Colleen B Bove, Ph.D.

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EDUCATION

Ph.D. in Ecology — ***University of North Carolina at Chapel Hill*** (2015 – 2020)
Advisor: Dr. Karl Castillo
Dissertation: *Regional and species level responses of Scleractinian corals under global change within the Caribbean Sea*

B.S. in Marine Biology — ***University of North Carolina at Wilmington*** (2010 – 2014)
Cum Laude, Honors
Honors Thesis: *Responses of coral gastrovascular cavity pH to changes in light level and seawater pH suggest species-specific responses to the effects of ocean acidification on calcification* (Dr. Alina Szmant)

POSTDOCTORAL EXPERIENCE

Postdoctoral Associate Lecturer — ***Boston University*** (2020 – present)
Advisor: Dr. Sarah Davies

Postdoctoral Researcher — ***University of North Carolina at Chapel Hill*** (2020)
Advisor: Dr. John Bruno

PUBLICATIONS (* Undergraduate mentee)

2020 **Bove CB**, Whitehead RF, Szmant AM. *Responses of coral gastrovascular cavity pH during light and dark incubations to reduced seawater pH suggest species-specific responses to the effects of ocean acidification on calcification.* Coral Reefs. DOI: 10.1007/s00338-020-01995-7

2020 **Bove CB**, Umbanhowar J, Castillo KD. *Meta-analysis reveals reduced coral calcification under projected ocean acidification and warming across the Caribbean.* Frontiers in Marine Science, 7:1-11. DOI: 10.3389/fmars.2020.00127

2019 **Bove CB**, Ries JB, Davies SW, Westfield IT, Umbanhowar J, Castillo KD. *Common Caribbean corals exhibit highly variable response to predicted future acidification and warming.* Proceedings of the Royal Society B., 286:1-9. DOI: 10.1098/rspb.2018.2840

2018 Benson BE, Rippe JP, **Bove CB**, Castillo KD. *Apparent timing of Siderastrea siderea density banding in relation to colony growth and physiology*. Coral Reefs, 38:165-176. DOI: 10.1007/s00338-018-01753-w

In Review Baumann JH, **Bove CB**, Carne L, Castillo KD. *Back reef corals exhibit greater physiological plasticity under environmental variation than nearshore counterparts.* Coral Reefs (Available upon request)

In Review Aichelman HE, **Bove CB**, Castillo KD, Boulton JM, Knowlton AC, Nieves OC, Ries JB, Davies SW. *Exposure duration modulates the response of Caribbean corals to global change stressors.* Limnology & Oceanography (Preprint available: https://doi.org/10.1101/2020.06.19.161711)

Submitted Davies SW, Putnam HM, Ainsworth T, Baum JK, **Bove CB**, Crosby SC, Côté IM, Duplouy A, Fulweiler RW, Griffin AJ, Hanley TC, Hill T, Humanes A, Metaxas A, Parker L, Rivera HE, Silbiger NJ, Smith NS, Spalding AK, Traylor-Knowles N, Weigel BL, Wright RM, Bates AE. *Shifting Our Value System Beyond Citations for a More Equitable Future.* (Preprint available: www.preprints.org/manuscript/202102.0493/v1)

In Prep **Bove CB**, Mudge L, Bruno, JF. *One Hundred and Fifty Years of Warming on Caribbean Coral Reefs*. (Available upon request)

In Prep **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Thomasson BC*, McCoppin J*, Farquhar E*, Castillo KD. *Physiological and transcriptomic responses of Caribbean corals under global change.*

In Prep Oliveira KS*, Thomasson BC*, Ries JB, Castillo KD, **Bove CB**. *Global change impacts on the skeletal morphology of the Caribbean coral Siderastrea siderea over time.*

In Prep Rippe JP, Baumann JH, **Bove CB**, Aichelman HA, Davies SW, Castillo CD. *Modern reversal of coral growth-climate connection*.

In Prep Castillo KD, Davies SW, **Bove CB**, Ries JB. *Local Adaptation and transcriptomic plasticity of a resilient Caribbean coral.*

EXPERIENCES

2020 – Present **Statistics and Visualization Consultant** University of North Carolina at Chapel Hill
Perform data management, visualization, and statistical analysis in R and python of large sea surface temperature datasets, as well as consult on several ongoing projects in the Bruno Marine Ecology and Conservation Lab at UNC Chapel Hill.

2019 – 2020 **R Programming Contractor** CISME Instruments, LLC, Wilmington, NC
Write R software program to analyze data output from CISME device for Photosynthesis-Irradiance curves. CISME is now sold by Qubit Systems (qubitbiology.com/cisme/).

2015 **Research Assistant** University of North Carolina at Chapel Hill
Plan and carry out 6-month ocean acidification and warming mesocosm experiment using four species of Caribbean corals at Northeastern University's Marine Science Center (with Dr. Justin Ries). Responsibilities included maintaining over 40 experimental aquaria, feeding corals, maintain and measuring water chemistry, and monitoring growth of corals specimens.

2014 – 2015 **Laboratory Technician** University of North Carolina at Chapel Hill
Oversee daily lab activities of graduate and undergraduate students conducting research in the lab. Coordinate and execute field work with lab in Florida, Panama, and Belize.

2011 – 2014 **Research Assistant** University of North Carolina at Wilmington
Conduct independent undergraduate research honors thesis assessing effects of ocean acidification on coral calcification and physiology. Also assisted in aquarium upkeep containing research coral samples.

2011 **Aquarium Education Intern** NC Aquarium at Forth Fisher
Answer questions and provide information to visitors about Aquarium exhibits, train new education volunteers, and assist with organization and supervision of volunteers. Lead educational presentations including animal interactions, feeding demonstrations, live dive shows, and classroom activities.

2010 – 2014 **Aquarium Education and Dive Volunteer** NC Aquarium at Forth Fisher
Interact with visitors at exhibits to provide information about exhibits and assist with cleaning and maintenance inside Aquarium exhibits.

TEACHING / MENTORING EXPERIENCE

2020 – Present	Human and Systems Physiology Teaching Fellow, Boston University
2018 – 2020	UNC Undergraduate Honors Thesis Mentor (Bailey Thomasson, 2018 – 2019; Kyle Oliveira, 2019 – 2020)
2015– 2020	UNC Undergraduate Guest Lecturer (ENEC/MASC 450 - Biogeochemical Processes, MASC 441 - Marine Physiological Ecology, MASC 101 - The Marine Environment, MASC401/BIOL350/ENVR417 – Introduction to Oceanography, ENEC 295 – Coral Reef Ecology and Management)
2015 – 2020	UNC Undergraduate Research Volunteer Mentor (Bailey Thomasson, Brooke Benson, Kathryn Cobleigh, Lauren Winbourne, Brigitte Butler, Joseph Townsend, Cori Lopazanski, Meghan Gore, Brad Kotlarz, Zoe Sparks, Kyle Oliveira, Jess McCoppin, Liz Farquhar)
2016 – 2019	UNC MASC 395 Student Mentor (Bailey Thomasson, Lauren Winbourne, Brigitte Butler, Forrest Buckthal)
2016 – 2019	Teaching Assistant, University of North Carolina at Chapel Hill
2016 – 2018	Lead Teaching Assistant, University of North Carolina at Chapel Hill
2015 – 2019	NCSSM High School Mentor

COURSES TAUGHT (*Instructor on Record)

Human and Systems Physiology Lab: *(Boston University)* An introduction to physiological principles applied across all levels of organization (cell, tissue, organ system). Preparation for more advanced courses in physiology. Topics include homeostasis and neural, muscle, respiratory, cardiovascular, renal, endocrine, gastrointestinal, and metabolic physiology.

Ecology and Evolution: *(University of North Carolina at Chapel Hill)* Principles governing the ecology and evolution of populations, communities, and ecosystems, including speciation, population genetics, population regulation, and community and ecosystem structure and dynamics.

Conservation Biology: *(University of North Carolina at Chapel Hill)* The application of biological science to the conservation of populations, communities, and ecosystems, including rare species management, exotic species invasions, management of natural disturbance, research strategies, and preserve design principles.

Coral Reef Ecology + Management: *(University of North Carolina at Chapel Hill)* Explore key physical and chemical characteristics of the coral reef environment, topics in coral reef ecology, and strategies available for protecting and managing the reef environment. The course also familiarizes students with the identification of the principal corals and fishes found in the Caribbean with a field component in St. John, US Virgin Islands.

* Introduction to Environment and Society: *(University of North Carolina at Chapel Hill)* This course explores changing human-environmental relations from a variety of social, geographical, and historical settings. The class cuts across a large number of disciplines and strives to do this in a manner that is integrative rather than segregating lessons from different academic disciplines.

INVITED SEMINARS AND LECTURES

2021 Physiological and transcriptomic responses of Caribbean corals under global change (University of Rhode Island, Bio@Noon Seminar Series) February 2021

2020 Coral reefs under global change (Boston University Marine Program, guest lecture) December 2020

2020 Coral reefs under global change (Georgetown University, Environmental Geoscience, guest lecture) October 2020

2020 Regional and species level responses of Scleractinian corals under global change within the Caribbean Sea (The University of Texas Marine Science Institute, Departmental Seminar) June 2020

2020 Caribbean reef-building corals exhibit highly variable growth and physiological responses under projected global change (The Maritime Aquarium at Norwalk, CT Science Seminar Series) February 2020

2019 Physiological and transcriptomic responses of coral hosts and algal symbionts of four Caribbean corals under global change (UNC Chapel Hill Environment, Ecology, and Energy Program Seminar Series) October 2019

2018 Understanding the physiological responses of the coral host and algal symbiont of four Caribbean corals under ocean acidification and warming (Boston University Marine Program, guest lecture) November 2018

2018 Impacts of ocean acidification and warming on the growth and physiology of four Caribbean reef-building corals (UNC Asheville, invited seminar) September 2018

2018 *Chasing Corals* film screening expert panel (UNC Chapel Hill) March 2018

2017 Acidification and warming impair calcification and survivorship of Caribbean corals (Boston University Marine Program, guest lecture webinar) December 2017

2017 Acidification and warming impair calcification and survivorship of Caribbean corals (Climate Change Working Group, US Coral Reef Task Force, invited webinar) March 2017

RESEARCH FUNDING

The asterisk (*) indicates a grant for which I was not the official PI due to graduate student status but was the lead writer and researcher on the project.

2019 **Lerner-Gray Grants for Marine Research**, American Museum of Natural History; Understanding the physiological responses of four Caribbean reef-building coral holobionts under projected ocean acidification and warming scenarios **PI: Colleen Bove** − $3370

2019 **Rufford Small Grants for Nature Conservation**, The Rufford Foundation; Continuing research on coral acclimation on the Belize Mesoamerican Barrier Reef System PI: Justin Baumann – £20,000, **Co-PI: Colleen Bove**

2018 ***University Research Council Small Grant**, University of North Carolina at Chapel Hill; Disentangling the transcriptomic responses of the coral host and algal endosymbiont under projected global change PI: KD Castillo – $7500, Role: Project lead

2018 **Sea of Change Foundation Marine Conservation Scholarship**, Women Diver Hall of Fame; Disentangling the transcriptomic responses of the coral host and algal endosymbiont under projected global change **PI: Colleen Bove** − $2000

2017 **Hill Foundation Fellowship in Marine Science**, University of North Carolina at Chapel Hill; Funds to support an undergraduate researcher in investigating how global change impacts coral algal endosymbiont physiology **PI: Colleen Bove** − $250

FELLOWSHIPS

2019 – 2020 UNC Dissertation Completion Fellowship ($20,000)

2018 UNC Off Campus Research Fellowship ($10,000)

2018 2018 Steven W. Matson Summer Research Fellowship ($5,000)

2012 Gillings Fellowship ($10,000 to study at University of Southampton, England)

AWARDS AND HONOURS

2019 48th Benthic Ecology Meeting 2nd Best Graduate Student Oral Presentation ($100)
2019 UNC Graduate Student Transportation Grant ($2,000)
2019 Mentee (Bailey Thomasson) awarded UNC Department of Biology's 2019 Robert Coker Award for excellence in research for her honors thesis *Examining the combined effect of ocean acidification and warming on the skeletal morphology of Siderastrea siderea*
2018 UNC Graduate Student Professional Federation Travel Grant ($400)
2018 UNC Environment and Ecology Graduate Symposium Best Oral Presentation ($50)

2018 Undergraduate mentee awarded Best Poster Presentation − Climate Change Symposium ($200)
2017 University of North Carolina Chapel Hill Graduate Student Mentoring Award
2017 Honorable Mention in National Science Foundation Graduate Research Fellowship Program
2017 4th Annual UNC Climate Change Symposium Best Poster Presentation ($400)
2017 UNC Academic Research Conference Best Natural Sciences Oral Presentation
2016 Honorable Mention in National Science Foundation Graduate Research Fellowship Program
2014 UNCW Distinguished Undergraduate Research Scholar
2014 Benthic Ecology Meeting Best Undergraduate Poster Presentation Award ($100)
2013 Chancellor's Achievement Award
2013 UNCW CSURF Fall Student Travel Award ($1,000)

REVIEWER

Frontiers in Marine Science
PLOS ONE
Nature Climate Change
Coral Reefs
Proceedings of the Royal Society – Biology

PROFESSIONAL AFFILIATIONS

2018 – Present	Society for Integrative and Comparative Biology (SICB) Member
2016 – Present	International Coral Reef Society (ICRS) Member
2012 – Present	American Academy of Underwater Science (AAUS) Scientific Diver (Lead diver, over 100 logged dives)
2012 – Present	Divers Alert Network (DAN) Member (Diving First Aid for Professional Divers certification)

OUTREACH

2021	SICB Broadening Participation Mentor
2020 – Present	Disabled in STEM Mentor
2020 – Present	Letters to a Pre-Scientist
2019 – Present	Society for Women in Marine Science (SWMS) Mentor
2019	Field Notes; climate change photography exhibition; VAE, Raleigh, NC
2018 – 2019	UNC Ecology Seminar Series Planning Co-Chair
2017 – 2019	UNC Ecology Seminar Series Planning Committee Member
2016 – 2017	Blogger, Under the C graduate student Marine Sciences Blog
2016	Girls Advancing in STEM (GAINS); Chapel Hill, NC
2016, 2017	UNC Science Expo; Chapel Hill, NC
2015 – 2020	Undergraduate Student Mentor
2015 – 2018	NC School of Science and Math High School Mentor
2015	Northeastern Marine Science Center Open House; Nahant, MA
2015	SciREN Coast Networking Workshop; Pine Knoll Shores, NC
2014	SciREN Triangle Networking Workshop; Raleigh, NC

PROFESSIONAL WORKSHOPS

July 2018	Methods in Ecological Genomic Analysis – Functional genomics and gene network analysis with TagSeq workshop with Misha Matz
June 2016	Getting Published Workshop (ICRS workshop led by John Cinner and Terry Hughes)

PRESENTATIONS (* Undergraduate mentee)

2021 **CB Bove**, SW Davies, JB Ries, J Umbanhowar, KD Castillo. *Physiological and transcriptomic responses of Caribbean corals under global change*. Society for Integrative and Comparative Biology. Washington, DC, USA. Oral Presentation.

2020 **CB Bove**, SW Davies, JB Ries, J Umbanhowar, KD Castillo. *Physiological and transcriptomic responses of Caribbean corals under global change*. 14th International Coral Reef Symposium. Bremen, Germany. Oral Presentation. *Delayed due to COVID-19*

2020 Christian T*, Williams O*, **Bove CB**, Castillo KD. *Impact of winter ocean warming and reduced food availability on calcification rates of the temperate coral Oculina arbuscula.* 14th International Coral Reef Symposium. Bremen, Germany. Poster Presentation. *Delayed due to COVID-19*

2020 Baumann JH, **Bove CB**, Carne L, Gutierrez I, Castillo KD. *Back reef corals exhibit greater physiological plasticity under environmental variation than nearshore counterparts.* 14th International Coral Reef Symposium. Bremen, Germany. Oral Presentation. *Delayed due to COVID-19*

2020 **CB Bove**, SW Davies, JB Ries, J Umbanhowar, KD Castillo. *Physiological and transcriptomic responses of Caribbean corals under global change*. 14th International Coral Reef Symposium. Bremen, Germany. Oral Presentation. *Delayed due to COVID-19*

2020 **Bove CB**, Umbanhowar J, Castillo KD. *Meta-analysis reveals reduced coral calcification under projected ocean acidification and warming across the Caribbean*. Benthic Ecology Meeting. Wilmington, NC, USA. Oral Presentation. *Cancelled due to COVID-19*

2020 McCoppin J*, Farquhar E,* **Bove CB**, Castillo KD. *Assessing the Bleaching Response of Four Common Caribbean Corals and their Symbionts Using RGB Color Analysis.* Benthic Ecology Meeting. Wilmington, NC, USA. Oral Presentation. *Cancelled due to COVID-19*

2020 Oliveira K*, **Bove CB**, Ries JB, Castillo KD. *Impacts of Global Climate Change on the Skeletal Morphology of the Caribbean coral Siderastrea siderea (Massive Starlet Coral).* Benthic Ecology Meeting. Wilmington, NC, USA. Oral Presentation. *Cancelled due to COVID-19*

2020 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, McCoppin J*, Farquhar E,* Castillo KD. *Identifying physiological and transcriptomic responses of the coral host and algal endosymbionts of four Caribbean corals under global change*. Society for Integrative and Comparative Biology. Austin, TX, USA. Oral Presentation. January 2020

2019 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Castillo KD. *Ocean acidification and warming impact physiology of the algal symbiont to a greater extent than the host in four common Caribbean corals*. Benthic Ecology Meeting. St. John's, Newfoundland, Canada. Oral Presentation. April 2019

2019 McCoppin J*, Farquhar E,* **Bove CB**, Castillo KD. *Assessing the Bleaching Response of Four Common Caribbean Corals and their Symbionts Using RGB Color Analysis.* April 2019. Symbiofest. Athens, GA, USA. Oral Presentation.

2019 Oliveira K*, **Bove CB**, Ries JB, Castillo KD. *Impacts of Global Climate Change on the Skeletal Morphology of the Caribbean coral Siderastrea siderea (Massive Starlet Coral).* April 2019. Symbiofest. Athens, GA, USA. Oral Presentation.

2019 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Castillo KD. *Ocean acidification and warming impact physiology of the algal symbiont to a greater extent than the host in four common Caribbean corals*. Society for Integrative and Comparative Biology. Tampa, FL, USA. Oral Presentation. January 2019

2018 Thomasson B*, **Bove CB**, Ries JB, Castillo KD. *Examining the combined effect of ocean acidification and warming on the skeletal morphology of Siderastrea siderea*. April 2018. 6th UNC Climate Change Symposium. Chapel Hill, NC, USA. Poster Presentation.

2018 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Castillo KD. *Ocean acidification and warming impact physiology of the algal symbiont to a greater extent than the host in four common Caribbean corals*. Symbiofest. Athens, GA, USA. Oral Presentation. April 2018

2018 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Castillo KD. *Ocean acidification and warming impact physiology of the algal symbiont to a greater extent than the host in four common Caribbean corals*. Graduate Research and Policy Expo. Chapel Hill, NC, USA. Lightning Talk. April 2018

2018 **Bove CB**, Davies SW, Ries JB, Umbanhowar J, Castillo KD. *Ocean acidification and warming impact physiology of the algal symbiont to a greater extent than the host in four common Caribbean corals*. UNC E3P Research Symposium. Chapel Hill, NC, USA. Oral Presentation. March 2018

2017 **Bove CB**, Ries JB, Davies SW, Westfield IT, Castillo KD. *Acidification and warming impair calcification and survivorship of Caribbean corals*. 46th Benthic Ecology Meeting. Myrtle Beach, SC, USA. Oral Presentation. April 2017.

2017 Benson BE*, Rippe JP, **Bove CB**, Castillo KD. *Apparent timing of Siderastrea siderea density banding in relation to colony growth and physiology.* April 2017. 46th Benthic Ecology Meeting. Myrtle Beach, SC, USA. Poster Presentation.

2017 Boulton J*, Knowlton AC*, Davies SW, **Bove CB**, Ries JB, Castillo KD. *Coral and associated symbiont physiologies are resilient to changes in pCO_2 but are negatively affected by temperature stress.* April 2017. 46th Benthic Ecology Meeting. Myrtle Beach, SC, USA. Poster Presentation.

2017 **Bove CB**, Ries JB, Davies SW, Westfield IT, Castillo KD. *Acidification and warming impair calcification and survivorship of Caribbean corals*. 5th Annual UNC Climate Change Symposium. Chapel Hill, NC, USA. Poster Presentation. March 2017.

2016 **Bove CB**, Ries JB, Davies SW, Westfield IT, Castillo KD. *Acidification and warming impair calcification and survivorship of Caribbean corals*. 13th International Coral Reef Symposium. Honolulu, HI, USA. Oral Presentation. June 2016.

2016 **Bove CB**, Ries JB, Davies SW, Westfield IT, Castillo KD. *Acidification and warming impair calcification and survivorship of Caribbean corals*. Symbiofest. University of Georgia, Athens, GA, USA. Oral Presentation. May 2016.

2016 **Bove CB**, Ries JB, Davies SW, Westfield IT, Castillo KD. *Acidification and warming impair calcification and survivorship of Caribbean corals*. ASLO Ocean Sciences Meeting. New Orleans, LA, USA. Oral Presentation. February 2016.

2016 Townsend, JE*, **Bove CB**, Baumann J, Davies SW, Castillo KD. *The interactive effect of nutrients and salinity on corals from distinct thermal environments on the Belize Barrier Reef System.* February 2016. ASLO Ocean Sciences Meeting. New Orleans, LA, USA. Poster Presentation.

2015 **Bove CB**, Whitehead RF, Szmant AM. *Effects of seawater pH on the gastrovascular cavity of the corals Montastraea cavernosa and Duncanopsammia axifuga: Can corals counteract the effects of ocean acidification?* March 2015. Benthic Ecology Meeting. Quebec City, Canada. Oral Presentation.

2014 **Bove CB**, Whitehead RF, Szmant AM. *Effects of seawater pH on the gastrovascular cavity of the corals Montastraea cavernosa and Duncanopsammia axifuga: Can corals counteract the effects of ocean acidification?* April 2014. University of North Carolina at Wilmington Undergraduate Research Showcase. Wilmington, NC, USA. Poster Presentation.

2014 **Bove CB**, Whitehead RF, Szmant AM. *Effects of seawater pH on the gastrovascular cavity of the corals Montastraea cavernosa and Duncanopsammia axifuga: Can corals counteract the effects of ocean acidification?* April 2014. Colonial Academic Alliance Undergraduate Research Conference. Baltimore, MD, USA. Oral Presentation.

2014 **Bove CB**, Whitehead RF, Szmant AM. *Effects of seawater pH on the gastrovascular cavity of the corals Montastraea cavernosa and Duncanopsammia axifuga: Can corals counteract the effects of ocean acidification?* March 2014. Benthic Ecology Meeting. Jacksonville, FL, USA. Poster Presentation.

2013 **Bove CB**, Whitehead RF, Szmant AM. *Effects of seawater pH on the gastrovascular cavity of the corals Montastraea cavernosa and Duncanopsammia axifuga: Can corals counteract the effects of ocean acidification?* April 2013. University of North Carolina at Wilmington Undergraduate Research Showcase. Wilmington, NC, USA. Poster Presentation.

REFERENCES

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