

## John Morris

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### Professional Perspective:

I am passionate about marine science, research, and education. Throughout my ten years at NOAA, The Rosenstiel School, CIMAR and CIMAS, I have developed a diverse research portfolio and have become proficient across several areas of the scientific field. This includes physiological and transcriptomic response measurements of sponges, corals and endolithic algae, habitat modelling of coral reef ecosystems using benthic and fish survey data, assessing reef persistence in response to global and local environmental stressors, monitoring restoration success and coral recovery for reef ecosystems impacted by vessel groundings, seawater CO<sub>2</sub> manipulation and carbonate chemistry analysis, designing open-source equipment for experimental use, and proficiency in the CT-scanning of coral cores to characterize long-term coral growth records.

### Education:

**Rosenstiel School of Marine, Atmospheric, and Earth Science, Miami, FL (GPA: 3.8) 2017 to 2022**

PhD Marine Biology and Ecology

*The impact of carbonate chemistry on bioeroding sponges and the persistence of South Florida coral reefs*

**The University of Miami, Coral Gables, FL (GPA: 3.7) 2013 to 2017**

B.S. Double Major in Marine Science and Biology; Minor in Chemistry

*Coral stress bands and growth characteristics in Flower Garden Banks, Puerto Rico, and Florida Keys environments*

### Research Experience:

**Cooperative Institute for Marine and Atmospheric Studies and NOAA/AOML, Miami, FL 2023 to Present**

CIMAS Director: Benjamin Kirtman, PhD; NOAA/AOML PI: Ian Enochs, PhD

*Post-Doctoral Associate*

Erosion Rates of *Acropora palmata* in the Florida Keys (2024 to present)

*Evaluated the erosion rates of endangered Acropora palmata colonies affected by the 2023 mass bleaching event*

Benthic Habitat Persistence of *Mission: Iconic Reefs* (2023 to present)

*Modelled habitat persistence of Mission: Iconic Reefs in response to global and local environmental stressors*

**Cooperative Institute for Marine and Atmospheric Research, Honolulu, HI 2022 to 2023**

Ecosystem Sciences Division, PI: Brittany Huntington, PhD

*Marine Ecosystems Research Analyst*

Monitoring Restoration Success in Hawaii – *Voetrader* Vessel Grounding (2022 to 2023)

*Assessed reef recovery and restoration efficacy 12 years after the Voetrader vessel grounding in Oahu, HI*

**NOAA, Atlantic Oceanographic and Meteorological Laboratory, Miami, FL 2015 to 2022**

Ocean Chemistry and Ecosystems Division, PI: Ian Enochs, PhD

*Research Scientist and Ph.D Student*

Sponge Bioerosion and Diurnal Carbonate Chemistry Variability (2021)

*Measured the physiological response of two sponges to diurnal carbonate chemistry variability and ocean acidification*

Carbonate Budget State of South Florida Reefs (2020)

*Described coral reef habitat and growth characteristics of 723 reef sites throughout South Florida*

Sponge Bioerosion and Ocean Acidification (2019)

*Assessed the physiological and molecular impact of ocean acidification on two Caribbean sponges*

CO<sub>2</sub> Vent Sites (2018 and 2019)

*Characterized reef sites located near two natural CO<sub>2</sub> vents in the Grenadines and the Philippines*

Coral Calcification and Light Intensity (2018)

*Developed a response curve of *Orbicella faveolata* calcification rates as a function of light intensity*

Microbioerosion and Ocean Acidification (2017)

*Evaluated the impact of ocean acidification on the microbioerosion rates of endolithic algae in dead reef framework*

Coral Stress Bands (2017)

*Used CT scanning protocols to delineate 20 years of growth characteristics of coral cores*

## Field Experience:

- Florida Keys (2023 to present)  
*Carbonate budget surveys, photogrammetric analysis of coral colony erosion rates*
- Hawaii (2022 to 2023)  
*Surveys of coral communities, 3D SFM mosaics, photoquad annotation of benthic communities*
- Florida Keys and Dry Tortugas (2015 to 2022)  
*Carbonate budget surveys, sample collection (coral, sponges, reef substrate), 3D SFM mosaics, coral coring, instrument deployment, collection of seawater carbonate chemistry samples*
- Southeast Florida (2020)  
*3D SFM mosaics, collection of seawater carbonate chemistry samples*
- Philippines (2019)  
*Characterized a natural CO<sub>2</sub> vent site, 3D SFM mosaics, collection of seawater carbonate chemistry samples, deployment of bioeroding monitoring units*
- Flower Garden Banks (2018)  
*Carbonate budget surveys, sample collection (coral, sponges, reef substrate), 3D SFM mosaics, coral coring*
- Grenadines (2018)  
*Characterized a natural CO<sub>2</sub> vent site, 3D SFM mosaics, collection of seawater carbonate chemistry samples*

## Teaching Experience:

- Teaching assistant for Introduction to Marine Biology Laboratory (2018, University of Miami, BIL232)  
*Developed course material and led weekly lab experiments for undergraduate students*
- Teaching assistant Introduction to Marine Science Laboratory (2019, University of Miami, MSC112)  
*Developed course material and led weekly lab experiments for undergraduate students*
- Guest lectures for Introduction to Marine Biology (2019, University of Miami, BIL231)  
*Delivered guest lectures on material related to coral reef ecology*

## Education and Outreach:

- Interview, Miami | South Florida, WLRN (2022)  
*NPR interview discussing the state of Florida's coral reef habitat*  
<https://www.wlrn.org/environment/2022-12-08/floridas-350-mile-long-reef-tract-is-now-shrinking-faster-than-its-growing>
- Our Generation Ocean 360, VR film series, ANGARI Foundation (2018)  
*Immersive remote experiential education for underserved middle-school and high-school students*  
<https://angari.org/generationocean/>

## Publications:

- Esplandiu, E., Lirman, D., Enochs, I., **Morris, J.**, Besemer, N. (*in prep*). Reviving coral reefs: enhancing reef carbonate budgets through restoration.
- Morris, J.**, Huntington, B., Couch, C., Ruseborn, S. (*in revisions*). Comparing long-term outcomes of passive versus active restoration approaches following a vessel grounding in Hawaii, USA.
- Huntington, B., Couch, C., **Morris, J.**, Ruseborn, S. (2024). Study design and analytical guidance for assessing restoration success following vessel groundings on coral reefs. NOAA National Marine Fisheries Service Pacific Islands Fisheries Science Center, 10.25923/D38J-7C34.
- Morris, J.**, Enochs, I., Studivan, M., Young, B., Mayfield, A., Soderberg, N., Traylor-Knowles, N., Kolodziej, G., Manzello, D. (2023). Ocean acidification influences the gene expression and physiology of two Caribbean bioeroding sponges. *Frontiers in Marine Science*, 10:1223380.
- Morris, J.**, Enochs, I., Besemer, N., Viehman, S., Groves, S., Blondeau, J., Ames, C., Towle, E., Manzello, D. (2022). Low net carbonate accretion characterizes Florida's coral reef. *Scientific Reports* 12, 19582.
- Morris, J.**, Enochs, I., Webb, A., de Bakker, D., Soderberg, N., Kolodziej, G., Manzello, D. (2022). The influence of diurnal variability and ocean acidification on the bioerosion rates of two reef-dwelling Caribbean sponges. *Global Change Biology*, 28(23).
- Reyes, M., San Diego-McGlone, M.L., Pavia, R., Opina, J., Isah, R., Magyaya, R., **Morris, J.**, Tamayo, N., Licuanan, W. (2022). Low pH and low coral cover at a shallow hydrothermal vent site in Batangas, Philippines. *Philippine Journal of Science* 151(2).
- Enochs, I., Toth, L., Kirkland, A., Manzello, D., Kolodziej, G., **Morris, J.**, Holstein, D., Schlenz, A., Randall, C., Aronson, R. (2021). Upwelling and the persistence of coral-reef frameworks in the eastern tropical Pacific. *Ecological Monographs* 91(4).
- Enochs, I., Formel, N., Manzello, D., **Morris, J.**, Mayfield, A., Boyd, A., Kolodziej, G., Adams, G., Hendee, J. (2020). Coral persistence despite extreme periodic pH fluctuations at a volcanically acidified Caribbean reef. *Coral Reefs* 39(3).

## **Funding and Grants:**

- NOAA National Ocean Service and NOAA National Centers for Coastal Ocean Science  
*Florida Regional Ecosystem Stressors Collaborative Assessment* (senior personnel, \$4,175,998, FY24-28)
- NOAA Coral Reef Conservation Program  
*Reef Persistence Evaluator* (co-PI, \$623,194, FY24-26)
- NOAA Ocean Acidification Program  
*Patterns, Trends, and Future Projections in Pacific Coral Reef Carbonate Budgets* (co-PI, \$266,147, FY24-26)

## **Meetings and Workshops:**

- Carbonate Budget Research Meeting (2024, United Kingdom, Oral Presentation)  
*Methods development: incorporating photogrammetry into large-scale carbonate budget assessments*
- Resource Trustees for M/V Vogetrader Vessel Grounding: Project Report (2023, Hawaii, Oral Presentation)  
*Monitoring restoration success following ship groundings: Vogetrader case study*
- International Coral Reef Symposium (2022, Germany, Oral Presentation)  
*Physiological and molecular impact of ocean acidification on two common Caribbean bioeroding sponges*
- International Coral Reef Symposium (2021, Virtual, Oral Presentation)  
*Upwelling and the persistence of coral-reef frameworks in the eastern tropical Pacific*
- NCRMP Biology Team Meeting (2021, Virtual, Oral Presentation)  
*Rapidly eroding reefs in the Florida Keys: a carbonate budget analysis*
- Rosenstiel Student Seminar Series (2021, Rosenstiel, Oral Presentation)  
*Rapidly eroding reefs in the Florida Keys: a carbonate budget analysis*
- Ocean Acidification Program PI Meeting (2020, Rosenstiel, Poster Presentation)  
*Impact of ocean acidification on two Caribbean bioeroders: implications for coral reef persistence*
- Rosenstiel Student Seminar Series (2020, Rosenstiel, Oral Presentation)  
*The influence of diel carbonate chemistry fluctuations on the bioerosion rates of two Caribbean sponges*
- Rosenstiel Student Seminar Series (2019, Rosenstiel, Oral Presentation)  
*Impact of environmental stressors on Caribbean bioeroding sponges*
- Rosenstiel Student Seminar Series (2018, Rosenstiel, Oral Presentation)  
*Evaluating the response of microboring rates to ocean acidification*
- RNA-Seq and Bioinformatics Workshop (2018, UC Davis, Workshop Attendee)

## **Skills and Certifications:**

- NOAA Diver (140ft certification, 192 dives)  
*3D SFM mosaics, coral coring with pneumatic rig, sample collection (sponges, corals, dead reef framework), instrument deployment (Seabird SeaFET, Seabird EcoPAR, Seabird Subsurface Temperature Recorder, Lowell Tiltmeter), ReefBudget carbonate budget surveys (benthic and fish surveys), collection of seawater samples for carbonate chemistry analysis, photogrammetric evaluation of coral colony erosion rates*
- Coral Reef Communities  
*In-field surveys of Pacific coral species, size-frequency distributions, and partial mortality. Annotated coral and benthic communities using SFM mosaics and other photoquad imagery*
- Physiological Measurements  
*Calcification, dissolution, respirometry, photochemical efficiency*
- Analysis of Carbonate Chemistry for Ocean Acidification Research  
*Total alkalinity (Apollo SciTech, AS-ALK2), Dissolved inorganic carbon (Apollo SciTech, AS-C3), pH (Agilent Cary, 8454 UV-Vis Spectrophotometer), density (Anton Paar, DMA 5000)*
- Transcriptomics  
*RNA, DNA, and protein extractions, RNA library preparation, bioinformatics*
- CT Scanning and Delineation of Calcification Rate Records  
*Siemens CT Scanner, Amira Software, CoralXDS*
- Open-source Design and Fabrication  
*Engineered incubation chambers used for alkalinity anomaly experiments*
- Wetlab Experimentation with Carbonate Chemistry  
*Computer programming, CO<sub>2</sub> manipulation, maintenance of tank setup/conditions*
- Data Analysis  
*Statistical computing, coding, modeling*
- Boat Operator and Trailering  
*NOAA small boats, USCG boating license*