

RYAN J. ECKERT

Coral reef ecology, mesophotic coral ecosystems, molecular ecology



EDUCATION

- Present | 2019 • **Ph.D. Candidate 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

- 2022 • **Graduate Teaching Assistant / Lecturer**
FAU / FIO 📍 Long Key, FL
FIO Summer Marine Field Studies
- 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

📍 5600 US1 N, Ft. Pierce, FL 34946
📞 +1 (772) 224-2396
✉ ryan.j.eckert@gmail.com
💻 ryanjeckert.weebly.com
🐦 [CnidaRyan](#)
🌐 [RyanEckert](#)
📺 [Ryan J Eckert](#)

SKILLS

Coral reef ecology
Technical SCUBA diving
Closed-circuit rebreather diving
900+ 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

- 2022 • **15. Depth-dependent genetic structuring of a depth-generalist coral and its Symbiodiniaceae algal communities at Campeche Bank, Mexico**
Front Mar Sci (2022). doi:[10.3389/fmars.2022.835789](https://doi.org/10.3389/fmars.2022.835789)
Sturm AB, **Eckert RJ**, Carreiro AM, Simões N, Voss JD
- 2022 • **14. Population genetic structure of a broadcast spawning coral, *Montastraea cavernosa*, demonstrates refugia potential of upper mesophotic populations in the Florida Keys**
Coral Reefs (2022). doi:[10.1007/s00338-021-02112-y](https://doi.org/10.1007/s00338-021-02112-y)
Sturm AB, **Eckert RJ**, Carreiro AM, Voss JD
- 2021 • **13. Quantifying impacts of stony coral tissue loss disease on corals in Southeast Florida through surveys and 3D photogrammetry**
PLoS ONE (2021). doi:[10.1371/journal.pone.0252593](https://doi.org/10.1371/journal.pone.0252593)
Combs IR, Studivan MS, **Eckert RJ**, Voss JD
- 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**, González Méndez J, González-Díaz P, 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, 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

Citations: 343

h-index: 12

i10-index: 13

- 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
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
Gress E, Voss JD, Eckert RJ, Rowlands G, Andradi-Brown DA
- 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
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
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
Hu X, Nuttall MF, Wang H, Yao H, Saryk 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
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**
Biol Invasions Rec (2016). doi: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**
Biol Invasions Rec (2014). doi: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

- ***Stephanocoenia intersepta* corals in Florida Keys National Marine Sanctuary exhibit depth-dependent genetic structure with lower genetic diversity across shallow versus mesophotic populations**
Mol Ecol (submitted).
Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD
- **Single nucleotide polymorphism (SNP) data show high clonality and horizontal connectivity of *Porites astreoides* populations in southeast Florida**
Coral Reefs (in review).
Shilling EN, Eckert RJ, Sturm AB, Voss JD



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

- 2022 ● **Genetic connectivity and algal symbiont communities of shallow and mesophotic *Stephanocoenia intersepta* populations in the Florida Keys**
 15th International Coral Reef Symposium 📍 Bremen, Germany.
Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD
 Oral presentation

- 2022 ● **Genetic connectivity and genetic diversity of shallow and mesophotic *Stephanocoenia intersepta* populations throughout Florida Keys National Marine Sanctuary.**
 50th Annual Benthic Ecology Meeting 📍 Portsmouth, NH.
Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD
 Oral presentation

- 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

🏠 FUNDING

- 2021 ● **PADI Foundation Grant**
 \$4,377
- 2021 ● **FAU Presidential Fellowship**
 \$10,000
- 2019 |
 2019 ● **FAU GPSA Travel Awards**
 \$1,600
- 2018 |
 2018 ● **FAU Thesis Award**
 \$500
- 2018 ● **PADI Foundation Grant**
 \$4,973
- 2009 ● **Bess H. Ward Honors Thesis Award**
 \$1,000
- 2009 |
 2005 ● **Florida Bright Futures Academic Scholarship**
 \$14,850
- 2009 |
 2005 ● **Florida State University Freshman Academic Scholarship**
 \$8,000

2005 ● **Florida State University Freshman AP Scholarship**
\$500



AWARDS

2021 ● **Florida Atlantic University Presidential Fellow**

2019

2020 ● **Florida Atlantic University Student Publishing Award**
Awarded for 3 publications in 2019

2009 ● **Florida State University Dean's List**

2006

2005 ● **Florida State University President's List**



CERTIFICATIONS

● **AAUS Scientific Diver**
200', CCR, Trimix

● **TDI Technical SCUBA Diver**
Advanced Nitrox, Decompression Procedures, Trimix 200', Closed-Circuit Rebreather

● **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, closed-circuit rebreather 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



MEMBERSHIP AND SERVICE

- | | | |
|----------------------|--|------------------|
| Present

2020 | ● Mesophotic.org
Content Editor | |
| Present

2019 | ● International Coral Reef Society | |
| Present

2017 | ● Benthic Ecology Meeting Society | |
| 2022 | ● HBOI Graduate Student Association
Vice President | 📍 Ft. Pierce, FL |
| 2021,
2019 | ● HBOI Graduate Student Association
Secretary | 📍 Ft. Pierce, FL |
| 2019

2018 | ● Association for the Studies of Limnology and Oceanography | |
| | ● Reviewer for:
Scientific Reports | |



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