

RYAN J. ECKERT

Coral reef ecology, mesophotic coral ecosystems, molecular ecology



EDUCATION

- Present | 2019 • **Ph.D. Student in Integrative Biology**
Florida Atlantic University 📍 Boca Raton, FL
Dissertation: Population genetics, community ecology, and larval dispersal in shallow and mesophotic coral ecosystems in the Tropical Western Atlantic
Advisor: Dr. Joshua Voss
- 2019 | 2017 • **M.Sc. in Biological Sciences**
Florida Atlantic University 📍 Boca Raton, FL
Thesis: Population genetics and algal symbiont communities of the coral species *Montastraea cavernosa* on the Belize Barrier Reef
Advisor: Dr. Joshua Voss
- 2009 | 2005 • **B.Sc. in Biological Sciences**
Florida State University 📍 Tallahassee, FL
Thesis: Associational resistance and susceptibility in *Solanum carolinense*
Advisor: Dr. Nora Underwood

RESEARCH EXPERIENCE

- Present | 2017 • **Graduate Research Assistant**
FAU, Harbor Branch Oceanographic Institute 📍 Fort Pierce, FL
Coral Reef Health and Molecular Ecology Lab
- 2017 | 2009 • **Research Specialist**
NOAA's Flower Garden Banks NMS 📍 Galveston, TX
Science Division
- 2009 | 2007 • **Research Assistant**
Florida State University 📍 Tallahassee, FL
Underwood Lab

TEACHING EXPERIENCE

- 2017 • **Graduate Teaching Assistant**
FAU, Harbor Branch Oceanographic Institute 📍 Fort Pierce, FL
Marine Biodiversity
- 2014 | 2013 • **Guest Lecturer**
Texas A&M University at Galveston 📍 Galveston, TX
Scientific Diving Field Survey Methods

CONTACT

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🐦 [CnidaRyan](#)
🎧 [RyanEckert](#)
📺 [Ryan J Eckert](#)

SKILLS

Coral reef ecology
Technical SCUBA diving
775+ Scientific Dives
450+ Days at Sea
100+ research expeditions
Multivariate data analysis
NGS Library prep
Bioinformatic analyses

LANGUAGE SKILLS

R 
Bash 
Python 

2010 • **Instructor**
Galveston Independent School District
21st Century ACE

📍 Galveston, TX

STUDENTS MENTORED

2018 • **Emily Chei**
Link fellowship intern
Assessing population connectivity of the coral *Montastraea cavernosa* along the northern Florida Reef Tract
Presently a Ph.D. student at The University of Hong Kong

2017 • **Ashley Reaume**
Link fellowship intern
Optimized extraction and amplification of algal symbiont DNA from TRIzol preserved corals
Presently a Ph.D. student at The University of Central Florida

REFEREED PUBLICATIONS

2020 • **12. Population genetic structure of the great star coral, *Montastraea cavernosa*, across the Cuban archipelago with comparisons between microsatellite and SNP markers**
Sci Rep (2020). doi:[10.1038/s41598-020-72112-5](https://doi.org/10.1038/s41598-020-72112-5)
Sturm AB, Eckert RJ, Reaume AM, Studivan MS, and Voss JD

2020 • **11. Depth influences Symbiodiniaceae associations among *Montastraea cavernosa* corals on the Belize Barrier Reef**
Front Microbiol (2020). doi:[10.3389/fmicb.2020.00518](https://doi.org/10.3389/fmicb.2020.00518)
Eckert RJ, Reaume AM, Sturm AB, Studivan MS, and Voss JD

2020 • **10. Population structure of the scleractinian coral, *Montastraea cavernosa*, in Southeast Florida**
Bull Mar Sci (2020). doi:[10.5343/bms.2019.0074](https://doi.org/10.5343/bms.2019.0074)
Dodge DL, Studivan MS, Eckert RJ, Chei E, Beal J, Voss JD

2019 • **9. Populations of the coral species *Montastraea cavernosa* on the Belize Barrier Reef lack vertical connectivity**
Sci Rep (2019). doi:[10.1038/s41598-019-43479-x](https://doi.org/10.1038/s41598-019-43479-x)
Eckert RJ, Studivan MS, Voss JD

2019 • **8. The Mesoamerican Reef**
In: Loya Y, Puglise KA, Bridge TCL (eds) Mesophotic Coral Ecosystems of the World. Springer International Publishing, Cham, pp 71–84 (2019).
doi:[10.1007/978-3-319-92735-0_5](https://doi.org/10.1007/978-3-319-92735-0_5)
Gress E, Voss JD, Eckert RJ, Rowlands G, Andradi-Brown DA

Citations: 203

h-index: 8

i10-index: 6

- 2019 ● **7. Coral bleaching and recovery from 2016 to 2017 at East and West Flower Garden Banks, Gulf of Mexico**
Coral Reefs (2019). doi:[10.1007/s00338-019-01788-7](https://doi.org/10.1007/s00338-019-01788-7)
 Johnston MA, Hickerson EL, Nuttall MF, Blakeway RD, Sterne TK, Eckert RJ, Schmahl GP
- 2019 ● **6. Localized coral reef mortality event at East Flower Garden Bank, Gulf of Mexico**
Bull Mar Sci (2019). doi:[10.5343/bms.2018.0057](https://doi.org/10.5343/bms.2018.0057)
 Johnston MA, Nuttall MF, Eckert RJ, Blakeway RD, Sterne TK, Hickerson EL, Schmahl GP, Lee MT, MacMillan J, Embesi JA
- 2018 ● **5. Seasonal variability of carbonate chemistry and decadal changes in waters of a marine sanctuary in the Northwestern Gulf of Mexico**
Mar Chem (2018). doi:[10.1016/j.marchem.2018.07.006](https://doi.org/10.1016/j.marchem.2018.07.006)
 Hu X, Nuttall MF, Wang H, Yao H, Staryk CJ, McCutcheon MR, Eckert RJ, Embesi JA, Johnston MA, Hickerson EL, Schmahl GP, Manzello D, Enochs IC, DiMarco S, Barbero L
- 2016 ● **4. Persistence of coral assemblages at East and West Flower Garden Banks, Gulf of Mexico**
Coral Reefs (2016). doi:[10.1007/s00338-016-1452-x](https://doi.org/10.1007/s00338-016-1452-x)
 Johnston MA, Embesi JA, Eckert RJ, Nuttall MF, Hickerson EL, Schmahl GP
- 2016 ● **3. Rapid invasion of Indo-Pacific lionfishes *Pterois volitans* (Linnaeus, 1758) and *P. miles* (Bennett, 1828) in Flower Garden Banks National Marine Sanctuary, Gulf of Mexico, documented in multiple data sets**
BiolInvasions Rec (2016). doi:[10.3391/bir.2016.5.2.09](https://doi.org/10.3391/bir.2016.5.2.09)
 Johnston MA, Nuttall MF, Eckert RJ, Embesi JA, Sterne TK, Hickerson EL, Schmahl GP
- 2014 ● **2. Lionfish (*Pterois volitans* [Linnaeus, 1758] and *P. miles* [Bennett, 1828]) records within mesophotic depth ranges on natural banks in the Northwestern Gulf of Mexico**
BiolInvasions Rec (2014). doi:[10.3391/bir.2014.3.2.09](https://doi.org/10.3391/bir.2014.3.2.09)
 Nuttall MF, Johnston MA, Eckert RJ, Embesi JA, Hickerson EL, Schmahl GP
- 2012 ● **1. Flower Garden Banks – A refuge in the Gulf of Mexico?**
In: Yellowlees D, Hughes TP (eds) Proceedings of the 12th International Coral Reef Symposium (2012).
 Hickerson EL, Schmahl GP, Johnston MA, Nuttall MF, Embesi JA, Eckert RJ



MANUSCRIPTS IN PREPARATION

- **Quantifying impacts of stony coral tissue loss disease on corals in Southeast Florida through surveys and 3D photogrammetry**
PLoS ONE (in review).
 Combs IR, Studivan MS, Eckert RJ, Voss JD

- **Population genetic structure of a broadcast spawning coral, *Montastraea cavernosa*, demonstrates refugia potential of upper mesophotic populations in the Florida Keys**
Coral Reefs (in review).
Sturm AB, **Eckert RJ**, Carreiro AM, and Voss JD
- **Population genetic structure of the giant barrel sponge, *Xestospongia muta*, across shallow and mesophotic habitats in Florida Keys National Marine Sanctuary**
Coral Reefs (in prep).
Eckert RJ, Sturm AB, Carreiro AM, and Voss JD
- **Benthic community composition of mesophotic coral ecosystems in the northwest Gulf of Mexico, with comparisons to Flower Garden Banks National Marine Sanctuary**
Front Mar Sci (in prep).
Voss JD, Studivan MS, **Eckert RJ**, Williams MA, Clark RD



TECHNICAL REPORTS

- 2018 ● **Stetson Bank Long-term monitoring: 2016 annual report**
Marine Sanctuaries Conservation Series ONMS-19-02. U.S. Department of Commerce, NOAA, FGBNMS, Galveston, TX. (2018).
Nuttall MF, Sterne TK, **Eckert RJ**, Hu X, Sinclair J, Hickerson EL, Embesi JA, Johnston MA, Schmahl GP
- 2017 ● **Long-term monitoring at East and West Flower Garden Banks: 2016 annual report**
Marine Sanctuaries Conservation Series ONMS-17-09. U.S. Department of Commerce, NOAA, FGBNMS, Galveston, TX. (2017).
Johnston MA, Sterne TK, **Eckert RJ**, Nuttall MF, Embesi JA, Walker RD, Hu X, Hickerson EL, Schmahl GP
- 2017 ● **Long-term monitoring at Stetson Bank, Flower Garden Banks National Marine Sanctuary, 2015 annual report**
Marine Sanctuaries Conservation Series ONMS-17- 06. U.S. Department of Commerce, NOAA, FGBNMS, Galveston, TX. (2017).
Johnston MA, Sterne TK, **Eckert RJ**, Nuttall MF, Embesi JA, Walker RD, Hu X, Hickerson EL, Schmahl GP
- 2017 ● **Long-term monitoring at the East and West Flower Garden Banks National Marine Sanctuary, 2013–2015, volume 1: technical report**
U.S. Dept. of Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEM 2017-058. (2017).
Johnston MA, **Eckert RJ**, Nuttall MF, Sterne TK, Embesi JA, Manzello DP, Hickerson EL, Schmahl GP

- 2016 ● **Long-term monitoring at East and West Flower Garden Banks: 2015 annual report**
U.S. Marine Sanctuaries Conservation Series ONMS-16-02. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Flower Garden Banks National Marine Sanctuary, Galveston, TX. (2016).
 Johnston MA, **Eckert RJ**, Sterne TK, Nuttall MF, Hu X, Embesi JA, Hickerson EL, Schmahl GP

- 2015 ● **Long-term monitoring at East and West Flower Garden Banks National Marine Sanctuary: 2014 annual report**
U.S. Department of Commerce, NOAA, FGBNMS, Galveston, TX. (2015).
 Johnston MA, Sterne TK, **Eckert RJ**, Nuttall MF, Embesi JA, Walker RD, Hu X, Hickerson EL, Schmahl GP

- 2015 ● **Long-term monitoring at East and West Flower Garden Banks National Marine Sanctuary, 2011–2012, volume 1: technical report**
U.S. Dept. of Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, Louisiana. OCS Study BOEM 2015-027. (2015).
 Johnston MA, Nuttall MF, **Eckert RJ**, Embesi JA, Slowey NC, Hickerson EL, Schmahl GP

- 2014 ● **Long-term monitoring at East and West Flower Garden Banks National Marine Sanctuary: 2013 annual report**
U.S. Department of Commerce, NOAA, FGBNMS, Galveston, TX. (2014).
 Johnston MA, Nuttall MF, **Eckert RJ**, Embesi JA.

- 2013 ● **Long-term monitoring at the East and West Flower Garden Banks National Marine Sanctuary, 2009–2010, volume 1: technical report**
U.S. Dept. of Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region, New Orleans, Louisiana. OCS Study BOEM 2013-214. (2013).
 Johnston MA, Nuttall MF, **Eckert RJ**, Embesi JA, Slowey NC, Hickerson EL, Schmahl GP

PRESENTATIONS

- 2019 ● **Genetically distinct depth-stratified *Montastraea cavernosa* coral populations on the Belize Barrier Reef harbor relatively homogenous Symbiodiniaceae communities**
 48th Annual Benthic Ecology Meeting 📍 St. John's, NL, Canada
Eckert RJ, Reaume A, Voss JD
 Oral presentation

- 2019 ● **Populations of the coral species *Montastraea cavernosa* lack vertical connectivity on the Belize Barrier Reef**
 ASLO Aquatic Sciences Meeting 📍 San Juan, PR.
Eckert RJ, Studivan MS, Voss JD
 Poster presentation

- 2018

● **Affordable and ecologically relevant graduate research on the world's second largest barrier reef? You better Belize it!**

HBOI Science Seminar 📍 Ft. Pierce, FL.

Eckert RJ and Studivan MS

Oral presentation
- 2018

● **Connected corals: population genetics of *Montastraea cavernosa* on the Belize Barrier Reef**

HBOI Ocean Discovery Center Marine Science Friday 📍 Ft. Pierce, FL.

Eckert RJ

Oral presentation
- 2018

● **Breaking point: population genetics reveal a lack of vertical connectivity of *Montastraea cavernosa* on the Belize Barrier Reef**

47th Annual Benthic Ecology Meeting 📍 Corpus Christi, TX.

Eckert RJ, Studivan MS, Voss JD

Oral presentation
- 2013

● **Ciguatera fish poisoning in the northwestern Gulf of Mexico.**

66th Gulf and Caribbean Fisheries Institute Conference 📍 Corpus Christi, TX

Eckert RJ, Loeffler C, Robertson A, Johnston MA, Hickerson EL, Schmahl GP

Poster presentation
- 2009

● **Associational resistance and susceptibility in *Solanum carolinense***

Southeastern Ecology and Evolution Conference 📍 Gainesville, FL.

Eckert RJ, Kim T, Underwood N

Poster presentation



AWARDS

- 2021
|
2019

● **Florida Atlantic University Presidential Fellow**
- 2020

● **Florida Atlantic University Student Publishing Award**

Awarded for 3 publications in 2019
- 2009
|
2006

● **Florida State University Dean's List**
- 2005

● **Florida State University President's List**



FUNDING

- 2021

● **PADI Foundation Grant**

\$4,377
- 2021
|
2019

● **FAU Presidential Fellowship**

\$10,000
- 2019
|
2018

● **FAU GPSA Travel Awards**

\$1,600

- 2018 ● **FAU Thesis Award**
\$500
- 2018 ● **PADI Foundation Grant**
\$4,973
- 2009 ● **Bess H. Ward Honors Thesis Award**
\$1,000
- 2009 ● **Florida Bright Futures Academic Scholarship**
\$14,850
- 2005 | 2009 ● **Florida State University Freshman Academic Scholarship**
\$8,000
- 2005 | 2009 ● **Florida State University Freshman AP Scholarship**
\$500



MEMBERSHIP AND SERVICE

- Present | 2020 ● **Mesophotic.org**
Content Editor
- Present | 2019 ● **International Coral Reef Society**
- Present | 2017 ● **Benthic Ecology Meeting Society**
- 2021, 2019 | 2019 ● **HBOI Graduate Student Association**
Secretary 📍 Ft. Pierce, FL
- 2019 | 2018 ● **Association for the Studies of Limnology and Oceanography**
- **Reviewer for:**
Scientific Reports



CERTIFICATIONS

- **AAUS Scientific Diver**
190', Trimix
- **TDI Technical SCUBA Diver**
Advanced Nitrox, Decompression Procedures, Trimix 200'
- **PADI Trimix Gas Blender**
- **DAN Oxygen delivery, First Aid, and CPR for scuba diving injuries**
- **USCG Licensed Merchant Mariner**
100 GRT

- **USFWS Motorboat Operator Certification Course**
- **Sea-Bird Electronics technician**
- **NOAA Working SCUBA Diver**



SKILLS

- **DNA and RNA extraction, PCR, qPCR, Gel electrophoresis, NGS library preparation, Agilent Bioanalyzer (DNA, RNA)**
- **Bioinformatic analyses, multivariate statistics, and data visualization**
R statistical software, Python, Bash, PRIMER7, and CPCe
- **Coral sampling, benthic surveys, fish surveys, photography, navigation and mapping**
- **Offshore field research cruise planning, logistics, and execution**
- **Technical SCUBA diving, operation of Nitrox compressor systems, and Trimix blending**
- **Setup, operation, and maintenance of oceanographic equipment**
Sea-Bird Electronics, Onset HOBO, YSI
- **Adobe InDesign, Adobe Illustrator, and Adobe Photoshop**
- **Operation, navigation, and handling of small boats**
Marlinspike, and mooring buoy construction/installation/maintenance

REFERENCES

- **Dr. Joshua Voss**
Ph.D. Advisor
+1 (772) 242-2538

📍 Florida Atlantic University
jvoss2@fau.edu

- **Dr. Adrienne Simoes-Correa**
Assistant Professor
+1 (713) 348-3054

📍 Rice University
ac53@rice.edu

- **G.P. Schmahl**
Superintendent
+1 (409) 621-5151

📍 Flower Garden Banks National Marine Sanctuary
george.schmahl@noaa.gov