

# AMELIA L. RITGER

Ecology Evolution and Marine Biology, UC Santa Barbara, Santa Barbara, CA 93106

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## EDUCATION

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### University of California, Santa Barbara

2021 – present Ph.D., Ecology Evolution and Marine Biology (anticipated June 2025)

2018 – 2021 M.A., Ecology Evolution and Marine Biology  
Advisor: Gretchen Hofmann

### Dartmouth College

2011 – 2015 B.A., Biology; Anthropology modified with Environmental Studies, GPA: 3.66, *cum laude*

## PROFESSIONAL EXPERIENCE

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### Research

2021 – 2024 **Santa Barbara Coastal LTER Graduate Student Researcher**

Dr. Robert Miller – UC Santa Barbara (Santa Barbara, CA)

2016 – 2018 **Research Assistant**

Dr. Daniel Kronauer – Rockefeller University (New York, NY)

2015 – 2016 **James B. Reynolds Scholar**

Caribbean Marine Biological Institute (Curacao, Dutch Antilles)

2014 **Junior Research Scholar**

Mentor: Jessica V. Trout-Haney

Dr. Kathryn L. Cottingham – Dartmouth College (Hanover, NH)

2014 **CCMI Research Experience for Undergraduates (REU) Intern**

Dr. Thomas K. Frazer – Central Caribbean Marine Institute (Little Cayman, British West Indies)

2014 **Dartmouth Biology Foreign Study Program (FSP) student**

Dr. Ryan Calsbeek, Dr. Matthew Ayres, and Dr. Celia Chen (Costa Rica & Little Cayman, BWI)

2013 **Lab and Field Assistant**

Dr. Seth D. Dobson – Caribbean Primate Research Center (Cayo Santiago, Puerto Rico)

2012 – 2013 **Sophomore Science Scholar**

Mentor: Samuel B. Fey

Dr. Kathryn L. Cottingham – Dartmouth College (Hanover, NH)

### Mentorship

2024 **Lili O'Donnell** (UC Santa Barbara): *Study on the effects of marine heatwaves on C. californica*  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)

2024 **Brock Larrick** (UC Santa Barbara): *Study on the effects of marine heatwaves on C. californica*  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)

2024 **Leila Schorno** (UC Santa Barbara): *Study on the effects of marine heatwaves on C. californica*  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)

2024 **Saanvi Tiwary** (UC Santa Barbara): *Study on the effects of marine heatwaves on C. californica*  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)

2023 – 2024 **Sanjana Sujeet** (UC Santa Barbara): *Study on the effects of marine heatwaves on C. californica*

- Faculty Research Assistance Program, UCSB (Santa Barbara, CA)
- 2022 **Ricardo Hernandez** (Georgia State University): *The Heat is on: Evaluating the intraspecific variation of *Corynactis californica* in response to marine heatwaves*  
Ocean Global Change Biology REU, UCSB (Santa Barbara, CA).
- 2022 **Ryan Wang** (UC Santa Barbara): *Time series analysis of intertidal pH and temperature data*
- 2022 **Michelle Sun** (Basis Independent Silicon Valley): *Exploring Interactions between *Corynactis californica* and *Lytechinus pictus* in California Kelp Forests*  
Research Mentorship Program, UCSB (Santa Barbara, CA)  
*Current status:* Undergraduate student (Northwestern University)
- 2022 **Cody Busch-Weiss** (Laguna Blanca School): *Developing an Open-source pH Sensor to Monitor Ocean Acidification*  
Research Mentorship Program, UCSB (Santa Barbara, CA)
- 2021 – 2022 **Zoe Fung** (UC Santa Barbara): *Investigating the influence of interacting environmental mosaics on an abundant intertidal snail*  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)
- 2021 – 2022 **Doris Lius** (UC Santa Barbara): *Leveraging Marine Science Datasets for Integrated and Interactive K-12 Learning*
- 2021 **Aanchal Garg** (UC Santa Barbara): *Investigating the influence of interacting environmental mosaics on an abundant intertidal snail*
- 2021 **Kayla Caplin** (Paul D Schreiber High School): *The Influence of the Strawberry Anemone (*Corynactis californica*) on Purple Urchin Foraging Behavior*  
Research Mentorship Program, UCSB (Santa Barbara, CA)
- 2020 – 2021 **Ellyse Anderson** (UC Santa Barbara): *Will you be my neighbor? Ecological interactions between a corallimorph and kelp forest critters on the benthos*  
EEMB Senior Honors Program, UCSB (Santa Barbara, CA)  
Faculty Research Assistance Program, UCSB (Santa Barbara, CA)
- 2020 **Carlyn Hamel** (Pacific Ridge High School): *The Effects of *Corynactis californica* on the Foraging Behavior of Purple Urchins at Various Starvation States*  
Research Mentorship Program, UCSB (Santa Barbara, CA)  
*Current status:* Undergraduate student (University of California, Santa Barbara)
- 2019 **Xavius Boone** (UC Davis): *Urchin Starvation State May Amplify the Positive Interaction Between *Corynactis californica* and Macroalgae*  
Ocean Global Change Biology REU, UCSB (Santa Barbara, CA).  
*Current status:* Ph.D. graduate student (San Diego State University)

## Teaching

- 2025 **Graduate teaching assistant**  
ENVS 130C: Aquatic Food and Resource Management (UC Santa Barbara)
- 2022 **Graduate teaching assistant**  
ENVS 60: Applied Ecology (UC Santa Barbara)
- 2014 **Undergraduate teaching assistant**  
BIOL 27: Animal Behavior (Dartmouth College)

## FELLOWSHIPS & AWARDS

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2023	IEEE OCEANS 2023 Limerick Student Poster Competition – First Place
2023	Olympic Coast National Marine Sanctuary Special Recognition Award
2023	P.E.O. Scholars Award
2022	NSF Non-Academic Research Internships for Graduate Students: <i>Olympic National Park (National Park Service)</i>
2022	NSF Non-Academic Research Internships for Graduate Students: <i>Olympic Coast National Marine Sanctuary (National Oceanic and Atmospheric Administration)</i>
2021	UCSB Ecology, Evolution, and Marine Biology Storke Award
2018	NSF Graduate Research Fellowship Program
2014	NSF Central Caribbean Marine Institute Research Experience for Undergraduates
2012	Dartmouth Sophomore Science Scholarship

## RESEARCH GRANTS

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2024	Sigma Xi Grants in Aid of Research (\$1,000)
2024	UCSB Helen Hansma Research Accelerator Award (\$10,000)
2019 – 2024	UCSB Graduate Students Association Travel Grant (\$1,350)
2023	UCSB Associated Students Coastal Fund Minor Grant (\$2,000)
2023	Benioff Scholars Program in Applied Environmental Science (\$6,000)
2021	Schmidt Family Foundation Research Accelerator Award (\$8,000)
2020	UCSB Associated Students Coastal Fund Major Grant (\$15,740)
2015	James B. Reynolds Scholarship for Foreign Study (\$20,000)
2014	Dartmouth Undergraduate Research Grant (\$2,500)

## PUBLICATIONS

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### *In prep*

**Ritger, A.L.**, Jerde, C.L. Kraskura, K., Blanchette, C.A., and Hofmann, G.E. Intraspecific fitness and performance responses of a temperate corallimorph to realistic, simulated marine heatwaves. *Target journal: Global Change Biology. Anticipated submission date: March 2024.*

### *In press*

**Ritger, A.L.**, and Hofmann, G.E. Bringing Heatwaves into the Lab: A low-cost, open-source, and automated system to simulate realistic heating events in an experimental setting. *Limnology and Oceanography: Methods.*

Chan, K.Y.K., Kui, L., McDonald, A.M., **Ritger, A.L.**, and Hofmann, G.E. Coastal marine heatwaves in the Santa Barbara Channel: decadal trends and ecological implications. *Frontiers in Marine Science.*

### *Published*

**Ritger, A.L.**, and Burnett, D.C. 2024. A Wirelessly-Enabled, Power-Optimized, Low-Cost, and Open-Source Durafet-based pH Instrument for Continuous, Long Term Environmental Monitoring. OCEANS 2024 - Singapore. 1-6.

**Ritger, A.L.**, and Burnett, D.C. 2023. Developing Low-Cost, Simplified, and Open Source Durafet-based pH Instrument Electronics. OCEANS 2023 - Limerick, Limerick, Ireland. 1-7.

- Hart, T., Frank, D., Lopes, L.E., Olivos-Cisneros, L., Lacy, K.D., Tribble, W., **Ritger, A.**, Valdés-Rodríguez, S., and Kronauer, D.J.C. 2023. Sparse and stereotyped encoding implicates a core glomerulus for ant alarm behavior. *Cell* 186: 1-16.
- Ingeman, K.E., Zhao, L.Z., Wolf, C., Williams, D.R., **Ritger, A.L.**, Ripple, W.J., *et al.* 2022. Glimmers of hope in large carnivore recoveries. *Scientific Reports* 12(1): 1-13.
- Trout-Haney, J.V., **Ritger, A.L.**, Cottingham, K.L. 2021. Benthic cyanobacteria of the genus *Nostoc* are a source of microcystins in Greenlandic lakes and ponds. *Freshwater Biology* 66: 266-277.
- Ritger, A.L.**, Fountain, T.C., Bourne, K., Martín-Fernández, J.A., and Pierotti, M.E.R. 2020. Diet choice in a generalist predator, the invasive lionfish (*Pterois volitans/miles*). *Journal of Experimental Marine Biology and Ecology* 524: 151311.
- Chandra, V., Fetter-Pruneda, I., Oxley, P.R., **Ritger, A.L.**, McKenzie, S.K., Libbrecht, R., Kronauer, D.J.C. 2018. Social regulation of insulin signaling and the evolution of eusociality in ants. *Science* 361(6400): 398-402.
- Ritger, A.L.**, Curtis, A., and Chen, C.Y. 2018. Bioaccumulation of mercury and other metal contaminants in invasive lionfish (*Pterois volitans/miles*) from Curaçao. *Marine Pollution Bulletin* 131: 38-44.

## PRODUCTS

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- Open-source marine heatwave simulator – Raspberry Pi (<https://github.com/ameliaritger/MHWsim/>)
- Open-source pH sensor – Arduino (<https://github.com/ameliaritger/arduino-ph-sensor>)
- Shiny app – Marine Biodiversity Observation Network (<https://ameliaritger.shinyapps.io/mbon-shiny-app/>)
- Shiny app – Ocean Acidification Classroom Resource (<https://ameliaritger.shinyapps.io/intertidal-oa-module/>)

## MEETING PRESENTATIONS

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| 2024 | <i>Does variation matter? Intraspecific response and recovery of <i>Corynactis californica</i> to realistic, simulated marine heatwaves.</i> 105 <sup>th</sup> Annual Meeting of the Western Society of Naturalists (Portland, OR). Talk. |
| 2024 | <i>A Wirelessly-Enabled, Power-Optimized, Low-Cost, and Open-Source Durafet-based pH Instrument for Continuous, Long Term Environmental Monitoring.</i> OCEANS (Singapore). Talk.   |
| 2024 | <i>Resource Walk: Low-cost, open-source pH instrumentation.</i> Olympic Coast Ocean Acidification Site Symposium (Forks, WA). Talk.   |
| 2023 | <i>Bringing Marine Heatwaves into the Lab: How to engineer heating events in an experimental setting.</i> 104 <sup>th</sup> Annual Meeting of the Western Society of Naturalists (Monterey, CA). Talk.                                    |
| 2023 | <i>Developing Low-Cost, Simplified, and Open Source Durafet-based pH Instrument Electronics.</i> New Zealand Ocean Acidification Conference (Virtual). Talk.  |
| 2023 | <i>Developing Low-Cost, Simplified, and Open Source Durafet-based pH Instrument Electronics.</i> Washington Ocean Acidification Center Symposium (Seattle, WA). Poster.   |
| 2023 | <i>Developing Low-Cost, Simplified, and Open Source Durafet-based pH Instrument Electronics.</i> OCEANS (Limerick, Ireland). Poster.  |
| 2022 | <i>A Decade of Data: pH and temperature trends in the Santa Barbara Coastal LTER</i> Long Term Ecological Research All Scientists' Meeting (Asilomar, CA). Poster.  |
| 2021 | <i>Monitoring ocean acidification in California rocky intertidal habitats.</i> 102 <sup>nd</sup> Annual Meeting of the Western Society of Naturalists (Virtual). Poster.  |

- 2019 *Intraspecific variation in a clonal corallimorph alters purple urchin foraging behavior.* 100<sup>th</sup> Annual Meeting of the Western Society of Naturalists (Ensenada, Mexico). Poster.
- 2017 *Patterns of Mercury bioaccumulation in invasive lionfish (Pterois volitans/miles) from Curacao.* 13<sup>th</sup> International Conference on Mercury as a Global Pollutant (Providence, RI). Talk.
- 2015 *Friend or foe? Prey fish perception of predatory lionfish.* Karen E. Wetterhahn Science Symposium (Hanover, NH). Poster.

## **PUBLIC EDUCATION & OUTREACH**

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- 2024 Interview, Catalina Marine Society video project on ocean acidification (virtual)
- 2024 *The Olympic Coast as a Sentinel Site: Monitoring climate change impacts on purple olive snails and Pacific razor clams.* Makah Tribe community lunch (Neah Bay, WA).
- 2024 Guest scientist, Quileute Tribal School high school class (La Push, WA)
- 2024 *Unifying traditional knowledge and climate science to monitor climate change impacts on purple olive snails and Pacific razor clams.* Makah Tribe Ocean Policy Work Group (Neah Bay, WA).
- 2023 Guest scientist, Olympic Peninsula Academy middle school class (Sequim, WA)
- 2019 – 2022 Judge, Santa Barbara County Science and Engineering Fair. UCSB (Santa Barbara, CA; virtual)
- 2020 Interview a Scientist, Sci-Section Radio Show (radio/streaming/online)
- 2020 Guest scientist, Hollister Elementary School Pre-Kindergarten class (Goleta, CA)
- 2019 Science communicator, World Oceans Day Festival. Santa Barbara Museum of Natural History Sea Center (Santa Barbara, CA)
- 2016 *To Eat or Not to Eat? The diet of the Curacao lionfish and the woes of field research.* Caribbean Marine Biological Institute (Curacao, Dutch Antilles)
- 2014 *Friend or foe? Prey fish perception of predatory lionfish.* Central Caribbean Marine Institute (Little Cayman Island, BWI)

## **PROFESSIONAL SERVICE**

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### ***University and Departmental service***

- 2016 – 2024 Alumni Interviewer, Dartmouth Admissions Ambassador Program
- 2019 – 2022 UCSB EEMB Graduate Student Symposium Committee
- 2019 – 2022 UCSB EEMB Diversity, Equity, Inclusion and Wellness Committee
- 2019 – 2022 UCSB EEMB Diversity, Equity, Inclusion Working Group #2: Teaching & Curriculum
- 2022 UCSB EEMB Diversity, Equity, Inclusion Working Group #3: Climate & Anti-Racist Policies
- 2020 – 2021 UCSB American Association of University Women (AAUW) Mentorship Program
- 2020 – 2021 UCSB Associated Students Bike Shop Building Committee

### ***Reviewer for scientific journals***

*Ecology, Ethology*

### ***Reviewer for grant proposals***

NOAA/Marine Fisheries Initiative