

Erin N. Shilling

Curriculum Vitae

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EDUCATION

Harbor Branch Oceanographic Institute- Florida Atlantic University

Master of Science, Marine Science & Oceanography

August 2018-December 2020

Coral Reef Health & Molecular Ecology Lab, Advisor: Dr. Joshua Voss

GPA: 3.76

Thesis: Stony Coral Tissue Loss Disease Intervention Strategies for *Montastraea cavernosa*

The University of Texas at Austin

Bachelor of Science, Biology: Ecology, Evolution, & Behavior

2013-2017

Minor in Marine Science, Certificate in Environment & Sustainability

GPA: 3.52

RESEARCH EXPERIENCE

Lab Manager

January 2021 – Present

Coral Reef Health and Molecular Ecology Lab, Dr. Joshua D. Voss

Harbor Branch Oceanographic Institute-Florida Atlantic University, Fort Pierce, FL

- Library prep optimization and analysis of microbial samples collected from stony coral tissue loss disease affected *Montastraea cavernosa* corals as part of previous thesis project work
- Coordinate and conduct logistics, sampling, and analysis for several projects, including population genetics of *Porites astreoides* coral on St. Lucie Reef and a coral transplantation research project carried out in conjunction with the Florida Fish & Wildlife Research Institute
- Lead Southeast Florida coral reef monitoring field work, including coral disease surveys and coral disease intervention treatments
- Manage laboratory supplies including ordering and maintaining equipment, reagents, as well as keeping lab in accordance with safety regulations, writing lab SOPs, and training new students in laboratory techniques

Scientific Diver

August 31-September 9, 2021

Dry Tortugas National Park Stony Coral Tissue Loss Disease Intervention Cruise, RV Makai

- Invited to participate in National Fish and Wildlife Foundation Coral Response Emergency Fund project led by Dr. Karen Neely of Nova Southeastern University
- Treated over 6,000 corals with SCTLD around Bird Key in Dry Tortugas National Park as part of a team of seven other scientific divers

Graduate Research Assistant

August 2018 – December 2020

Coral Reef Health and Molecular Ecology Lab, Advisor Dr. Joshua D. Voss

Harbor Branch Oceanographic Institute-Florida Atlantic University, Fort Pierce, FL

- Over an 11-month period, treated and fate-tracked stony coral tissue loss disease-affected *Montastraea cavernosa* colonies on a nearshore Fort Lauderdale reef
- Effectiveness of two treatment methods, antibiotic and chlorine, were compared to untreated controls; measured tissue loss over time via 3D modelling
- Led Southeast Florida coral reef monitoring field work, including coral disease surveys and coral disease intervention treatments

Coral Disease Biologist and Scientific Diver

August 21-28, 2019

Leg 2, CIOERT Research Cruise, RV Walton Smith

Mesophotic Coral Reefs: Connectivity and Health in the Florida Keys National Marine Sanctuary and Pulley Ridge

- Aided in monitoring for scleractinian coral diseases, particularly for the presence of stony coral tissue loss disease
- Surveyed, collected, and processed shallow samples of scleractinian corals and sponges for population genetics and coral disease characterization studies

Science Team Member

August 14-18, 2019

Leg 1, Global Foundation for Ocean Exploration ROV Telepresence Cruise, RV Manta

Coral Reef Biodiversity and Connectivity in and around the Flower Garden Banks National Marine Sanctuary

- Conducted quantitative fish and benthic surveys, antipatharian and scleractinian coral and sponge collection and processing
- Narrated dives as part of live-streaming of ROV dives daily to the public to expand and encourage understanding about the FGBNMS and research cruises

Volunteer Lab Technician

January - May 2017

Bolnick Lab, Eco-Evo-Immuno Dynamics

University of Texas at Austin, Austin, TX

- Parasite evolution research, worked with PhD candidate Will Shim in Dr. Dan Bolnick's lab
- Dissected anole lizards to better understand parasites associated with them and their evolution between geographically separate populations
- Conducted lab work including DNA extractions to quantify copepod's susceptibility to parasites

Independent Researcher

January- May 2016

Villareal Lab, Phytoplankton Ecology

University of Texas Marine Science Institute, Port Aransas, TX

- Project title: Investigating the potential for positive buoyancy in *Ditylum brightwellii*
- Conducted research under Dr. Tracy Villareal through the UT Semester by the Sea program
- Confirmed novel behaviors in *D. brightwellii*, a species of diatom, while optimizing and utilizing experimental lab techniques

Volunteer Research Assistant

August 2015-May 2016

Matz Laboratory, Coral Genomics

University of Texas at Austin

- Conducted RNA extractions and qPCR to validate candidate biomarker genes in *Acropora millepora*, a species of scleractinian coral
- Contributed to paper produced by PhD candidate Rachel Wright, under supervision of Dr. Mikhail Matz

Project Leader/Researcher

January -June 2015

University of Texas at Austin & Akumal, Quintana Roo, Mexico

- Project title: Tourism and Coral Reef Community Structure
- Field course led by UT faculty member Dr. Kenneth Dunton
- Collaborated with team members over 5-month period to plan and execute a 3-week field research project in June in Akumal
- Led team of three in proposing and conducting field research studying tourism's effects on coral reef benthic community structure
- Produced research paper and presented findings to colleagues and program participants

Project Leader/Researcher

August-December 2014

Brackenridge Field Lab, University of Texas at Austin

- Project title: Comparison of rates of decomposition between native and invasive plant species at Brackenridge Field Lab, Austin, Texas

- Designed and carried out a study to compare the rates of decomposition of physiologically similar native and invasive plant species as part of a UT field biology lab course

WORK EXPERIENCE

Lakes Region Conservation Corp- AmeriCorps

November 2017-August 2018

Squam Lakes Association, Holderness, NH

- Developed new education & outreach programs targeting groups in the region to encourage environmental appreciation & conservation
- Maintained and assisted in the management of 50+ miles of trails surrounding the Squam Lakes watershed
- Identified, mapped, and implemented management strategies to control both terrestrial and aquatic invasive species in the region

Conservation Intern

May 2017-August 2017

Bald Head Island Conservancy, Bald Head Island, NC

- Conducted monitoring programs as part of contracts with local government, including beach, aquifer & creek water quality, mammal & shorebird surveys, & dune health, saltwater aquarium maintenance
- Led public education programs covering topics including sea turtles and other coastal conservation and protection themes
- Co-designed and executed study to assess the success of the conservancy's white-tailed deer population management program

Conservation Intern

May 2016 – August 2016

Squam Lakes Association, Holderness, NH

- Aided in management tactics to control invasive variable milfoil (*Myriophyllum heterophyllum*) infestation in the Lakes region using diver-assisted suction harvesting and hand-pulling removal techniques
- Maintained and encouraged responsible recreation of the Squam Lakes region through trail & campsite maintenance, water quality monitoring, and youth education
- Trained and led teams of scuba divers and trail work crews of 3-4 people as a part of intern training and duties

Wild Birds of Africa Intern

June 2015 – August 2015

Dallas Zoo, Dallas, TX

- Prepared diets, cleaned and maintained enclosures and exhibits, assisted with husbandry, medical procedures and enrichment for over 75 species of African birds
- Conducted an independent project analyzing egg hatching methods and success to improve breeding program

Quarantine Intern

June 2015 – August 2015

Dallas Children's Aquarium, Dallas, TX

- Prepared diets, cleaned and maintained enclosures and exhibits, assisted with husbandry, medical procedures for many taxa of sick, injured, or newly acquired marine creatures at aquarium
- Monitored water quality and parameters of all saltwater quarantine tanks

TEACHING

Undergraduate Teaching Assistant

January 2016-May 2017

Humans and a Changing Ocean (30 undergraduate students); Dr. Dong-Ha Min

University of Texas at Austin

- Independently planned & led weekly discussion sections for an oceanography course for non-science majors
- Lectured students on course related material, assisted in class lectures, held office hours, proctored exams

Undergraduate Teaching Assistant

August 2016-December 2016

Introduction to Oceanography (40 undergraduate students); Dr. Dong-Ha Min

University of Texas at Austin

- Independently led prepared weekly lab lectures and activities for an introduction oceanography course for non-science majors
- Wrote quizzes, lectured students on course related material, assisted in class lectures, held office hours, proctored exams

Undergraduate Assistant & Speech Consultant

August 2014- December 2014

Interactive Ocean (18 undergraduate students); Dr. Sean P. Gulick

University of Texas at Austin

- Assisted with an undergraduate course covering oceans' geography, history, and biology
- Received training & provided writing and speech assistance to students, both in class and during office hours
- Planned and led several class discussions, prepared several class assignments

STUDENTS MENTORED

Elle Cohen

February 2021-Present

Voss Lab Intern

Generation and optimization of 3D models to track healthy tissue areas on corals affected with stony coral tissue loss disease in Southeast Florida

McKenna Rayburn

May-August 2019

Harbor Branch Oceanographic Institute Summer Intern

Intervention Methods and Rate of Tissue Loss on Stony Coral Tissue Loss Disease-Affected *Montastraea cavernosa* in the Florida Reef Tract

PUBLICATIONS

Peer Reviewed

Shilling, E. N., Combs, I. R., Voss, J. D. 2021. Assessing the effectiveness of two intervention methods for stony coral tissue loss disease on *Montastraea cavernosa*. *Scientific Reports* 11:8566.

Shilling, E. N., Holt, K. P., and Gartman, D. 2017. Tourism & Coral Reef Community Structure in Akumal Bay. *Texas Undergraduate Research Journal*.

Wright, R. M., Kenkel, C. D., Dunn, C. E., **Shilling, E. N.**, Bay, L. K., Matz, M. V. 2017. Intraspecific differences in molecular stress responses and coral pathobiome contribute to mortality under bacterial challenge in *Acropora millepora*. *Scientific Reports* 7:2609.

Technical Reports

Voss JD, **Shilling E**, Pantoni G, Eckert R, Sturm A. 2021. Advancing Coral Intervention and Resilience in Southeast Florida. Florida DEP. Miami, FL. Pp 1-15.

Voss JD, **Shilling E**, Combs I, Carreiro A, Studivan M, and Beal J. 2020. Intervention and fate tracking for corals affected by stony coral tissue loss disease in the northern section of Florida's Coral Reef. Florida DEP. Miami, FL. Pp. 1-33.

Voss JD, **Shilling E**, Combs I. 2019. Intervention and fate tracking for corals affected by stony coral tissue loss disease in the northern Florida Reef Tract. Florida DEP. Miami, FL. Pp. 1-23.

PRESENTATIONS

Shilling, E. N., Carreiro, A. M., Combs, I. R., Studivan, M. S., Beal, J., Voss, J. D. “Intervention strategies for diseased corals in Southeast Florida and potential impacts on mucus microbial communities”. **Pre-recorded oral presentation** at the 14th ICRS Virtual 2021 Conference.

Shilling, E. N., Combs, I., Studivan, M. S., Beal, J., Voss, J. D. “Intervention Strategies for Diseased Corals in SE Florida”. **Oral presentation** at the Indian River Lagoon Symposium. Feb. 13th, 2020. Harbor Branch Oceanographic Institute, Fort Pierce, Fl.

Shilling, E. N., Beal, J., Voss, J. D. “Intervention strategies for diseased corals in Southeast Florida and potential impacts on mucus microbial communities”. **Poster presentation** at the 2019 Benthic Ecology Meeting. April 4th. Sheraton Hotel Newfoundland, St. John’s, Newfoundland, Canada.

Shilling, E. N., Beal, J., Voss, J. D. “Implementing disease intervention strategies on corals in the southeast Florida Reef Tract and assessing their potential impact on mucus microbial communities”. **Poster presentation** at the 2019 ASLO Aquatic Sciences Meeting. Feb. 16th. Puerto Rico Convention Center, San Juan, Puerto Rico.

Shilling, E. N., Beal, J., Voss, J. D. “Coral Disease Intervention Strategies and Coral Mucus Community Composition”. **Oral presentation** at the Indian River Lagoon Symposium. Feb. 7th, 2019. Harbor Branch Oceanographic Institute, Fort Pierce, Fl.

Shilling, E. N. “Disease and Ecology of Southeast Florida Coral Reefs”. **Oral presentation** at the St. Lucie County Aquarium. Jan. 16th, 2019. Fort Pierce, Fl.

Shilling, E. N., Holt, K. P., Gartman, D. “Tourism and Coral Reef Community Structure in Akumal Bay”. **Poster presentation** at the UT Undergraduate Research Forum. Apr. 16th, 2019. University of Texas at Austin, Austin, TX.

Shilling, E. N. “Investigating the potential for positive buoyancy in a small species of diatom, *Ditylum brightwellii*”. **Poster presentation** at the 2016 Bridging Discipline Program Poster Session. Apr. 21st, University of Texas at Austin, Austin, TX.

HONORS AND AWARDS

Best Three-Minute Student Presentation, Indian River Lagoon Symposium, February 2019

Florida Atlantic University Provost Fellow, 2018-2020

University Honors, Spring & Fall 2014, Spring 2016, University of Texas at Austin

EXTRACURRICULARS & VOLUNTEERING

Marine Science Club at UT Austin - *Historian* (Aug. 2015-Dec. 2015); *Vice President* (Aug. 2016-May. 2017)

- Led and assisted in coordinating weekly member meetings, social events, recruitment, and community outreach
- Coordinated group Open Water SCUBA certification for members of club

Animal Rehabilitation Keep (ARK) – *Volunteer*, Port Aransas, TX January 2016 – May 2016

- Assisted with care and rehabilitation of marine shore birds by preparing diets, feeding, cleaning & maintenance of holding facilities
- Helped with medical procedures as needed

FUNDING

\$5,000 Florida Atlantic University Provost Fellowship	2019
\$2,400 Florida Atlantic University Graduate Grant	2019
\$9,750 Indian River Lagoon Graduate Research Fellowship	2019
\$5,046 PADI Foundation Grant	2019
\$800 FAU Graduate & Professional Student Association	2019
\$3,988 Indian River Lagoon Graduate Research Fellowship	2018
\$5,000 Florida Atlantic University Provost Fellowship	2018
\$2,400 Florida Atlantic University Graduate Grant	2018
\$1,750 Anna Mae Hutchison Endowed Scholarship, UT Austin	2016
\$3,500 Semester by the Sea Tuition Scholarship, UT Austin	2016
\$1,000 Undergraduate Research Fellowship, UT Austin	2016
\$8,000 Exchange Club of East Dallas Scholarship	2013
\$5,000 Pete Schenkel Scholarship, State Fair of Texas	2013
\$2,000 Sally Poe Turpin Memorial Scholarship, Woodrow Wilson High School Community Foundation	2013

CERTIFICATIONS & SKILLS

AAUS Certified Scientific Diver, 200+ scientific dives, 100 fsw

PADI Nitrox

DAN Oxygen Delivery, First Aid, and CPR for scuba diving injuries

SSI Open Water Diver, 50+ dives

Department of Interior Motorboat Operator Certification Course

Wilderness First Aid

New Hampshire Safe Boater

New Hampshire Commercial Boating License

SKILLS

Computer: MS Word, Excel, PowerPoint, Access; Adobe Acrobat, R Studio, Image J, Windows OS, FFmpeg, Agisoft Metashape, Rhinoceros 3D

Laboratory Practical: DNA & RNA extractions, amplicon library prep and analysis, 2bRAD library prep and analysis, qPCR, PCR, gel electrophoresis, Qubit, Nanodrop, water quality analyses, stereoscopy, saltwater aquaria maintenance

Field Practical: Small boat operations (6 months experience), scientific diving, UTV operation, transect surveys, GPS, Li-Cor 250, YSI Sonde use and maintenance, scleractinian coral & sponge collection, scleractinian coral disease intervention & treatment techniques, sediment cores, seine net sampling, otter trawls & plankton tows, radio telemetry tracking, identification of marine shorebirds, Caribbean coral, algae, & reef fish species, spotlighting surveys, hiking trail development and maintenance