

PROFESSIONAL APPOINTMENTS

Executive Director & Chief Scientist Sound Ocean Science	2021-present
Guest Investigator Woods Hole Oceanographic Institution	2022-present
Program Director (USVI Coral) The Nature Conservancy, Caribbean Division	2019-2021
Postdoctoral Investigator Woods Hole Oceanographic Institution Biology Department	2015-2019
Postdoctoral Researcher Department of Marine, Earth & Atmospheric Sciences North Carolina State University	2014-2015

EDUCATION

Ph.D., Marine Science <i>Marine, Earth & Atmospheric Sciences, North Carolina State University, USA</i>	2014
M.Sc., Biology <i>Ocean Sciences Centre, Memorial University of Newfoundland, Canada</i>	2009
B.Sc., (Hons) Oceanography and Biology <i>Department of Earth & Ocean Sciences, University of British Columbia, Canada</i>	2005

QUALIFICATIONS AND EXPERIENCE

- Leader with experience in marine science research and conservation settings globally
- High-level analytical, problem-solving, data synthesis, and communication skills
- Expertise in collecting and analyzing large oceanographic, ecological, and acoustic datasets in a variety of habitats (tropical, temperate, cold oceans)
- Management and leadership skills in field, laboratory, and office settings
- Track record of developing relevant research questions, scientific framework, and experimental designs to advance ecological and applied problems
- Experience developing time-series analyses and visualizations using Matlab
- Ability to liaise and collaborate with multi-disciplinary teams and users
- Capacity for identifying key issues, prioritizing workflows, managing multiple workstreams, and expediently achieving project goals
- Diverse experience and broad perspective on marine ecology, monitoring, and restoration across a variety of scales, habitats, and geographies

PEER-REVIEWED SCIENTIFIC PUBLICATIONS

**student co-author*

Lillis, A. & Caputo, M. (2026). Spatiotemporal variation in snapping shrimp sound production in East African coral reef soundscapes. In: Popper, A. N. et al. (eds) *The Effects of Noise on Aquatic Life IV*. Springer, Cham.

Lillis, A., Kremer, S.*, & Caputo, M. (2026). Bubbles Blow: Using rebreathers, free diving, and low-cost recording equipment to expand fish sound libraries. In: Popper, A. N. et al. (eds) *The Effects of Noise on Aquatic Life IV*. Springer, Cham.

Lillis, A., & Jiddawi, N. (In Review). Documenting coral spawning in East Africa: New in situ observations from Zanzibar for three reef-building species. *Submitted to PeerJ*.

Maxin, S.*, Blincow, K., **Lillis, A.**, Biggs, C., Schärer, M., Appeldoorn, R., & R.S. Nemeth (In Review). Identifying changes in behavior and abundance of a recovering Nassau grouper (*Epinephelus striatus*) spawning aggregation using passive acoustic monitoring. *Submitted to Marine Ecology Progress Series*.

Williams B., Merriënboer, B., Dumoulin, V., Hamer, J., Fleishman, A.B., McKown, M., Munger, J., Rice, A.N., **Lillis, A.**, White, Hobbs, C., Razak, T., Curnick, D., Jones, K.E. & T. Denton (2025). Leveraging tropical reef, bird and unrelated sounds for superior transfer learning in marine bioacoustics. *Philosophical Transactions of the Royal Society B*. 380: 20240280. <https://doi.org/10.1098/rstb.2024.0280>

Nixon, E. N.*, Gutting, A. N., Cook, S., Wegley Kelly, L., & **Lillis, A.** (2025). Multi-year evaluation of rearing techniques for three sexually propagated Caribbean corals in a restoration setting. *Restoration Ecology*. e70039.

Lillis, A., Apprill, A., Armenteros, M. & T.A. Mooney (2023) Small-scale variation in the acoustic environments of coral reefs. In: Popper, A. N., Hawkins, A.D., Thomsen, F. (eds) *The Effects of Noise on Aquatic Life*. Springer, Cham. https://doi.org/10.1007/978-3-031-10417-6_114-1

Lillis, A. & T.A. Mooney. (2022) Sounds of a changing sea: temperature drives acoustic output by dominant biological sound-producers in shallow water habitats. *Frontiers in Marine Science*. 9:960881.doi: 10.3389/fmars.2022.960881

Suca, J.J.*, **Lillis, A.**, Jones, I.T.*, Kaplan, M.B.* and others (2020) Variable and spatially explicit response of fish larvae to the playback of local, continuous reef soundscapes. *Marine Ecology Progress Series*. 653:131151. <https://doi.org/10.3354/meps13480>

Lillis, A., Apprill, A., Suca, J.J.*, Becker, C.*, Llopiz, J.K. & T. A. Mooney. (2018) Soundscapes influence the settlement of the common Caribbean coral *Porites astreoides* irrespective of light conditions. *Royal Society Open Science*. 5(12). <http://doi.org/10.1098/rsos.181358>

Dinh, J.P.*, Suca, J.J.*, **Lillis, A.**, Apprill, A., Llopiz, J. & T.A. Mooney. (2018) Multiscale spatio-temporal patterns of boat noise on U.S. Virgin Island coral reefs. *Marine Pollution Bulletin* 136: 282-290

Lillis, A., & T.A. Mooney. (2018) Snapping shrimp sound production patterns on Caribbean coral reefs: relationships with celestial cycles and environmental variables. *Coral Reefs* 37(2): 597-607

Lillis, A., Caruso, F., Mooney, T.A., Llopiz, J.K., Bohnenstiehl, D.R., & D.B. Eggleston. (2018) Drifting hydrophones as an ecologically meaningful approach to underwater soundscape measurement in coastal benthic habitats. *Journal of Ecoacoustics* 2: #STBDH1, <https://doi.org/10.22261/JEA.STBDH1>

Lillis, A., Perelman, J.*, Panyi, A.* & Mooney, T.A. (2017) Sound production patterns of big-clawed snapping shrimp (*Alpheus* spp.) are influenced by time-of-day and social context. *Journal of the Acoustical Society of America* 142(5): 3311-3320.

Lillis, A. & Mooney, T.A. (2016) Loudly heard, little seen, and rarely understood: Spatiotemporal variation and environmental drivers of sound production by snapping shrimp. *Proceedings of Meetings on Acoustics* 27: 010017, <http://dx.doi.org/10.1121/2.0000270>

Lillis, A., Bohnenstiel, D., Peters, J.W.*, & Eggleston, D. (2016) Variation in habitat soundscape characteristics influences settlement of a reef-building coral. *PeerJ* 4:e2557 <https://doi.org/10.7717/peerj.2557>

Ricci, S.W.*, Eggleston, D.B., Bohnenstiehl, D.R., & **Lillis, A.** (2016) Temporal soundscape patterns and processes in an estuarine reserve. *Marine Ecology Progress Series* 550:25-38.

Bohnenstiel, D.R., **Lillis, A.** & Eggleston, D.B. (2016) The Curious Acoustic Activity of Estuarine Snapping Shrimp: Temporal Patterns of Snapping Shrimp Sound in Sub-tidal Oyster Reef Habitat. *PLoS ONE*. 11(1): e0143691. doi:10.1371/journal.pone.0143691

Lillis, A., Eggleston, D.B. & Bohnenstiehl, D.R. (2016) Soundscapes and larval settlement: characterizing the stimulus from a larval perspective. In: Popper, A. & Hawkins, A. (Eds.) *The Effect of Noise on Aquatic Life II*, Springer, New York. p.637-646.

Eggleston, D.B., **Lillis, A.** & Bohnenstiehl, D.R. (2016) Soundscapes and larval settlement: larval bivalve responses to habitat-associated underwater sound. In: Popper, A. & Hawkins, A. (Eds.) *The Effect of Noise on Aquatic Life II*, Springer, NY. p. 255-264.

Lillis A., Bohnenstiehl DR, Eggleston DB. (2015) Soundscape manipulation enhances larval recruitment of a reef-building mollusk. *PeerJ* 3:e999

Lillis, A., Eggleston, D.B. & Bohnenstiehl, D.R. (2014) Soundscape variation from a larval perspective: the case for habitat-associated sound as a settlement cue for weakly swimming larvae. *Marine Ecology Progress Series* 509: 57-70. doi: 10.3354/meps10917

Lillis, A., Eggleston, D.B. & Bohnenstiehl, D.R. (2014) Estuarine soundscapes: distinct acoustic characteristics of oyster reefs compared to soft-bottom habitats. *Marine Ecology Progress Series* 505: 19-28. *Feature Article

Lillis, A., Eggleston, D.B. & Bohnenstiehl, D.R. (2013) Oyster larvae settle in response to habitat- associated underwater sounds. *PLoS ONE* 8(10): e79337.

Eggleston, D., **Lillis, A.**, & Bohnenstiehl, D. (2013) Larval settlement in response to estuarine soundscapes. *Journal of the Acoustical Society of America* 134(5):4148.

Lillis, A. & Snelgrove, P.V.R. (2010) Near-bottom hydrodynamic effects on postlarval settlement in American lobster, *Homarus americanus*. *Marine Ecology Progress Series* 401:161-172.

GRANTS & FELLOWSHIPS

Earthways Foundation (\$5900) <i>Spawning Coral & Capacity: Training Local Trainers for Reef Resilience in Zanzibar</i>	2026-2027
Blue Alliance (\$36,480) <i>Coral reproduction and recruitment patterns in the Pemba Channel Conservation Area</i>	2025-2026
marinecultures.org/Zoo Basil (\$37,492) <i>Research, Implementation, and Application of the Method of Sexual Coral Reproduction in Zanzibar and the WIO Region</i>	2025-2027
Scaling up Coral Reef Restoration in the USVI (\$200,000) <i>Butler Bay Restoration Project (Contributor/Project Lead)</i>	2023-2024
IDEA WILD Equipment Grant (\$1500)	2022
PADI Foundation Research Grant (\$5698)	2022
NFWF National Coastal Resilience Fund (P.I., \$2,409,103) <i>US Virgin Coral Innovation Hub, The Nature Conservancy</i>	2020-2024
NOAA Coral Reef Conservation Program (P.I., \$200,000) <i>US Virgin Coral Innovation Hub, The Nature Conservancy</i>	2020-2022
National Geographic Explorer Grant (P.I., \$18,000)	2019-2022
WHOI Interdisciplinary Award (Co-P.I., \$100,000) <i>Unsupervised habitat characterization from ambient soundscapes</i>	2016-2018
Woods Hole Oceanographic Institution Postdoctoral Scholarship (\$118,000)	2015-2017
PADI Foundation Research Grant (\$7000) <i>Racket on the reef: ambient reef sound as a coral settlement cue and the potential impact of anthropogenic noise</i>	2014-2015
NSF Doctoral Dissertation Improvement Grant (\$15,000)	2013-2014

NSF Grant OCE-1234688 (\$456,414) <i>(primary contributor to design and writing of proposal with P.I.s Eggleston & Bohnenstiehl)</i>	2012-2015
American Academy of Underwater Sciences (\$1500) Kathy Johnston Graduate Student Research Award	2011
PADI Foundation Research Grant (\$5000) <i>Underwater sound as an orientation and settlement cue for estuarine larvae</i>	2011
National Shellfisheries Association Carriker Research Grant (\$1250)	2011
National Science & Engineering Research Council of Canada (NSERC) Postgraduate Scholarship - Doctoral (\$42,000)	2009
North Carolina State University Provost's Fellowship (\$5000)	2009
National Science & Engineering Research Council of Canada (NSERC) Canada Graduate Scholarship – Masters (\$39,000)	2006

AWARDS & DISTINCTIONS

Caribbean Impact Award, The Nature Conservancy	2021
Travel Award for “Effects of Noise of Aquatic Life” International Meeting	2016
Best Presentation (3 rd), NCSU Graduate Research Symposium	2013
Travel Award for “Effects of Noise of Aquatic Life” International Meeting	2013
Best Poster Award, Southeastern Estuarine Research Society Meeting	2012
Best Poster Award, American Fisheries Society Tidewater Meeting	2012
Graduate Student Travel Award, NCSU Marine Sciences	2012
Best Student Poster, NCSU MEAS Graduate Student Symposium	2012
Outstanding Teaching Assistant Award, NC State University	2012
Best Student Presentation Award, Benthic Ecology Meeting	2011
Fellow of the School of Graduate Studies, Memorial University	2009
Memorial University Dean of Graduate Studies Award	2008
University of British Columbia Dean's List	2005

FIELD EXPERIENCE & RESEARCH SKILLS

Extensive coastal small vessel and scientific diving experience (800+ scientific dives):

2022-present	Zanzibar, Tanzania
	- coral spawning monitoring
	- water sampling and monitoring
	- reef habitat surveys
	- hydrophone deployment & recovery

- 2019-present St. Croix, US Virgin Islands
 - field-based coral nursery construction and maintenance
 - coral outplanting and restoration site preparation
 - reef photomosaic surveys
 - coral spawning and larval propagation
- 2020-2022 Bazaruto Archipelago, Mozambique
 - reef/hardbottom benthic surveys
 - instrument deployment and recovery
- 2015-2018 St. John, US Virgin Islands
 - coral reef benthic cover and fish surveys
 - acoustic recorder deployment and recovery
 - surface drifter deployments
- 2017 Cuba, Gardens of the Queen reefs
 - acoustic recorder deployment and recovery
 - hydrophone vertical array measurements
- 2014-2015 Curaçao, Carmabi Research Station
 - *in situ* larval settlement experiments
 - monitoring instrument deployment and recovery
- 2009-2014 Pamlico Sound, North Carolina
 - excavation and demographic sampling of oyster reefs
 - hydrophone deployment and recovery
 - fish and benthic sampling, trawls & gillnets

Oceanographic research cruise experience:

- 2018 *R/V Walton Smith*, Coral Chorus: reef soundscapes and recruitment
St. John, USVI, 23 days
- 2017 *R/V Walton Smith*, Rapid response to Hurricane Irma
St. John, USVI, 14 days
- 2017 *M/V Alucia*, Exploring protected Cuban coral reefs
Southern Cuba, 26 days
- 2013 *R/V Hatteras*, Deep-sea mooring deployment cruise
Blake Ridge, Western Atlantic, 6 days
- 2013 *R/V Atlantis*, Deep-sea methane seep collection cruise, ROV Jason
Caribbean Sea (Barbados), 21 days
- 2012 *R/V Savannah*, NOAA Fisheries Survey Cruise
Southeastern US (NC to FL), 14 days

Certifications/Qualifications:

AAUS Scientific Diver, TDI Air Diluent CCR Diver, PADI Divemaster, DAN Diver Emergency Medical Provider (CPR & First Aid), NAUI Rescue Diver, NAUI Nitrox Diver

Laboratory expertise:

- 2019-2022 - coral collections, husbandry, and propagation
- 2015-2018 - microbial ecology seawater sampling
- long-term experimental mesocosms
- temperature manipulations and monitoring experiments
- 2009-2014 - larval invertebrate (coral) rearing
- small tank acoustic replays

- particle motion measurements
- larval settlement tile microscope processing
- 2007-2009
 - laboratory flume experiments
 - hydrodynamic measurements (acoustic Doppler velocimetry)
 - larval crustacean behavioural observation
 - aquatic animal husbandry

TEACHING & MENTORING EXPERIENCE

Mentoring:

- | | |
|--------------|--|
| 2024-present | Hannah Gower, University of Exeter, UK, PhD student (co-supervisor)
Samantha Kremer, Sound Ocean Science intern/research assistant |
| 2023-2024 | Stefanie Maxin, University of the Virgin Islands Masters student |
| 2020-2023 | Raquel Moronde, Scripps Institute of Oceanography M.S. student
Emily Nixon, TNC intern (now at Scripps Institution of Oceanography)
Sophie Cook, TNC intern (now at Scripps Institution of Oceanography)
Kristina Black, UT-Austin PhD candidate (TNC NatureNet Fellow)
Lindsay Dade, University of the Virgin Islands Masters student
Makayla Carino, University of the Virgin Islands undergrad intern
Amanda Boussiere, University of the Virgin Islands undergrad intern |
| 2019-2020 | Mikayla Barnwell, TNC intern (now University of Hawaii M.S. student) |
| 2016-2018 | Alexis Earl, guest student, University of Texas
Jason Dinh, summer research fellow, Duke University
Apryle Panyi, guest investigator/graduate student, WHOI
Jessica Perelman, guest investigator/graduate student, WHOI
Martha Clark, high school student, WHOI
Karen Ji, high school student, WHOI |
| 2014-2015 | Shannon Ricci, M.S. student, North Carolina State University
Jason Peters, M.S. student, North Carolina State University |

Teaching:

- | | |
|-----------|---|
| 2021 | Guest Lecture, Duke University Masters in Environmental Science |
| 2019 | Guest Lecture, SEA Semester Program, St. Croix |
| 2017 | Guest Lecture, SEA Semester Program, Woods Hole, MA |
| 2016 | Guest Lecture, WHOI/MIT Joint Program, Woods Hole Oceanographic Institution, Effects of Noise on Aquatic Life |
| 2012-2014 | Guest Lecturer, North Carolina State University
Biological Oceanography (MEA 449/549)
Marine Biology (MEA 200)
Estuarine and Coastal Ecology (MEA 469) |
| 2011-2012 | Head Teaching Assistant, North Carolina State University
Biological Oceanography (MEA 449/549)
Department of Marine, Earth & Atmospheric Sciences
* Awarded NCSU Outstanding Teaching Assistant 2011 |
| 2009-2012 | Teaching Assistant/ Lab Instructor, North Carolina State University
Biological Oceanography (MEA 449/549)
Department of Marine, Earth & Atmospheric Sciences |

SELECTED MEDIA COVERAGE, COMMUNICATIONS & PUBLIC OUTREACH

Overheard at Nat Geo Podcast, “Snap, Crackle, Shrimp”, 2023

Featured “Nature Changemaker”, Change Starts Here: An Earth Day Celebration
<https://www.youtube.com/watch?v=ulzTI861k7A>

Scientific Contributor & Interviewee, New York Times Magazine
<https://www.nytimes.com/interactive/2018/09/21/magazine/voyages-travel-sounds-from-the-world.html>

Featured Scientist, Fusion Univision documentary “Coral Reefs Last Stand: Cuba”
<https://fusion.tv/video/589477/coral-reefs-last-stand-cuba/>

Scientific Contributor, Music of Reality, “Reef Music” www.musicofreality.com

Contributor, Black Inscription: a multimedia song cycle about our ocean, debuted Jan 2018
(<http://prototypefestival.org/archive/show/black-inscription/>)

“Eavesdropping on Snapping Shrimp Communication”
Oceanus Magazine, January 30, 2017
<http://www.whoi.edu/oceanus/feature/snap-chat-eavesdropping-on-snapping-shrimp-communication>

“Oh, snap! What snapping shrimp sound patterns may tell us about reef ecosystems”
Science Daily, Jan 14, 2016
<https://www.sciencedaily.com/releases/2016/01/160114163041.htm>

Scientific Contributor, Squidtoons Science Illustrations
<http://www.squidtoons.com/how-oyster-larvae-hear-their-way-home.html>

“NC researcher finds baby oysters drawn to places with reef sounds”
Raleigh News & Observer March 16, 2014
http://www.newsobserver.com/2014/03/16/3696613_what-do-baby-oysters-listen-for.html?rh=1

“Oyster Sounds” California Academy of Sciences Science News Nov. 16, 2013
<http://www.calacademy.org/explore-science/oyster-sounds>

“NC State Researchers Say Oysters Let Sounds Carry Them Home”
North Carolina Public Radio Interview Nov. 6, 2013
<http://wunc.org/post/nc-state-researchers-say-oysters-let-sounds-carry-them-home>

“The reefs are alive with the sound of oysters”
ScienceNews Scicurious Blog Nov. 5, 2013
<https://www.sciencenews.org/blog/scicurious/reefs-are-alive-sound-oysters>

“Oysters Don’t Have Ears But Still Use Sound to Choose Their Homes” Smithsonian.com
Nov. 1, 2013
<http://www.smithsonianmag.com/smart-news/oysters-dont-have-ears-but-still-use-sound-to-choose-their-homes-8117006/?no-ist>

“Oysters Use Sound to Select Their Home, Study Suggests”

Nature World News Oct. 31, 2013

<http://www.natureworldnews.com/articles/4710/20131031/oysters-use-sound-to-select-their-home-study-suggests.htm>

CONFERENCE PROCEEDINGS & INVITED PRESENTATIONS

Presented at over 30 international scientific meetings, including ecology, coastal research, fisheries, oceanography and acoustics conferences such as AAUS Ocean Sciences, Benthic Ecology Meeting, and International Coral Reef Symposium, and has given more than 15 invited seminars as an expert for university and research institution invited speaker series.

SELECTED INVITED PRESENTATIONS

- 2025 *Aquatic Invertebrate Sounds*, FishSounds Educate Seminar Series
- 2024 *Interviews with Fish: Ecoacoustic monitoring of coral reef habitats in East Africa*
African Bioacoustics Conference, Plenary Presentation
- 2023 *Listening to shrimp and interviewing fish: fundamental observations for reef ecoacoustics*
BioacousTalks, Cornell University
- 2022 *Sounds of a Changing Sea: Marine ecoacoustics and larval ecology.*
University of South Carolina, Department of Biology
- 2021 *Coral Reef Restoration: Gaps in science and engineering hinder ecologically meaningful outcomes.*
Woods Hole Oceanographic Institution – Reef Solutions Seminar Series
- 2019 *Corals of the Future: Restoration techniques for coral reef resilience*
World Ocean’s Day, Coralpalooza, St. Croix, US Virgin Islands
- 2019 *The Nature Conservancy’s US Virgin Islands Coral Innovation Hub*
National Park Service, Buck Island National Monument, St. Croix
- 2018 *Marine larval ecology, soundscape variation, and why we should listen to shrimp.*
Smithsonian Tropical Research Institute, Panama
- 2017 *The Sound of Fury? Drivers of snapping shrimp sound production and their domination of marine acoustic environments.*
Biology Seminar Series, Woods Hole Oceanographic Institution
- 2016 *Marine soundscapes, snapping shrimp, and why we should listen to the sea.*
Oceanography Seminar Series
Dalhousie University, Halifax, Canada

- 2015 *Tune in, turn on, drop out: Soundscapes as a larval settlement cue for reef-building marine invertebrates.*
Biology Seminar Series, Woods Hole Oceanographic Institution
- 2015 *Can you hear me now? Soundscape manipulation enhances oyster settlement.*
National Shellfisheries Association Annual Meeting, Monterey, CA, USA

ACADEMIC SERVICE

Reviewer for the journals:

Science, Scientific Reports, Frontiers in Marine Science, Marine Ecology Progress Series, Journal of Experimental Marine Biology and Ecology, Biofouling, PLOSone, PeerJ, Canadian Journal of Fisheries and Aquatic Sciences, Tropical Conservation Research, Coral Reefs, Marine and Coastal Fisheries, Remote Sensing for Ecology, Global Change, Journal of Applied Ecology

- 2015-2016 Postdoctoral Association Representative
Woods Hole Oceanographic Institution
- 2011 Chairperson & Founder, Graduate Student Symposium Committee
Marine, Earth & Atmospheric Sciences, North Carolina State University
- 2010-2011 Graduate Student Representative, Faculty Search Committee
Marine Microbial Ecology Assistant Professor, North Carolina State University
- 2010-2011 President, MEAS Graduate Student Association 2010-2011
Marine, Earth & Atmospheric Sciences, North Carolina State University
- 2009-2010 Vice-President, MEAS Graduate Student Association
Marine, Earth & Atmospheric Sciences, North Carolina State University
- 2007-2008 Vice-Chairperson & Treasurer, Biology Graduate Student Association,
Memorial University of Newfoundland
- 2007-2008 Graduate Student Representative to Faculty
Biology Department, Memorial University of Newfoundland
- 2007-2008 Graduate Student Representative to Academic Council
School of Graduate Studies, Memorial University of Newfoundland

ashlee LILLIS. PHD
MARINE ECOLOGY & CONSERVATION
ashlee@soundoceanscience.com

