# RYAN J. ECKERT

Coral reef ecology, mesophotic coral ecosystems, molecular ecology





### **CONTACT**

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### **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



2021

### ♣■ STUDENTS MENTORED

**Emily Chei** 2018

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

**Ashley Reaume** 2017 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 Sturm AB, **Eckert RJ**, Carreiro AM, Simões N, Voss JD

14. Quantifying impacts of stony coral tissue loss disease on corals 2021 in Southeast Florida through surveys and 3D photogrammetry

> PLoS ONE (2021). doi:10.1371/journal.pone.0252593 Combs IR, Studivan MS, Eckert RJ, Voss JD

13. Population genetic structure of a broadcast spawning coral, Montastraea cavernosa, demonstrates refugia potential of upper mesophotic populations in the Florida Keys

Coral Reefs (2021). doi:10.1007/s00338-021-02112-y Sturm AB, Eckert RJ, Carreiro AM, Voss JD

12. Population genetic structure of the great star coral, 2020 Montastraea cavernosa, across the Cuban archipelago with comparisons between microsatellite and SNP markers

Sci Rep (2020). doi:10.1038/s41598-020-72112-5

Sturm AB, **Eckert RJ**, González Méndez J, González-Díaz P, Voss JD

11. Depth influences Symbiodiniaceae associations among 2020 Montastraea cavernosa corals on the Belize Barrier Reef

> Front Microbiol (2020). doi:10.3389/fmicb.2020.00518 Eckert RJ, Reaume AM, Sturm AB, Studivan MS, Voss JD

10. Population structure of the scleractinian coral, Montastraea 2020 cavernosa, in Southeast Florida

> Bull Mar Sci (2020). doi:10.5343/bms.2019.0074 Dodge DL, Studivan MS, Eckert RJ, Chei E, Beal J, Voss JD

Citations: 285

h-index: 10

i10-index: 11

2019		9. Populations of the coral species <i>Montastraea cavernosa</i> on the Belize Barrier Reef lack vertical connectivity <i>Sci Rep</i> (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, 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  Johnston MA, Embesi JA, Eckert RJ, Nuttall MF, Hickerson EL, Schmahl GP
2016	•	3. Rapid invasion of Indo-Pacific lionfishes <i>Pterois volitans</i> (Linnaeus, 1758) and <i>P. miles</i> (Bennett, 1828) in Flower Garden Banks National Marine Sanctuary, Gulf of Mexico, documented in multiple data sets <i>BioInvasions Rec</i> (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 ( <i>Pterois volitans</i> [Linnaeus, 1758] and <i>P. miles</i> [Bennett, 1828]) records within mesophotic depth ranges on natural banks in the Northwestern Gulf of Mexico <i>Biolnvasions Rec</i> (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

 Single nucleotide polymorphism (SNP) data show high clonality and horizontal connectivity of Porites astreoides populations in southeast Florida

Coral Reefs (in prep). Shilling EN, **Eckert RJ**, Sturm AB, Voss JD

 Population genetic structure and Symbiodiniaceae communites of the coral species Stephanocoenia intersepta, across shallow and mesophotic habitats in Florida Keys National Marine Sanctuary Mol Ecol (in prep).

Eckert RJ, Sturm AB, Carreiro AM, Klein A, 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

2017

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

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

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

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

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

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

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

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.

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

Genetic connectivity and genetic diversity of shallow and mesophotic Stephanocoenia intersepta populations throughout Florida Keys National Marine Sanctuary. Oral presentation.

Genetically distinct depth-stratified *Montastraea cavernosa* coral populations on the Belize Barrier Reef harbor relatively homogenous Symbiodiniaceae communities

48th Annual Benthic Ecology Meeting Eckert RJ, Reaume A, Voss JD Oral presentation

St. John's, NL, Canada

2019	•	Populations of the coral species <i>Montastraea cavernosa</i> lack
2013		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 RI and Studiyan MS
		Oral presentation
2018	•	Connected corals: population genetics of <i>Montastraea cavernosa</i> on the Belize Barrier Reef
		HBOI Ocean Discovery Center Marine Science Friday
		Eckert RJ Oral presentation
2018	•	Breaking point: population genetics reveal a lack of vertical
		connectivity of <i>Montastraea cavernosa</i> 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
2009	•	Associational resistance and susceptibility in <i>Solanum carolinense</i>
		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		<b>FAU GPSA Travel Awards</b> \$1,600
2018		FALL The sein Assessed
2018		FAU Thesis Award \$500
2018	•	PADI Foundation Grant \$4,973
2009	•	Bess H. Ward Honors Thesis Award \$1,000

2009   2005		\$14,850
2009   2005	•	Florida State University Freshman Academic Scholarship \$8,000
2005	•	Florida State University Freshman AP Scholarship \$500
	Ö	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
		CERTIFICATIONS
	•	AAUS Scientific Diver 200', CCR, Trimix
		<b>TDI Technical SCUBA Diver</b> 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

**International Coral Reef Society** 

**Benthic Ecology Meeting Society** 

Present 2020

Present

2019 Present

2017

2022

2021, 2019

2019

2018

Mesophotic.org

**Content Editor** 

**HBOI Graduate Student Association** Vice President

**HBOI Graduate Student Association** 

• Ft. Pierce, FL Secretary

**♀** Ft. Pierce, FL

- Association for the Studies of Limnology and Oceanography
- **Reviewer for:** Scientific Reports

## **REFERENCES**

**Dr. Joshua Voss** Ph.D. Advisor

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