Sara Swaminathan, PhD

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EDUCATION

University of Florida

- **PhD,** Environmental Engineering Sciences 2019 - 2024
  Dissertation: *Potential for Coral Reef Community Resilience in the Anthropocene*
  Faculty advisor: Andrew Altieri
  GPA: 4.00/4.00

Wesleyan University 2013 - 2017

- **Bachelor of Arts**, Science in Society Program
  Minor: Art History

PROFESSIONAL APPOINTMENTS

Postdoctoral Scientist 2024 - Present
Bigelow Laboratory for Ocean Sciences, East Boothbay, ME
Advisor: Douglas Rasher

STRI Fellow 2025 – Present
Smithsonian Tropical Research Institute, Panama City, Panama
Advisor: Matthieu Leray

Graduate research assistant 2019 - 2024
Department of Environmental Engineering Sciences, University of Florida, Gainesville, FL
Advisor: Andrew Altieri

Laboratory manager - Coral Ecophysiology and Ocean Acidification Lab 2018 - 2019
Department of Marine Biology and Ecology, RSMAS, University of Miami, Miami, FL
Advisor: Chris Langdon

Research fellow – Bahamas Marine EcoCentre 2017 –2019
Department of Marine Geosciences, RSMAS, University of Miami, Miami, FL
Advisors: Pamela Reid, Amanda Oehlert

Independent research – Purkis Remote Sensing Lab 2017 –2019
Department of Marine Geosciences, RSMAS, University of Miami, Miami, FL
Advisor: Samuel Purkis

Independent research – Photomosaics Lab 2017 – 2018
Department of Marine Geosciences, RSMAS, University of Miami, Miami, FL
Advisors: Art Gleason, Brooke Gintert

PUBLICATIONS

- **Swaminathan SD**, Lafferty KD, Knight NS, and Altieri AH (2024). Stony coral tissue loss disease indirectly alters reef communities. *Science Advances*, *10*(18). https://doi.org/10.1126/sciadv.adk6808.
- **Swaminathan SD**, Meyer JL, Johnson MD, Paul VJ, Bartels E and Altieri AH (2024) Divergent responses of the coral holobiont to deoxygenation and prior environmental stress. *Frontiers in Marine Science* 10:1301474. https://doi.org/10.3389/fmars.2023.1301474.

- Johnson MD, **Swaminathan SD**, Nixon EN, Paul VJ, Altieri AH (2021) Differential susceptibility of reef-building corals to deoxygenation reveals remarkable hypoxia tolerance. *Scientific Reports* 11:23168. https://doi.org/10.1038/s41598-021-01078-9.
- Altieri AH, Johnson MD, **Swaminathan SD**, Nelson HR, Gedan KB (2020) Resilience of Tropical Ecosystems to Ocean Deoxygenation. *Trends in Ecology & Evolution* 36(3):227-238. doi: 10.1016/j.tree.2020.11.003.
- **Swaminathan SD,** Craig Z, Didderen K, Lengkeek W, Merck D, Muller E, Van Der Heide T, Altieri AH Predator exclusion improves coral reef restoration success in a marine protected area. *Restoration Ecology IN REVIEW*

FUNDING, HONORS & AWARDS

2022 Tropical Conservation and Development Travel Award, University of Florida Center for Latin American Studies ($500)
2020 Tropical Conservation and Development Field Research Award, University of Florida Center for Latin American Studies ($2500)
2020 Sally and William Glick Graduate Research Endowment, University of Florida Department of Environmental Engineering Sciences ($1500)
2019 National Science Foundation Graduate Research Fellowship Program (NSF GRFP) ($144,000)
2019 University of Florida Graduate Student Preeminence Award, University of Florida Graduate School ($36,000)
2018 Bahamas Marine EcoCentre Research Fellow ($10,000)

OUTREACH & MENTORING

- Workshop organizer – Boston High School Marine Science Symposium; Boston, MA April 2025
- Facilitator – Girls Who Code; Boothbay, Maine September 2024 - Present
- Mentor – Frost Science Museum IMPACT Program; Miami, FL 2018
- Student teacher – Marine Research Club (middle and high school); South Caicos, TCI 2016
- Past and present research mentees are listed below:
  - Alexandra Grant (2023 – present) – Current Masters student, Department of Environmental Engineering Sciences, University of Florida
    Thesis title: *Key Drivers of Growth and Survival for Coral Outplanting Success in the Florida Keys*
  - Julie Fernandez (2021 – present) – Current undergraduate research assistant, Department of Environmental Engineering Sciences, University of Florida
    Thesis title: *Responses of the Coral Microbiome to Warming and Deoxygenation*
  - Hailey Vaughan (2021 – 2022) – Former research assistant, Department of Environmental Engineering Sciences, University of Florida
  - Garret O'Donnell (2021) – Current Knauss Fellow at National Oceanographic and Atmospheric Association
  - Will Ferrell, Mikey Orense, Claire Hiaasen, Hunter Kaminski (2019 – 2020) - Former undergraduates at the University of Florida, Department of Environmental Engineering Sciences
  - Tessa Vekich (2019-2020) – Former staff biologist at Smithsonian Marine Station (2019-2021)
  - Emily Nixon (2019) – Current PhD Student at Scripps Oceanographic Institute

TEACHING EXPERIENCE

- Smithsonian Tropical Research Institution, McGill NEO program — Co-instructor
- Curriculum development – Reefologies, an educational card game about coral reef ecology for middle/high school students, April 2025

EXTERNAL & INTERNAL SERVICE

External Service:

- Reviewer – Scientific Reports (2024 – present)
- Reviewer – Marine Ecology Progress Series (2024 – present)
- Reviewer – PLOS One (2024 – present)
- Reviewer – Journal of Fish Biology (2024 – present)

Internal Service:

- Member – Diving Control Board, Bigelow Laboratory for Ocean Sciences (2025 – present)
- Organizer – North Florida Marine Science Symposium (2020 – 2024)

CONFERENCE PRESENTATIONS & INVITED TALKS

- "Recent heatwave shifts coral reef communities in unexpected ways" Oral presentation; Western Society of Naturalists meeting. 10 Nov 2023, Monterey, California.
- "Stony Coral Tissue Loss Disease alters coral reef communities" Oral presentation; Ecological Society of America. 10 Aug 2023, Portland, Oregon.
- "Stony Coral Tissue Loss Disease threatens reef fish by altering benthic communities" Oral presentation; North Florida Marine Science Symposium. 03 Mar 2023, Marineland, Florida. Award for Best Graduate Student Oral Presentation.
- "Stony Coral Tissue Loss Disease threatens reef fish by altering benthic communities" Oral presentation; Western Society of Naturalists meeting. 13 Nov 2022, Oxnard, California.
- "Resilience of the Acropora cervicornis microbiome to hypoxia and host physiological stress" Oral Presentation; International Coral Reef Symposium. 06 July 2022, Bremen, Germany.
- "Responses of benthic and reef fish assemblages to Stony Coral Tissue Loss Disease" Oral presentation; Benthic Ecology Meeting. 31 March 2022, Portsmouth, NH.
- "Resilience of the coral microbiome to hypoxia and host physiological stress" Oral presentation; Coastal Hypoxia Research Program Advisory Committee Meeting. 26 April 2021, Gainesville, FL.
- "Light exposure mediates susceptibility of juvenile *P. astreoides* to oxygen depletion" Oral presentation; Coastal Hypoxia Research Program Advisory Committee Meeting. 10 April 2020, Gainesville, FL.
- "Light exposure mediates susceptibility of juvenile *P. astreoides* to oxygen depletion" Poster presentation; North Florida Marine Science Symposium. 23 January 2020, Marineland, FL.
- "Site and genotype influence success of *A. cervicornis* outplants in the Florida Keys" Oral presentation; Coastal Ecosystem Dynamics Seminar, University of Florida. 19 November 2019, Gainesville, FL.
- "Assessing the relationship between *Spirobranchus giganteus* presence and health of coral hosts." Oral presentation; Academic panel and local community meeting. 05 December 2016, South Caicos, Turks and Caicos Islands.

TECHNICAL SKILLS

- **Fieldwork**: Over 300 AAUS research dives in the Florida Keys, Panama, Belize, Bonaire, French Polynesia. Field experiment design and deployment, underwater census methods (coral taxonomy and demography surveys, fish surveys, habitat surveys, benthic community surveys), underwater photography, biological sample collection, water quality instrument deployment. 5+ years boat operation experience. 5+ years of coral reefrestoration experience.
- **Research diving**: AAUS Scientific Diver since 2019. NAUI/SSI Drysuit diver since 2025. NAUI Master, Rescue, & Nitrox certified since 2019. Advanced open water certified since 2016.
- **Field instrumentation**: 8+ years experience with deployment, maintenance, calibration, and data management of a variety of field instruments such as multiparameter YSI sondes, MiniDOT oxygen and temperature loggers, light sensors, and temperature loggers.
- **Laboratory skills**: 8+ years experience with coral husbandry; wetlab mesocosm operation and maintenance for multistressor experimentation; sampling/processing of coral tissue; fish dissection and sample processing; Pulse-amplitude modulated (PAM) fluorometry.

- **Molecular skills:** Preparing samples from fish and corals for microbial analyses; Performing DNA extractions, PCR library preparation, Gel electrophoresis.
- **Analytical skills**: Expertise with Bayesian multilevel modeling, bioinformatics of metabarcoding data, multivariate community analyses, image and video analysis of ecological datasets, and DNA reference library curation; Highly proficient in R, data visualization, Bayesian and frequentist statistical methods, LaTex, MATLAB, TagLab, ArcGIS, GitHub, Adobe Creative Suite, Microsoft Office.