

# CATHERINE LAWRENCE ALVES

## EDUCATION

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**University of North Carolina at Chapel Hill | Chapel Hill, NC** August 2015 – Present

- Doctor of Philosophy: Ecology, expected graduation Fall 2020; Advisor: Dr. John Bruno
- Dissertation: *Searching for the win-win: Does community-based fisheries management restore ecological function and improve the livelihoods of small-scale fishers in Belize?*

**Connecticut College | New London, CT** August 2009 – May 2013

- Bachelor of Arts: Biological Sciences, Minor: Chemistry
- Spring 2012: Tropical Marine Ecology and Conservation Semester in Bonaire, Dutch Caribbean

## PROFESSIONAL EXPERIENCE & RESEARCH

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**University of North Carolina at Chapel Hill | Chapel Hill, NC** August 2015 - Present

*Graduate Researcher and Teaching Assistant*

- Designing, grant-writing and executing international interdisciplinary research projects (in Belize and Mexico) related to fisheries management, coral reef ecology, and marine conservation
- Providing critical insights into social and ecological efficacy of community-based fisheries management to stakeholders (natural resource managers at the governmental and local levels)

**Narrow River Kayaks | Narragansett, RI** June 2018 – Present, Seasonally

*Lead Eco Tour Guide and Naturalist*

- Educate diverse audiences about the local history, marine and terrestrial ecology, and conservation of the Narrow River Estuary while kayaking; coordinate schedules, plan tours and maintain safety

**Williams-Mystic Maritime Studies Program | Mystic, CT** January 2014 – June 2015

*Marine Science Laboratory Manager and Teaching Assistant*

- Managed Marine Sciences Center (8,000 sq-ft lab) by maintaining extensive aquaria system, small fleet of research boats and all laboratory equipment
- Mentored 2-3 undergraduate lab assistants and 8-10 research projects in marine ecology and oceanography per semester, collaborating with Marine Ecology and Oceanography faculty

**Reef Environmental Education Foundation (REEF) | Key Largo, FL** May – December 2013

*Intern Project Coordinator*

- Promoted to leadership position after four months as Marine Conservation Intern
- Coordinated field-based lionfish research, local volunteer opportunities, outreach events, presentations on Caribbean fish identification and daily office management

**Romberg Tiburon Center for Environmental Studies, San Francisco State Univ. | Tiburon, CA** Summer 2012

*Research Intern, NSF-Funded Research Experience for Undergraduates*

- Implemented study of invasive copepod population genetics by combining field sampling throughout San Francisco Bay Estuary with DNA extractions, sequencing and analysis
- Presented findings at summer research symposia & professional comparative biology conference

## PEER-REVIEWED PUBLICATIONS

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- Mudge, L., **C. Alves**, B. Figueroa-Zavala, and J. Bruno. 2019. *Assessment of elkhorn coral populations and associated herbivores in Akumal, Mexico*. *Front. Mar. Sci.* 6:683. DOI: 10.3389/fmars.2019.00683.
- **Alves, C.** N. Bood, K. Castillo, C. Cox, C. Fieseler, Z. Locklear, M. McField, L. Mudge, J. Umbanhowar, A. Valdivia, J. Bruno. *20 years of benthic community changes across the Belize Mesoamerican Barrier Reef*. In review at *Marine Ecology Progress Series*.
- **Alves, C.** *Marine resource management and fisheries governance in Belize: Historical analysis and ways forward*. In review at *Ocean and Coastal Management*.
- Donovan, M., **C. Alves**, and 16 additional co-authors. *From polyps to pixels: Understanding coral reef resilience to local and global change across scales*. In prep for *Trends in Ecology and Evolution*.

## GRANTS, FELLOWSHIPS & AWARDS

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## CATHERINE LAWRENCE ALVES

- Gulf and Caribbean Fisheries Institute (GCFI) Outstanding Student Achievement Award (\$1,500) 2019
- UNC-CH Graduate School Graduate Student Transportation Grant Recipient (\$1,000) 2019
- Rufford Foundation Small Grant Recipient (\$6,400) 2019
- **National Geographic Society Early Career Grant Recipient (\$5,000)** 2018
- UNC-CH Carolina Center for Public Service Mingma Norbu Sherpa Fellowship (\$1,250) 2018
- Women Diver's Hall of Fame Marine Conservation Research Grant (\$2,000) 2018
- **National Science Foundation (NSF) Graduate Research Fellowship (\$138,000 for 3 years)** 2017
- UNC-CH Institute for the Study of the Americas Field Research Grant (\$2,000) 2017
- UNC-CH Tri-Beta Biology Honor Society Biology Teaching Assistant of the Year 2016
- National Science Foundation (NSF) Graduate Research Fellowship Honorable Mention 2016
- Connecticut College E. Frances Botsford Prize for excellence in biology and service to department 2013
- Connecticut College President's Sustainability Grant Recipient (\$4,000) 2013
- Connecticut College Office of Student Engagement and Leadership Collaboration Award 2013
- Connecticut College Travel Grant for Student Researchers (\$500) 2012
- Rhode Island Lieutenant Governor Elizabeth Roberts's Leadership Award 2009
- Narrow River Preservation Association's Environmental Awareness Award 2007

### SKILLS & EXPERTISE

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#### Field & Research Skills

- Accomplished SCUBA Diver (PADI Divemaster with >250 logged dives, mostly scientific)
- Caribbean and Northeast Atlantic marine species identification (coral, algae, invertebrates, fish)
- Small boat handling and sailing skills
- Marine science research methods (underwater transects, water quality testing, species identification)
- Quantitative and qualitative social science research methods (focus groups, interviews, content analysis)
- Analysis of socio-economic and environmental fisheries data
- Extensive collaboration with natural resource managers and marine stakeholders (including government agencies, academic institutions, NGOs and media) to build capacity and increase community engagement

#### Computer Proficiency

- Advanced coding skills and proficiency with R, GitHub, and SPSS
- Experience using relational databases including SQL and Microsoft ACCESS
- Geospatial mapping in ESRI ArcGIS
- Benthic community composition analysis using Coral Point Count (CPCe) and CoralNet
- Multi-media communication via Adobe Illustrator, Photoshop, Premiere Pro
- Strong organizational and time management skills using Slack, Asana, Zoom, Skype
- Fluency in Microsoft Office and Google Drive suites
- Web design via Weebly and Wordpress

### TEACHING & MENTORING

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University of North Carolina at Chapel Hill | Chapel Hill, NC 2016 – 2017

- Mentored senior Biology honors thesis student, Zachary Locklear on research titled: *Belizean coral functional group shifts from 1997 to 2016*

Academic Support Program for Student Athletes, UNC-CH | Chapel Hill, NC 2016 – 2017

- Tutor for student athletes in Biology, Mathematics, Marine Science

University of North Carolina at Chapel Hill | Chapel Hill, NC 2015 – 2017

- Teaching Assistant for BIOL 201: Ecology and Evolution
- Teaching Assistant for BIOL 252 Lab: Human Anatomy and Physiology
- Teaching Assistant for ENEC 201: Environment and Society

## CATHERINE LAWRENCE ALVES

### Wyzant Tutoring | Chapel Hill, NC

2015 – 2017

- Private freelance tutor in High School Biology, Chemistry, ACT preparation

### Williams-Mystic Maritime Studies Program | Mystic, CT

2014 – 2015

- Mentored 2-3 undergraduate lab assistants and 8-10 independent undergraduate research projects in marine ecology and oceanography per semester

## PRESENTATIONS & SCIENCE COMMUNICATION

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### ACADEMIC CONFERENCES

- 2020\*** **Alves, C.**, J. Bruno. *Assessing fisher perceptions of the Territorial User Rights for Fishing (TURF) Program: A Belizean case study*. Poster Presentation. International Coral Reef Symposium (ICRS). July 2020. Bremen, Germany.
- 2020\*** **Alves, C.** Belize's coral reefs: fostering sustainable practices with community-based management. Rufford Small Grant Conference. March 2020. Roatán, Honduras.
- 2019** **Alves, C.**, J. Bruno. *Assessing fisher perceptions of the Territorial User Rights for Fishing (TURF) Program: A Belizean case study*. Poster Presentation. Gulf and Caribbean Fisheries Conference (GCFI). November 2019. Punta Cana, Dominican Republic.
- 2017** **Alves, C.**, Z. Locklear, M. McField, J. Bruno. *MPAs did not mitigate coral reef phase shifts in Belize caused by disease and warming*. Oral Presentation. Benthic Ecology Meeting (BEM). April 2017. Myrtle Beach, SC.
- 2014** Weiner, M., L. Gilbert, **C. Alves**, P. Poole, S. Schleicher. *A salt marsh erosion model: Interplay between biotic and physical factors at the seaward edge*. Poster Presentation. American Geophysical Union (AGU) Conference. December 2014. San Francisco, CA.
- 2013** Perry, E., **C. Alves**, C. Craig, V. Miller-Sims, W. Kimmerer, and C.S. Cohen. *Genetic variability of mitochondrial COI ranges from low to dramatically high in invasive species of copepods in San Francisco Estuary*. Poster Presentation. Society for Integrative and Comparative Biology (SICB) Conference. January 2013. San Francisco, CA.
- 2012** **C. Alves**, and E. Perry. *Determining genetic diversity at cytochrome c oxidase (COI) of copepod species in the San Francisco Estuary*. Oral Presentation. San Francisco State University (SFSU)'s Summer Undergraduate Research Symposium. August 2012. San Francisco, CA.

\* = Canceled due to COVID-19.

### PUBLIC OUTREACH, EDUCATION, AND INVITED SEMINARS

- 2019** *My PhD Journey*. Guest Lecturer. ENEC 567: Ecological Analysis and Applications. October 2019. Chapel Hill, NC.
- 2019** *Assessing fisher perceptions of the Territorial User Rights for Fishing (TURF) Program: A Belizean case study*. Invited Speaker. Environment, Ecology, and Energy Program Student Seminar Series. October 2019. Chapel Hill, NC.
- 2019** *Life as a Marine Conservation Ecologist*. Invited Panelist for Higher Edge, Inc's Summer Institute for high school seniors in College Access Program. August 2019. Stonington, CT.

## CATHERINE LAWRENCE ALVES

- 2019 *Explorer Classroom: My path to becoming a marine conservation ecologist*. National Geographic's Explorer Classroom. April 2019. YouTube link [here](#).
- 2019 *Searching for the win-win: Can community-based fisheries management restore ecological function and improve the livelihoods of Belizean fishers?* Invited Speaker to Dr. Gavin Fay's lab meeting, University of Massachusetts at Dartmouth School for Marine Science and Technology (SMAS). February 2019. New Bedford, MA.
- 2018 *A day in the life of a marine biologist*. Invited Speaker. Temple Beth Or Synagogue Senior Luncheon. March 2018. Raleigh, NC.
- 2017 *Life as a marine biologist: Using SCUBA to study coral reef communities*. Invited Speaker. Culbreth Science Day. April 2017. Culbreth Middle School, Chapel Hill, NC.
- 2014 *Coral Reef Ecology*. Invited Guest Lecture. Williams-Mystic Maritime Studies Program Marine Ecology Class. December 2014. Mystic, CT.
- 2014 *Citizen Science and the Reef Environmental Education Foundation (REEF)*. Invited Speaker. Connecticut College's Spring Log Jam Fundraiser. June 2014. New London, CT.
- 2013 *Invasive Lionfish Ecology*. Oral Presentation. Diving Equipment and Marketing Association (DEMA) Conference. November 2013. Orlando, FL.
- 2012 *Examining the effect of different grazers on algal biomass*. Oral Presentation. CIEE Research Station Bonaire's Public Lecture Series. May 2012. Kralendijk, Bonaire.

### PUBLICATIONS FOR PUBLIC AUDIENCES

- 2020 **Alves, C.** *Ctenophora (Mnemiopsis leidyi)*. Published April 1, 2020. Article for the Narrow River Preservation Association [website](#) and newsletter.
- 2019 **Alves, C.** Belize's coral reefs: Fostering sustainable practices through co-management. [National Geographic Open Explorer Expedition Posts](#). Supported by the Science Exploration Education (SEE) Initiative.
- 2018 Baumann, J., L. Mudge, and **C. Alves**. North Carolina can lead the fight against climate change if we make it our priority. Op-Ed. Published December 11, 2018 in the [Herald Sun](#) and [News and Observer](#).
- 2015 **Alves, C.** The Offshore Adventures Continue. Blog post. [Williams-Mystic Maritime Studies Program Blog. Published February 11, 2015](#).
- 2012 **Alves, C.** Examining the effect of different grazers on algal biomass. *Physis Journal of Marine Science*, CIEE Research Station Bonaire. [Vol. XI pg. 1-8](#).

### PROFESSIONAL SERVICE

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- 2017 - 2018 **The Scientific Research and Education Network (SciREN), Chapel Hill, NC**  
Co-Organizer
- 2016 - 2018 **Graduate and Professional Student Federation (GPSF), UNC-CH, Chapel Hill, NC**  
Senator; Representing Ecology graduate students; Serving on Joint Code Working Group, to re-write code between undergraduate and graduate students at UNC-CH
- 2016 - 2018 **Graduate Environment and Ecology Association (GEEA), UNC-CH, Chapel Hill, NC**  
GPSF Senator, co-organize annual Ecology research symposium

## CATHERINE LAWRENCE ALVES

- 2016 – 2018 **Biology Graduate Student Association (BGSA), UNC-CH, Chapel Hill, NC**  
Liaison, Curriculum for the Environment and Ecology
- 2016 – 2017 **Curriculum for the Environment and Ecology (CEE), UNC-CH, Chapel Hill, NC**  
Seminar Committee Member, coordinating weekly guest seminar series
- 2012 - 2013 **Forest Justice Student Organization, Connecticut College, New London, CT**  
Co-President
- 2011 - 2013 **Biology Student Advisory Board, Connecticut College, New London, CT**  
Co-Chair

### COMMUNITY ENGAGEMENT & OUTREACH

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- 2018 – present **Skype a Scientist**  
Scientist, sharing research with students in classrooms around world via video calls
- 2018 – present **Narrow River Preservation Association, Narragansett, RI**  
Guide, teaching children and families about ecology of Narrow River while kayaking
- 2018 – 2019 **National Geographic Society Open Explorer Expedition, Science Exploration Education (SEE) Initiative**  
*Belize's coral reefs: Fostering sustainable practices through co-management*  
Recipient of Sofar Trident underwater drone, write [blog posts](#) about expedition
- 2017 – 2018 **Inspiring Meaningful Programs and Communication through Science (IMPACTS), NC**  
Science Communication Ambassador
- 2017 – 2018 **Letters to a Pre-Scientist**  
Pen pal to middle school student pre-scientist
- 2016 – 2017 **The Scientific Research and Education Network (SciREN), Chapel Hill, NC**  
Researcher, developed lesson plan in marine food webs for grades 8-12
- 2013 **Biscayne National Park, Homestead, FL**  
National Parks Service Blue-Card Diver, contributing to management projects
- 2013 **John Pennekamp Coral Reef State Park, Key Largo, FL**  
Volunteer Diver, assisted with lionfish research and seagrass restoration
- 2013 **Coral Restoration Foundation, Key Largo, FL**  
Volunteer, developed off-shore coral nurseries and reef restoration programs

### PROFESSIONAL DEVELOPMENT

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- 2019 **National Science Policy Network Symposium**, funded participant in event for early-career scientists interested in science policy, advocacy and diplomacy. National Science Policy Network. University of Wisconsin-Madison, Madison, WI.
- 2019 **Inclusive SciComm Symposium**, participant in three-day symposium designed to engage trainers, scholars, and practitioners in engaging audiences in conversations and activities related to STEM topics. Metcalf Institute. University of Rhode Island, Kingston, RI

## CATHERINE LAWRENCE ALVES

- 2019 **Data Carpentry Geospatial Workshop in R**, participant in two-day training in geospatial analysis in R. University of Massachusetts Boston, Boston, MA
- 2018 **National Geographic Science Telling Boot Camp**, Video Production Course designed to teach participants how to use video to communicate science, Online
- 2018 **Nor'eastR Conference**, participant at one-day R Studio statistics conference, sponsored by the Coastal Institute at the University of Rhode Island, Providence, RI
- 2018 **Policy Engagement Workshop Training**, led by Scholars Strategy Network, UNC-Chapel Hill
- 2018 **Data Science for Coral Reefs: Data Integration and Team Science**, Coral Reef Science and Cyberinfrastructure Network (CRESCYNT) and National Center for Ecological Analysis and Synthesis (NCEAS), weeklong-training in open data science. Santa Barbara, CA
- 2017 **Inspiring Meaningful Programs and Communication through Science (IMPACTS)**, Science Communication Ambassador training, Morehead Planetarium and Science Center, UNC-CH
- 2016 **Teaching in Challenging Times Workshop**, designed to prepare faculty and teaching assistants to discuss gender, race, sexuality and politics in the classroom, led by The Center for Faculty Excellence, UNC-Chapel Hill
- 2016 **Software Carpentry Workshop**, participant in two-day training in R Studio, GitHub, and Unix Shell, UNC-Chapel Hill
- 2015 **Graduate Funding Workshop**, Graduate Funding Information Center, UNC-Chapel Hill

### PROFESSIONAL AFFILIATIONS

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- 2019 Gulf and Caribbean Fisheries Institute (GCFI), Student Member
- 2019 International Coral Reef Symposium (ICRS), Student Member
- 2018 Ecological Society of America (ESA), Student Member
- 2018 National Science Policy Network, Student Member
- 2017 Society for Women in Marine Science (SWMS), Member
- 2017 Inter-university Consortium for Political and Social Research (ICPSR), Student Member
- 2017 Society for Conservation Biology (SCB), Student Member
- 2016 American Association for the Advancement of Science (AAAS)
- 2013 Reef Environmental Education Foundation (REEF)
- 2011 Diver's Alert Network (DAN)

### CERTIFICATIONS

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- 2017 Divemaster (# 406704), Professional Association of Diving Instructors (PADI)
- 2016 Scientific Diver, American Academy of Underwater Sciences (AAUS)
- 2013 Emergency First Responder, Emergency First Response (EFR)
- 2013 Enriched Air Nitrox Diver & Equipment Specialty (PADI)
- 2012 Rescue and Advanced Open Water Diver (PADI)
- 2011 Open Water Diver, SCUBA Diving International (SDI)

### LANGUAGES

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- French** Intermediate written and oral proficiency
- Spanish** Beginner oral proficiency
- Italian** Beginner written and oral proficiency