

# Christina L Goethel

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## EDUCATION

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- 2017-Present      **Ph.D.** Marine and Estuarine Environmental Science, University of Maryland Center for Environmental Science, Maryland (Advisor: Dr. Jacqueline Grebmeier, Dissertation: “*Time-series focused assessments of changing marine bivalve communities in the Bering and Chukchi Seas*”)
- 2014-2016        **M.S.** Marine and Estuarine Environmental Science, University of Maryland Center for Environmental Science, Maryland (Advisor: Dr. Jacqueline Grebmeier, Thesis: “*Implications of Ocean Acidification for Three Pacific Arctic Bivalve Species*”)
- 2009-2013        **B.A.** Environmental Science and Policy with honors; Minor: Marine Science, Smith College, Massachusetts (Thesis: “*Effects of Elevated pCO<sub>2</sub> on the Calcification and Morphological Characteristics of the Coccolithophore *Emiliana huxleyi*: Implications of Ocean Acidification*”)
- 2011                **Sea Education Association (SEA) Semester**, Woods Hole, Massachusetts (Fall Semester Abroad)

## RESEARCH EMPLOYMENT

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- 2021-2022        **Fulbright Ministry Affairs Arctic Scholar – Iceland**
- 2014-Present     **Graduate Research Assistant**  
University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory, Solomons, Maryland, Dr. Jacqueline Grebmeier’s Lab
- 2013                **Student Summer Research Assistant**  
University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory, Solomons, Maryland
- 2013                **Summer Research Fellow**  
Smith College, Northampton, Massachusetts
- 2012                **National Science Foundation Research Experience for Undergraduates Intern**  
Western Washington University, Shannon Point Marine Center, Anacortes, Washington

## RESEARCH CRUISE EXPERIENCE

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- 2-24 October 2020      Nome, Alaska-Nome, Alaska, *Norseman II*, Distributed Biological Observatory Fall Cruise, Bering and Chukchi Seas, Benthic Team
- 23 August-27 September 2020    **Scheduled Participation/cancelled participation from COVID-19** Seattle, Washington-Kodiak, Alaska, *NOAA Ship Oscar Dyson R224*, Distributed Biological Observatory-Northern Chukchi Integrated Study and Ecosystems and Fisheries-

	Oceanography Coordinated Investigations Joint Cruise, Bering and Chukchi Seas, Benthic Team
1-24 July 2020	<i>Scheduled Participation/cancelled from COVID-19</i> Victoria, British Columbia, Canada-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, North Pacific, Bering, and Chukchi Seas, Benthic Team
4-24 August 2019	Nome, Alaska-Nome, Alaska, <i>USCGC Healy</i> , Distributed Biological Observatory-Northern Chukchi Integrated Study Cruise, Bering and Chukchi Seas, Benthic Team
11-23 July 2019	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
4-24 August 2018	Nome, Alaska-Nome, Alaska, <i>USCGC Healy</i> , Distributed Biological Observatory-Northern Chukchi Integrated Study and Ecosystems and Fisheries-Oceanography Coordinated Investigations Joint Cruise, Bering and Chukchi Seas, Benthic Team
13-24 July 2018	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
4-25 August 2017	Nome, Alaska-Nome, Alaska, <i>Norseman II</i> , Arctic Marine Biodiversity Observing Network Cruise, Bering and Chukchi Seas, Benthic Team Day Shift Lead
11-24 July 2017	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
9-21 July 2016	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
8 August -5 September 2015	Prudhoe Bay, Alaska-Wainwright, Alaska, <i>Norseman II</i> , Arctic Marine Biodiversity Observing Network Cruise, Bering and Chukchi Seas, Benthic Team
11-23 July 2015	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
11-23 July 2014	Dutch Harbor, Alaska-Barrow, Alaska, <i>CCGS Sir Wilfrid Laurier</i> , C30- Distributed Biological Observatory Cruise, Bering and Chukchi Seas, Benthic Team
29 July-15 August 2013	Dutch Harbor, Alaska-Barrow, Alaska, <i>USCGC Healy</i> , COMIDA-Hanna Shoal Ecosystem Study, Bering and Chukchi Seas, Benthic Team
15 November-24 December 2011	Honolulu, Hawaii-Kiribati-Raiatea-Papeete, Tahiti, <i>SSV Robert C. Seamans</i> , Sea Education Association Oceans and Climate
20-31 December 2006	Tierra del Fuego, Argentina-Antarctica, <i>M/V Polar Star</i> , Students on Ice Antarctic Expedition
22 July-5 August 2005	Reykjavik, Iceland-Greenland-Baffin Island, Canada, <i>M/V Explorer</i> , Students on Ice Arctic Expedition

## **TEACHING and MENTORING**

2020            **Adjunct Instructor – Fall 2020**  
 St. Mary's College of Maryland, St. Mary's, Maryland

- Co-instructor of ENST250 Introduction to Environmental Science
  - Syllabus and Course Development
  - Virtual/Hybrid Instruction during COVID-19 Pandemic
- 2018-2019      **Undergraduate Mentor for First Generation College Senior**  
 St. Mary's College of Maryland and Chesapeake Biological Laboratory, Maryland
- Mentor for senior project at St. Mary's College of Maryland; student presented their research at the Alaska Marine Science Symposium (January, 2019)
- 2017            **Teaching Assistant / Lab Instructor**  
 University of Maryland, College Park, Maryland
- The World of Biology – introductory biology course for non-science majors, two three-hour lab sections
- 2016-2017      **Undergraduate and National Science Foundation REU Mentor**  
 St. Mary's College of Maryland and Chesapeake Biological Laboratory, Maryland
- REU summer mentor for field work and project and senior project at St. Mary's College of Maryland; student presented their research at the ASLO Meeting (2017)
- 2015-2017      **High School Mentor and Tutor**  
 Ryken High School, St. Mary's, Maryland
- Biology, chemistry, and physics tutor for a student in their Junior and Senior year
- 2013            **Student Instructor**  
 Smith College, Northampton, Massachusetts
- Microscopy Course for University of Iraq Students
- 2012            **Teaching Assistant**  
 Smith College, Northampton, Massachusetts
- Marine Ecology
- 2011            **Camp Counselor**  
 Camp Favorite, Brewster, Massachusetts
- "Oceans of Opportunity" Program Lead

## **SCIENTIFIC PUBLICATIONS**

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- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2019. "Changes in abundance and biomass of the bivalve *Macoma calcarea* in the northern Bering Sea and the southeastern Chukchi Sea from 1998-2014, tracked through dynamic factor analysis models". 162: 127-136. Deep Sea Research Part II. <https://doi.org/10.1016/j.dsr2.2018.10.007>
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Miller, T.J., 2017. "Implications of ocean acidification in the Pacific Arctic: Experimental responses of three Arctic bivalves to decreased pH and food availability". Deep Sea Research Part II. 144: 112-124. <https://doi.org/10.1016/j.dsr2.2017.08.013>

## **OTHER PUBLICATIONS**

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- Determined to Be Extraordinary: Modern Women in Stem Book Project- Participant, in press and ongoing project. For more information please visit <https://www.modernwomeninstem.com/> or <https://www.facebook.com/ModernWomeninSTEM/>
- Bartlett-Browne, P., Cooper, L.W., Grebmeier, J.M., **Goethel, C.L.**, 2020. "Don't Clam Up - The Effects of Warming Seas on Respiration and Biomass." Lesson Plan using Distributed Biological Observatory Data and Resources.
- **Goethel, C.L.**, Brzezinski, S., 2020. "Happy as a Clam...or Not? – Ocean Acidification Experiment". Lesson Plan

## **ORAL PRESENTATIONS (\*\* invited talk)**

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- **\*\*Goethel, C.L.**, 2021. "Effects of ocean acidification on Pacific Arctic bivalves and implications for maritime heritage." Climate Change and Maritime Heritage: Interdisciplinary Perspectives, Virtual Conference. St. Mary's College of Maryland, St. Mary's, Maryland, and the Western Australian Museum, Perth, Australia.
- **Goethel, C.L.**, 2021. "(Un?) Happy as a Clam: A tale of clams in the Pacific Arctic". GradTerp Exchange, Virtual Seminar. University of Maryland, College Park, Maryland.
- Cooper, L.W., Grebmeier, J.M., Cooper, R.E., Gaffey, C., **Goethel, C.L.**, Maisch, J., Sandy, S., Shipton, P., Danielson, S., Iken, K., 2021. "Late season observations of productivity in the northern Bering and Chukchi Seas: Initial results from an October 2020 research cruise". Arctic Science Summit Week, Virtual Meeting, Lisboa, Portugal.
- Grebmeier, J.M., Cooper, L.W., **Goethel, C.L.**, Koch Wegner, C., Frey, K., Moore, S.E., 2021. "Ecosystem Changes in the Pacific Arctic: Multi-year studies within the Distributed Biological Observatory". Arctic Science Summit Week, Virtual Meeting, Lisboa, Portugal.
- Grebmeier, J.M., Cooper, L.W., **Goethel, C.L.**, Koch Wegner, C., Frey, K., Moore, S.E., 2021. "Ecosystem changes in the Pacific Arctic: A decade into the Distributed Biological Observatory approach". Alaska Marine Science Symposium, Virtual Meeting, Anchorage, Alaska.
- Cooper, L.W., Grebmeier, J.M., Cooper, R.E., Gaffey, C., **Goethel, C.L.**, Maisch, J., Sandy, S., Shipton, P., Danielson, S., Iken, K., 2021. "Late season observations in the northern Bering and Chukchi Seas: Initial results from an October 2020 research cruise". Alaska Marine Science Symposium, Virtual Meeting, Anchorage, Alaska.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Rowe, C.L., 2021. "Seasonal comparisons and effects of temperature on sediment oxygen consumption and individual dominant organisms in the northern Bering Sea". Alaska Marine Science Symposium, Virtual Meeting, Anchorage, Alaska.
- Grebmeier, J.M., **Goethel, C.L.**, Wegner, C., 2020. "Spectacled Eiders and Walruses: Is Their Food Changing?". Group Oral Presentation to the Indigenous Food Security Working Group. All three authors presented.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Rowe, C.L., 2020. "Sediment oxygen consumption in the Pacific Arctic: Impacts of increased temperature and food supply on the benthic community and individual dominant organisms". AGU/ASLO/TOS Ocean Sciences Meeting, San Diego, California.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Rowe, C.L., 2020. "Sediment oxygen consumption in the Pacific Arctic: Impacts of increased temperature and food supply on the benthic community and individual dominant organisms". 5<sup>th</sup> Distributed Biological Observatory (DBO) Data Workshop, Seattle, Washington.
- **Goethel, C.L.**, 2019. "Bivalve population shifts and contribution to overall benthic ecosystem". Update at the Open Planning Workshop for the Synoptic Arctic Survey, Woods Hole, Massachusetts.
- Grebmeier, J.M., Cooper, L.W., **Goethel, C.L.**, Kedra, M., Iken, K., 2019. "Pelagic-Benthic coupling in the Chukchi Sea ecosystem: A key part of the Arctic Marine Biodiversity Observing Network (AMBON)". Alaska Marine Science Symposium, Anchorage, Alaska.
- **Goethel, C.L.**, Swam, L.M., Grebmeier, J.M., Cooper, L.W., Frey, K.E., 2019. "Tracking benthic bivalve population shifts: Changes in recruitment and dominant size classes of *Macoma calcarea* and *Nuculana sp.* in the northern Bering Sea from 1998-2015". Alaska Marine Science Symposium, Anchorage, Alaska.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2017. "Decadal population trends of *Macoma calcarea* in the northern Bering sea and southeastern Chukchi Sea from 1998-2014". 4<sup>th</sup> Distributed Biological Observatory (DBO) Data Workshop, Seattle, Washington.
- **Goethel, C.L.**, Love, B., Peckol, P., 2013. "Effects of elevated pCO<sub>2</sub> on the calcification of the coccolithophore *Emiliania huxleyi*". National Conference on Undergraduate Research (NCUR), LaCrosse, Wisconsin.

## **POSTER PRESENTATIONS (\*undergraduate presenter)**

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- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Rowe, C.L., 2021. "Seasonal variations and effects of temperature on oxygen consumption rates within sediments and by dominant macrofauna in the Pacific Arctic". Arctic Science Summit Week, Virtual Meeting, Lisboa, Portugal.

- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., Rowe, C.L., 2020. “Sediment oxygen consumption in the Pacific Arctic: Impacts of increased temperature and food supply on the benthic community and individual dominant organisms”. Arctic Science Summit Week, 5<sup>th</sup> Arctic Observing Summit Virtual Meeting, Akureyri, Iceland.
- **Goethel, C.L.**, Swam, L.M., Grebmeier, J.M., Cooper, L.W., Frey, K.E., 2019. “Tracking benthic bivalve population shifts: Changes in recruitment and dominant size classes of *Macoma calcaria* and *Nuculana sp.* in the northern Bering Sea from 1998-2015”. Gordon Research Seminar and Gordon Research Conference on Polar Marine Science, Barga, Italy.
- \*Swam, L.M., **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2019. “Why the shift? A temporal analysis of *Nuculana spp.* abundance and size class in the northern Bering Sea from 2001-2015”. Alaska Marine Science Symposium, Anchorage, Alaska.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2018. “Changes in population dynamics of a key food web component, the bivalve *Macoma calcaria*, in the northern Bering Sea from 1998-2015 and its relation to rapidly changing environmental parameters”. AGU Fall Meeting, Washington, DC.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2018. “Decadal population trends of two Pacific Arctic clams as related to production”. POLAR18 and Arctic Science Summit Week, Davos, Switzerland.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2018. “Decadal population trends of two Pacific Arctic clams as related to production”. AGU/ASLO/TOS Ocean Sciences Meeting, Portland, Oregon.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2017. “Tracking changes in abundance, biomass, and dominant size class of the bivalve *Macoma calcaria* in the northern Bering Sea and southeastern Chukchi Sea from 1998-2012”. Gordon Research Seminar and Gordon Research Conference on Polar Marine Science, Ventura, California.
- \*Caradine-Taber, S., Grebmeier, J.M., Cooper, L.W., **Goethel, C.L.**, 2017. “Ecosystem changes in the benthos: length-weight measurements of four dominant bivalve species in the northern Bering Sea from 2012-2015”. The Association for the Sciences of Limnology and Oceanography Meeting, Honolulu, Hawaii.
- **Goethel, C.L.**, Grebmeier, J.M., Cooper, L.W., 2016. “A Time-series for Recruitment and Size Distributions of the Bivalve *Macoma sp.* in the Southern Chukchi Sea and Experimental Responses of Arctic Bivalves to pH and Food Manipulations”. AGU/ASLO/TOS Ocean Sciences Meeting, New Orleans, Louisiana.
- Lane, K., Peake, E., **Goethel, C.L.**, 2013. “Effects of climate change on the production of maple sugar in New England”. Smith College Celebrating Collaborations, Northampton, Massachusetts.
- **Goethel, C.L.**, Yerxa, H.M., 2012. “Biogeography of the myctophid in oxygen minimum zones in the Equatorial Pacific”. Smith College Celebrating Collaborations, Northampton, Massachusetts.
- **Goethel, C.L.**, Litwin, T., 2011. “Ecological and societal role of the Pacific walrus”. Smith College Celebrating Collaborations, Northampton, Massachusetts.

## **AWARDS and FELLOWSHIPS**

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2016-Present	Graduate Education Committee Travel Grant, Chesapeake Biological Lab, University of Maryland Center for Environmental Science (8 awards totaling \$5250)
2020	Graduate Student Summer Research Fellowship, University of Maryland and Marine and Estuarine Environmental Science Program (\$5000)
2020	International Arctic Science Committee (IASC) and Association of Polar Early Career Scientists Travel Award (€1100)
2019	Dean’s Fellowship, University of Maryland College of Computer, Mathematical and Natural Science (\$5000)
2019	International Conference Student Support Award, University of Maryland (\$500)
2018	National Science Foundation and Association of Polar Early Career Scientists Travel Award (\$2000)

- 2017 International Arctic Science Committee Travel Support (\$500)
- 2017, 2019 Jacob K. Goldhaber Travel Grant, University of Maryland (\$400 and \$600)
- 2016 Southern Association of Marine Lab Student Support Program Award (\$250)
- 2013 The Amey Randall Brown Prize for Best Essay on a Botanical Subject, Smith College, Northampton, Massachusetts
- 2013 Agnes Shedd Andrae Fellowship, Smith College Environmental Science and Policy Program
- 2013 Nancy Kay Holmes Fund for Continued Research for Graduating Seniors/Summer Research Fellowship, Biological Sciences, Smith College, Northampton, Massachusetts (\$5000)
- 2013 Tomlinson Fund Award for Honors Research, Smith College, Northampton, Massachusetts (\$500)
- 2011-2013 Academic All-Conference Smith College Swimming and Diving Team
- 2010-2013 Dean's List, Smith College, Northampton, Massachusetts
- 2009-2011 STRIDE Scholar, Smith College, Northampton, Massachusetts (\$34,200, tuition and stipend)
- 2009 Congressional Award: Bronze Certificate, Silver Certificate, Gold Certificate, Bronze Medal, Silver Medal, United States Congress  
 - Hours for four categories achieved for Silver Medal Level  
     Voluntary Service: 200 hours  
     Personal Development: 100 hours  
     Physical Fitness: 100 hours  
     Expedition or Exploration: 2 nights/ 3 days  
     Total Minimum Months of Activities Needed: 12 months

## **PROFESSIONAL SOCIETIES**

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American Association for the Advancement of Science (AAAS), member through the AAAS/Science Program for Excellence in Science

Interagency Arctic Research Policy Committee (IARPC), member  
 Marine Ecosystems Collaboration Team  
 Early Career Forum

Association of Polar Early Career Scientists, member

American Association of University Women-Chesapeake Biological Laboratory Chapter, member  
 2018-2019 Secretary  
 2017-2018 President  
 2016-2017 Secretary

American Geophysical Union, student member

Sigma Xi Scientific Research Society Associate, member

National Honor Society

## **PROFESSIONAL SERVICE**

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- 2020-Present Early Career Co-Chair (Dr. Jacqueline Grebmeier and Dr. Øyvind Paasche Chairs) for science session at Arctic Science Summit Week 2021 – The International Synoptic Arctic Survey Program in the High Arctic
- 2020-Present Early Career Co-Chair (Dr. Olivia Lee and Dr. Karen Pletnikoff Chairs) for science session at Arctic Science Summit Week 2021 – Experiences in sustaining collaborative Arctic research teams
- 2020-Present Future of Research at University of Maryland in the Post COVID-19 Era, University of Maryland and University of Maryland Center for Environmental Science
- 2020-Present COVID-19 Reactivation Committee, University of Maryland Center for Environmental Science
- 2019-Present Middle States Commission on Higher Education Reaffirmation of Accreditation Steering Committee, University of Maryland Center for Environmental Science
- 2019-Present Middle States Commission on Higher Education Accreditation Working Group VII: “Governance, Leadership, and Administration”, University of Maryland Center for Environmental Science
- 2018-Present Manuscript referee: *Estuaries and Coasts*, *Journal of Experimental Marine Biology and Ecology*, *ICES Journal of Marine Science*, *Philosophical Transactions of the Royal Society A* (co-reviewer with Ph.D. advisor), *Journal of the Marine Biological Association of the United Kingdom*
- 2020 Discussion of *The Immortal Life of Henrietta Lacks* co-Leader, Diversity, Equity, and Inclusion Collaborative, University of Maryland Center for Environmental Science
- 2020 Virtual Vigil in Memory of George Floyd Co-Leader and Organizer, University of Maryland Center for Environmental Science
- 2020 COVID-19 Response Team, University of Maryland Center for Environmental Science
- 2020 Virtual Commencement Planning Committee, University of Maryland Center for Environmental Science
- 2018-2020 Graduate Student Council Chair, University of Maryland Center for Environmental Science
- 2018-2020 University of Maryland Center for Environmental Science Representative, University System of Maryland Student Council
- 2018-2020 Administrative Council, University of Maryland Center for Environmental Science
- 2018-2020 Faculty Senate, University of Maryland Center for Environmental Science
- 2018-2020 Graduate Faculty Council, University of Maryland Center for Environmental Science
- 2019-2020 Faculty Hire Search Committee, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science
- 2018-2019 Mental Health Resources Committee, University of Maryland Center for Environmental Science
- 2019 Discussion Leader for “Polar Carbon Cycling and Food Webs Linking Sea Ice, Pelagic, and Benthic Communities” Session, Gordon Research Seminar on Polar Marine Science
- 2018 Graduate Student Council Bylaws Subcommittee, University of Maryland Center for Environmental Science

- 2017-2020 Academic Council, Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science Graduate
- 2017-2020 Graduate Student Council Representative, University of Maryland Center for Environmental Science
- 2017 Discussion Leader for Power Hour: Women in Science, Gordon Research Conference on Polar Marine Science
- 2010-2011 Sustainability Representative, Smith College Student Government

## **VOLUNTEER and OUTREACH ACTIVITIES**

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- 2020-Present Aided outreach coordinator with Creativity Challenges for University of Maryland Center for Environmental Science community during COVID-19 Pandemic
- 2017-Present Student Volunteer for Chesapeake Biological Laboratory's Science for Citizen Seminars
- 2016-Present Annual Chesapeake Biological Laboratory Open House
- 2020
    - o Developed a [lesson plan](#) and created a [video](#) of an at home ocean acidification experiment for the Virtual 2020 [CBL Science at Home](#) in place of the open house due to COVID-19 pandemic
    - o Conducted a [CBL Next Generation: Student Interview Series interview](#) to introduce the local community to who the students are, what we researching, and why it is important.
    - o Filmed short video clips of life aboard a research vessel in the Arctic for the "A Look at the Lab" Series for community outreach during the COVID-19 pandemic.
- 2014-Present As needed lab tours for visiting student groups and classes, Chesapeake Biological Laboratory
- 2020 Reviewer for the Maryland Junior Science and Humanities Symposia Program via the Patuxent Partnership
- 2020 PLOS One Blog Early Career Interview
- 2020 [Student Participant](#) for [GradGamut Podcast - Here Comes 'Rona! - Interview about Arctic field work in the time of the COVID-19 pandemic](#)
- 2018 University of Maryland Center for Environmental Science Podcast Participant- [Bridging the Gap: Women grad students talk rise of STEM, power of diversity in science](#)
- 2018, 2020 AGU/ASLO/TOS Ocean Sciences Meeting K-12 Day Mentor
- 2016 Filmed a [student outreach video](#) with the Chesapeake Biological Laboratory outreach coordinator and a local Maryland high school
- 2014 Patuxent River Appreciation Day, Chesapeake Biological Laboratory, Student Volunteer
- 2010-2013 Student Helper with Explore the Ocean World LLC., school talks and museum summer help



## **RELEVANT SKILLS**

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- Geographic Information Systems (GIS) (ArcMap)
- PADI SCUBA Diver: Open Water
- RStudio
- Microscopy (light, SEM)
- Identification of Pacific Arctic Infaunal Invertebrates
- van Veen Benthic Grab Collections
- HAPs Core Sediment Collection and Sediment Oxygen Incubations (PreSens Meter)
- Individual Respiration Sampling and Analysis (FireSting Meter)
- Water Column Chlorophyll-a Sampling and Analysis
- Sediment Chlorophyll-a Sampling and Analysis
- Sediment Grain Size Sampling and Analysis
- Water Column Nutrient Sample Collection
- $\delta^{18}\text{O}$  Water Column Sample Collection
- Maintenance of Live Collected Bivalves
- Harmful Algal Bloom (HAB) Sediment Sampling