovery monitoring</li> <li>• Lead water quality measurements to coincide with fish presence</li> </ul>	
<b>Podcast Co-Host</b> Sharkpedia	4/2021 – present
<ul style="list-style-type: none"> <li>• Biweekly science podcast that evaluates and discusses a publication of elasmobranch research</li> <li>• Interview experts or primary authors of the literature discussed to interpret to the general public</li> <li>• Provide a better, more scientific understanding of sharks and their importance to ocean ecology</li> </ul>	
<b>Co-Founder and Executive Director</b> Minorities In Aquarium & Zoo Science Inc. (MIAZS) <i>MIAZS.org</i>	4/2021 – present
<ul style="list-style-type: none"> <li>• Founded and lead an organization dedicated to removing social and financial barriers to BIPOC professionals interested in aquarium or zoo science</li> <li>• Networking BIPOC professionals to develop an inclusive network of aquarium and zoo scientists</li> <li>• Actively seeking non-profit status to provide scholarship funding for college programs, conference attendance, and professional development workshops for BIOPOC members of MIAZS</li> </ul>	

<b>Senior Biologist</b> Aquarium of the Bay Animal Care Research Biologist <i>San Francisco, CA USA</i>	8/2017 – 9/2022
<ul style="list-style-type: none"> <li>● Principal Investigator for all ongoing research projects at Aquarium of the Bay</li> <li>● Manage a portfolio of complex research on a diversity of habitats, rare and protected species</li> <li>● Perform full spectrum research activities, including development of short and long-term plans, analysis of proposed research preparation of cost and resources</li> <li>● Oversee and control efforts to support research projects, procurement, development, and testing of research studies implementation planning, and publication in peer-reviewed scientific literature</li> <li>● Serve as subject matter expert on conservation biology, marine ecology, natural resources, and environmental sciences to synthesize complex scientific information into a variety of scientific publications and public outreach materials</li> <li>● Oversee and manage complex field operations, including overseeing and mentoring a large team of field staff engaged in diverse, and at times risky operations</li> <li>● Lead biology team on the facilities research vessel while developing captain skills and fulfilling captain licensing requirements</li> <li>● Lead conservation ecology research of the broadnose sevengill sharks, <i>Notorynchus cepedianus</i></li> <li>● Designed comparative physiology studies of leopard shark, <i>Triakis semifasciata</i>, stress response</li> <li>● Evaluated the behavior and physiology of reproductive octopuses to evaluate reproductive ecology</li> <li>● Spearheaded international assessments of cephalopod behavior via intensive species-specific surveys</li> <li>● Evaluated novel Pacific spiny lumpsucker, <i>Eumicrotremus orbis</i>, reproductive behavior and ontogenetic development of young</li> <li>● Evaluated burrowing octopus, <i>Muusoctopus leioderma</i>, gamete deposition and long-term behavior</li> <li>● Developed virtual educational programming for Bay Area schools during the COVID-19 shutdown</li> <li>● Provide daily husbandry care and exhibit maintenance and interpret species to the general public</li> <li>● Mentor volunteers and interns assigned under my direction</li> </ul>	
<b>Aquarist/Biologist</b> Oregon Coast Aquarium Fish and Invertebrate Aquarist <i>Newport, OR USA</i>	5/2016 – 7/2017
<ul style="list-style-type: none"> <li>● Provided daily husbandry care and exhibit maintenance including animal feeds, cleaning, health monitoring and environmental sampling for rocky intertidal marine fish and invertebrates</li> <li>● Led diver in AAUS aquarium dive program for collections and acquisitions of incoming animals</li> <li>● Committee chair of the aquariums Animal Enrichment Committee, leading committee and day event</li> <li>● Implemented new enrichment programs for various species including the Giant Pacific Octopus</li> <li>● Assisted in a variety of animal treatments and procedures such as tube feeding, blood draws, etc.</li> <li>● Led design and execution in exhibit remodels and new display environments</li> <li>● Executed rockfish and Sea Star Wasting surveys via underwater transects</li> <li>● Lead aquarist in research regarding Sea Star Wasting Syndrome at Oregon Coast Aquarium</li> <li>● Interpret gallery to guests and colleagues in an inspirational, informative, and meaningful manner</li> </ul>	
<b>Aquarium Educator</b> Oregon Coast Aquarium Sleepover Educator <i>Newport, OR USA</i>	1/2017- 7/2017
<ul style="list-style-type: none"> <li>● Interacted with and directed participants ages 6 and older of groups up to 60 people</li> <li>● Set expectations and enforces policies and protocols with sleepover groups</li> <li>● Prepared and teaches various activities such as educational scavenger hunts, classroom programs, behind-the-scenes tours and other activities</li> <li>● Managed student and guardian behavior in a positive and unflappable manner</li> </ul>	

<ul style="list-style-type: none"> <li>Remained calm in difficult social situations or in the event of an emergency</li> </ul>	
<b>Divemaster</b> BottomdwellersInc and Oregon State University <i>Corvallis, OR USA</i>	2/2012 – 7/2017
<ul style="list-style-type: none"> <li>Led educational tours for students from Discover SCUBA to Divemaster courses</li> <li>Executed exceptional judgment and followed safety protocols with students under cold conditions</li> <li>Interpreted wildlife to students and a divers role in advocating and protecting wildlife</li> <li>Managed students and subordinates with PADI standards, feasibility, and skill level</li> <li>Extensive dry suit experience with dry suit certification. Assisted teaching dry suit skills to students</li> <li>Proven resistance to motion sickness aboard various vessels, from zodiacs to R/V vessels</li> <li>Accurately filled out dive logs and assisted students in understanding and filling out dive logs</li> </ul>	
<b>Aquarist and Research Technician</b> Sinnhuber Aquatic Research Laboratory (SARL) Oregon State University <i>Corvallis, Oregon USA</i>	10/2015 – 4/2016
<ul style="list-style-type: none"> <li>Provided primary husbandry care and research support in a high throughput biomedical zebrafish research facility, adhering to strict biosecurity protocols</li> <li>Performed histological sample preparation, assist in the maintenance of mutant and transgenic zebrafish lines, larval rearing, and large scale embryo production</li> </ul>	
<b>Seasonal Aquarist</b> Oregon Coast Aquarium Fish and Invertebrate Seasonal Aquarist <i>Newport, OR USA</i>	6/2014 – 10/2014, 6/2015-10/2015
<ul style="list-style-type: none"> <li>Experience and aptitude with mechanical life support systems, including maintenance and operation</li> <li>Primary responsibilities included coverage for all galleries including jelly culture and displays as well as responsible for medications and medical procedure assistance in hospital/quarantine wing</li> <li>Strong attention to detail as part of daily routine, and in high risk situations</li> <li>Regularly participated in exhibit dive maintenance using surface supplied, SCUBA, and OTS Guardian full face mask modes</li> <li>Assisted in offshore diving for fish and invertebrate collection and transport (e.g. <i>Mola mola</i>, shellfish, rockfish etc)</li> </ul>	
<b>Fish and Invertebrate Intern</b> Oregon Coast Aquarium Fish and Invertebrate Husbandry department <i>Newport, OR USA</i>	6-8/2013
<ul style="list-style-type: none"> <li>Participated in husbandry maintenance of tropical and temperate marine fish and invertebrates</li> <li>Primary areas of responsibility were jelly culture, jelly exhibit maintenance, and assisting in the medical/quarantine wing for procedures including tube feeding, blood draws, necropsies, etc.</li> </ul>	

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## RESEARCH EXPERIENCE

### Research Assistant

10/2014-10/2015

Fisheries Oceanography Lab, Hatfield Marine Science Center  
*Newport, Oregon USA*

Assisted with the National Science Foundation-funded project “Observations on Subtropical Trophodynamics of Ichthyoplankton.” Identified and cataloged a large data set of images (~500,000) of marine plankton collected by the *In Situ* Ichthyoplankton Imaging System in the

Straits of Florida. Processed plankton samples collected by a Multiple Open-Closing Net Environmental Sampling System, with an emphasis on removing larval fish.

3/2013-6/2013

**Student Researcher**

Intertidal Marine Ecology, Hatfield Marine Science Center  
Newport, Oregon USA

Completed an independent research project investigating the prey, the common periwinkle snail (*Littorina littorea*), grazing response to the presence of a predator, the red rock crab (*Cancer productus*).

9/2013-12/2013

**Student Researcher**

Tropical Marine Biology and Conservation CIEE  
Kralendijk, Bonaire Dutch Caribbean

Performed AAUS SCUBA diving methods for fish and invertebrate surveys using underwater video, with experience with video editing. Additionally completed an independent research project investigating the importance of defecation behavioral differences between parrotfish species.

**Research Volunteer**

Menge Lab, Oregon State University  
Corvallis, Oregon USA

Prepared algal samples and recorded sample data for analysis of algal nutrient uptake along Oregon coast and how upwelling's and climate shifts impact algal communities.

10/2011-6/2013

**Marine Biology Researcher**

Computational Mechanics and Design Lab, Oregon State University  
Corvallis, Oregon USA

Collected, analyzed, and prepared blubber samples from various whale species and collaborated with engineers and scientists for improved, species specific whale tag designs.

10/2012 – 3/2013

**Alaska Whale Foundation Intern**

Five Finger Lighthouse, Fredrick's Sound, Alaska USA

Collected humpback whale bioacoustic samples via hydrophones and marked humpback and vessel location via theodolite, supporting research dedicated to investigating impacts of vessel traffic on humpback behavior.

7-8/2012

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**PUBLICATIONS**

1. **Holst MM**, Hauver CM, Stein RS, Milano BL, Levine LH, Zink AG, Watters JV, Crook RJ (2022) Behavioral changes in senescent giant Pacific octopus (*Enteroctopus dofleini*) are associated with peripheral neural degeneration and loss of epithelial tissue. *Journal of Comparative Biochemistry and Physiology, Part A*. DOI: 10.1016/j.cbpa.2022.111263
2. **Holst M** & Miller-Morgan T (2020) The use of a species-specific health and welfare assessment tool for the giant Pacific octopus, *Enteroctopus dofleini*. *Journal of Applied Animal Welfare Science*. DOI:10.1080/10888705.2020.1809412

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**PRESENTATIONS & GUEST LECTURES**

**Holst M.** “Behavioral and physiological metrics of sensory decline and welfare in senescent giant Pacific octopus, *Enteroctopus dofleini*.” Regional Aquatics Workshop (RAW). Moody Gardens. Galveston, TX. 23 February 2022.

- Received “Best Of Raw” award.

**Holst M, Schiffman D, Bangley C.** “Shark Friends Career Q&A”. University of Miami, Sharks and Rays course. Virtual invited lecturer. March 2022.

**Holst M.** “Shark fisheries, management, and conservation.” Humboldt State University. Biology of Sharks and Rays course. Virtual invited lecturer. February 2022.

**Holst M.** “Shark fisheries, management, and conservation.” University of California, Davis. Fish Biology and Conservation course. Virtual invited lecturer. October 2021.

**Holst M.** “Shark fisheries, management, and conservation.” University of California, Davis. Fish Biology and Conservation course. Virtual invited lecture. October 2021.

**Holst M.** “Implications of the Physiological Changes During Senescence on the Welfare of Giant Pacific Octopus, *Enteroctopus dofleini*.” The Cephalopod Symposium. Seattle, WA. 24 April 2019. Oral Presentation

**Holst M.** “Applying Research-Based Concepts to the Welfare Interpretation of the Giant Pacific Octopus.” Association of Zoos and Aquariums (AZA) Annual Conference. Seattle, WA. 27 September 2018. Oral Presentation.

**Holst M.** “Applying Vertebrate Concepts to Invertebrates for Long-term Health and Conservation.” Regional Aquatics Workshop (RAW). New England Aquarium. Boston, MA. 12 May 2017. Oral Presentation.

**Holst M.** “Stress Interpretation via Behavioral Analysis of Octopus.” International Marine Animal Trainers’ Association (IMATA). Oregon Coast Aquarium. Newport, OR. 25 April 2017. Oral Presentation.

**Holst M.** “Stress Interpretation via Behavioral Analysis of Octopus.” Octopus Symposium and Workshop. Seattle Aquarium. Seattle, WA. 19 April 2017. Oral Presentation.

\***Atkinson M, Buster M.** “Sketch It Up: An In-house Approach to LSS Design and Development.” Aquatic Animal Life Support Operators Workshop (AALSO). The Newport Aquarium. Newport, KY. 2 April 2015. Poster Presentation.

\***Atkinson M, Buster M, Hannum R, Hansen C.** “Sketch It Up: An In-house Approach to LSS Design and Development.” Regional Aquatics Workshop (RAW). Monterey Bay Aquarium. Monterey Bay, CA. 4 March 2015. Oral Presentation.

- Received “Best Of Raw” award.

\***Atkinson M.** “Influence of habitat on defecation behavior of queen (*Scarus vetula*) and princess (*Scarus taeniopterus*) parrotfish. CIEE Research Station public student research symposium. Bonaire, Dutch Caribbean. 21 November 2013. Oral Presentation.

\***Atkinson M, Beazley M, Derlacki T.** “The Fear Factor: Prey Grazing Response in Presence of Predators.” Hatfield Marine Science Center student symposium. Newport, OR. 4 June 2013. Oral Presentation.

\*Please note previous maiden name is Atkinson

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## ACADEMIC AWARDS AND SCHOLARSHIPS

<u>Best of RAW (top 10 conference presentation at the Regional Aquatics Workshop)</u>	2015, 2022
<u>Save Our Seas Foundation</u> Small Grant Award (application: sevengill shark conservation research)	2022
<u>The Company of Biologist</u> Travel Grant Award (application: process sevengill shark blood samples)	2022
<u>Oregon Coast Community College</u> Aquarium Science Scholarship Dean's List	2015 2014-2015
<u>Oregon State University</u>	
Cum Laude	2014
University Honor Roll	2010-2014
Provost Scholar	2010-2014
Gillman Scholar	2013
Association for Women in Science Award and Scholarship	2010-2011

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## MEMBERSHIPS

Marine Technology Society	2013-2014
PADI Professionals	2012-present
Alpha Lambda Delta Honor Society	2010-2014

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## RELEVANT SKILLS

Field Techniques: Small boat operation, hydrophone maintenance and operation, underwater videography and photography, AAGRA and REEF protocol, underwater and intertidal point intercept, quadrat, transect, and visual surveys

Laboratory Techniques: Dissection microscopy, fish and invertebrate research husbandry and setup, and laboratory sterilization and sterile techniques,

Data analysis programs: R, Prism, MiniTab Statistics, RavenPro, Microsoft (Excel, Word, Access, Powerpoint), Coral Point Count (CPC)

### Certifications

Divemaster 304241 Certified 2/2012  
AAUS Scientific Diver  
DAN: Oxygen Provider, First Aid, CPR, and Emergency First Responder  
Level 1 and Level 2 AALSO Life Support Operator

Diving Experience: Video surveying, Guardian Full face mask OTS, surface supply diving, dry suit diving, AAUS scientific diving, aquarium habitat diving, boat diving, deep diving, night diving, altitude diving, drift diving, mapping