RYAN J. ECKERT

Coral reef ecology, mesophotic coral ecosystems, molecular ecology





CONTACT

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RyanEckert

8 Ryan | Eckert

SKILLS

Coral reef ecology
Technical SCUBA diving
Closed-circuit rebreather
diving
1000+ Scientific Dives
500+ days at sea
100+ research expeditions
Multivariate data analysis
NGS library prep
Bioinformatic analyses

LANGUAGE SKILLS

R Bash Python

Citations: 591

h-index: 14

i10-index: 19

♣ 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

2024

2023

REFEREED PUBLICATIONS

24. Recent trends and biases in mesophotic ecosystem research 2024 Biol Lett (2024). doi: 10.1098/rsbl.2024.0465

> Radice VZ, Hernandez-Agreda A, Pérez-Rosales G, Booker R, Bellworthy J, Broadribb M, Carpenter GE, Diaz C, Eckert RJ, Foster NL, Gijsbers JC, Gress E, Laverick JH, Micaroni V, Pierotti M, Rouzé H, Stevenson A, Sturm AB, Bongaerts P

23. Assesment of nutrient amendments on stony coral tissue loss 2024 disease in Southeast Florida

> Front Mar Sci (2024), doi: 10.3389/fmars.2024.1384534 Carreiro AM, **Eckert RJ**, Sturm AB, Ingalls TC, Combs IR, Walker BK, Voss JD

22. Cryptic diversity of shallow and mesophotic Stephanocoenia intersepta corals across Florida Keys National Marine Sanctuary

Heredity (2024). doi:10.1038/s41437-024-00698-x Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD

21. Algal symbiont genera but not coral host genotypes correlate to 2024 stony coral tissue loss disease susceptibility among Orbicella faveolata colonies in South Florida

> Front Mar Sci (2024). doi:10.3389/fmars.2024.1287457 Klein, AM, Sturm AB, **Eckert RJ**, Walker BK, Neely KL, Voss JD

20. Does depth divide? Variable genetic connectivity patterns 2023 among shallow and mesophotic Montastraea cavernosa coral populations across the Gulf of Mexico and western Caribbean

Ecol Evol (2023). doi:10.1002/ece3.10622

Sturm AB, **Eckert RJ**, Carreiro AM, Klein, AM, Studivan MS, Dodge Farelli D, Simões N; González-Díaz P, González Méndez J, Voss JD

19. Porites astreoides coral populations demonstrate high clonality and connectivity in southeast Florida

Coral Reefs (2023). doi:10.1007/s00338-023-02417-0 Shilling EN, Eckert RJ, Sturm AB, Voss JD

2023	•	18. Stony coral tissue loss disease intervention with amoxicillin leads to a reversal of disease-modulated gene expression pathways <i>Mol Ecol</i> (2023). doi:10.1111/mec.17110 Studivan MS, Eckert RJ , Shilling EN, Soderberg N, Enochs IC, Voss JD
2023		17. Diet and Feeding Ecology of the Whitespotted Eagle Ray (Aetobatus narinari) from Florida Coastal Waters Revealed via DNA Barcoding Fishes (2023). doi:10.3390/fishes8080388 Cahill BV, Eckert RJ, Bassos-Hull K, Ostendorf TJ, Voss JD, DeGroot BC, Ajemian MJ
2023		16. Coral disease outbreak at the remote Flower Garden Banks, Gulf of Mexico Front Mar Sci (2023). doi:10.3389/fmars.2023.1111749 Johnston MA, Studivan MS, Enochs IC, Correa AMS, Besemer N, Eckert RJ, Edwards K, Hannum R, Hu X, Nuttall MF, O'Connel K, Palacio-Castro AM, Schmahl GP, Sturm AB, Ushijima B, Voss JD
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
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 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 <i>PLoS ONE</i> (2021). doi: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 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 Eckert RJ, Reaume AM, Sturm AB, Studivan MS, Voss JD
2020		10. Population structure of the scleractinian coral, <i>Montastraea</i> 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

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
		BioInvasions 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 (<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>BioInvasions 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

Population genetics of the giant barrel sponge, *Xestospongia muta*, reveal distinct, hybridizing lineages across the Florida Reef Tract (in review)

Eckert RJ, Sturm AB, Carreiro AM, Voss JD

 Genetic insights of key habitat-forming coral and sponge populations in Flower Garden Banks National Marine Sanctuary (in prep)

Eckert RJ, Sturm AB, Pantoni GS, Herrera S, Voss JD

 Coral genetic lineages do not predict disease resistance or survivorship: a multi-species restoration experiment to assess stony coral tissue loss disease susceptibility

(in revision)

2017

Bell SL, Shilling EN, Pantoni GS, **Eckert RJ**, Sturm AB, Sharp WC, Muller EM, Gilliam DS, Lirman D, Bourque AS, Voss JD

■ TECHNICAL REPORTS

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

2024

2024 Cryptic diversity of *Stephanocoenia intersepta* corals throughout Southeast Florida and the Florida Keys

2024 AAUS Diving for Science Symposium Fort Pierce, FL Eckert RJ, Sturm AB, Carreiro AM, Pantoni GS, Klein AM, Voss JD Poster presentation

Cryptic diversity of Stephanocoenia intersepta corals throughout Southeast Florida and the Florida Keys

Miami, FL

Genetically divergent mesophotic and shallow Stephanocoenia intersepta populations in the Florida Keys

51st Annual Benthic Ecology Meeting
Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD
Poster presentation

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2023		Genetically divergent mesophotic and shallow Stephanocoenia intersepta populations in the Florida Keys Mesophotic Coral Ecosystem Gordon Research Conference ■ Ventura, CA Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD Poster presentation Best overall student presentation
2023	•	Stephanocoenia intersepta corals in Florida Keys National Marine Sanctuary exhibit depth-dependent genetic structure
		Mesophotic Coral Ecosystem Gordon Research Symposium • Ventura, CA Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD Oral presentation
2022	•	Genetic connectivity and algal symbiont communities of shallow and mesophotic Stephanocoenia intersepta populations in the Florida Keys
		15th International Coral Reef Symposium Eckert RJ, Sturm AB, Carreiro AM, Klein AM, Voss JD Oral presentation ■ Bremen, Germany.
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 <i>Montastraea cavernosa</i> 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
		vertical connectivity on the Belize Barrier Reef ASLO Aquatic Sciences Meeting Eckert RJ, Studivan MS, Voss JD Poster presentation San Juan, PR. Poster presentation
2018	•	Affordable and ecologically relevant graduate research on the world's second largest barrier reef? You better Belize it!
		HBOI Science Seminar Eckert RJ and Studivan MS Oral presentation Ft. Pierce, FL.
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 Ft. Pierce, FL.

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, Studiyan 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
		FUNDING
2023	•	Smithsonian NMNH Research Fellowship \$16,000
2023		FAU GPSA Travel Awards
2017		\$3,023
2021		PADI Foundation Grant \$4,377
2021		FAU Presidential Fellowship
2019		\$10,000
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
2005		\$14,850
2009		Florida State University Freshman Academic Scholarship
2005		\$8,000
2005	•	Florida State University Freshman AP Scholarship \$500
	Ö	AWARDS
2021	•	Florida Atlantic University Presidential Fellow
 2019		
2020	•	Florida Atlantic University Student Publishing Award Awarded for 3 publications in 2019

2005

Florida State University Dean's List

Florida State University President's List

E CERTIFICATIONS

• AAUS Scientific Diver

100 m, CCR, Trimix

TDI Technical SCUBA Diver

Advanced Nitrox, Decompression Procedures, Trimix 100 m, Closed-Circuit Rebreather, Advanced Mixed Gas CCR

- 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



REFERENCES

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