

CURRENT POSITION

Assistant Professor
DEEPEND Consortium Data Manager
Guy Harvey Research Institute
Department of Biological Sciences
Nova Southeastern University Halmos College of Natural Sciences and Oceanography

EDUCATION

2015 **Doctor of Philosophy:** Oceanography/Marine Biology, Nova Southeastern University
2011 **Master of Science:** Marine Biology, Nova Southeastern University
2002 **Bachelor of Science:** Information Systems, Linfield College

PUBLICATIONS

Peer-reviewed journals (reverse chrono):

** student publications

In preparation/under review

24. Timm LE, Isma L, **Johnston MW**, Bracken-Grissom, HD (submitted) Comparative population genomics and biophysical modeling of shrimp in the Gulf of Mexico reveals current-mediated connectivity. *Frontiers in Marine Science*.
23. Boswell K, D'Elia M, **Johnston M**, Wells D, Warren J, Sutton T (submitted) Oceanographic variability and solar elevation controls patterns of mesopelagic scattering layers. *Frontiers in Marine Science*.
22. Bernard AM, **Johnston MW**, Reichert MJ, Shivji MS (in revision) Genetic and Biophysical Modeling Evidence of panmixia over generations of Atlantic Red Grouper (*Epinephelus Morio*). *Molecular Ecology*.

Published/In-press:

21. Riegl B, **Johnston MW**, Glynn PW, Keith I, Rivera F, Vera-Zambrano M, Banks S, Glynn PJ (2019) Some environmental and biological determinants of coral richness, resilience and reef building in Galápagos (Ecuador). *Nature Scientific Reports* 9(1), 10322.
20. Byrne ME, Wetherbee BM, Vaudo J, **Johnston MW**, Harvey GM, Shivji MS (2019) Behavioral Response of a Mobile Marine Predator to Environmental Variables Differs Across Ecoregions.. *Ecography*.
19. **Johnston MW**, Milligan RJ, Easson CG, de Rada S, English D, Penta B, Sutton TT (2019) An Empirically-validated Method for Characterizing Pelagic Habitats in the Gulf of Mexico Using Ocean Model Data. *Limnology and Oceanography Methods* 17(6), 363-375.
18. **Johnston MW**, Larsson AI (2019) 40 Perspectives of Biophysical Modelling with Implications on Biological Connectivity of Mediterranean Cold-Water Corals. In: Orejas C., Jiménez C. (eds) *Mediterranean Cold-Water Corals: Past, Present and Future*. Coral Reefs of the World, vol 9. Springer, Cham
17. Riegl B, **Johnston MW**, Bauman A, Howells E, Burt J, Purkis S, Sheppard CRC (2018) Population collapse dynamics in *Acropora downingi*, an Arabian/Persian Gulf ecosystem-engineering coral, linked to rising temperature. *Global Change Biology* 24(6), 2447-2462.
16. Sylvain P, **Johnston MW**, Vaissière AC, Bergerd F, Jacoba C, Dodge R (2017) An update of the Visual_HEA software to improve the implementation of the Habitat Equivalency Analysis method. *Ecological Engineering* 105 276-283.
15. O'Brien CM**, **Johnston MW**, Kerstetter D (2017) Ports and Pests: Assessing the Threat of Aquatic Invasive Species Introduced by Maritime Shipping Activity in Cuba. *Marine Pollution Bulletin*, 125(1-2), 92-102.
14. **Johnston MW**, Bernard AM (2017) A bank divided: quantifying a spatial and temporal connectivity break between the Campeche Bank and the north-eastern Gulf of Mexico. *Marine Biology* 164(1), 1-15.
13. **Johnston MW**, Bernard AM, Shivji MS (2017) Forecasting lionfish sources and sinks in the Atlantic: Are Gulf of Mexico reef fisheries at risk? *Coral Reefs* 36, 169-181.
12. Purkis SJ, Gardiner R, **Johnston MW**, Sheppard CRC (2016) A half-century of coastline change in Diego Garcia – a strategically important atoll island in the Chagos. *Geomorphology* 261, 282-298.
11. **Johnston MW**, Akins, JL (2016) The Non-native royal damsel (*Neopomacentrus cyanomos*) in the southern Gulf of Mexico; an invasion risk? *Marine Biology* 163(1), 1-14.

10. **Johnston MW**, Purkis SJ (2016) Forecasting the success of invasive marine species; lessons learned from purposeful reef fish releases in the Hawaiian Islands. *Fisheries Research* 176, 190-200.
9. **Johnston MW**, Purkis SJ, Dodge RE (2015) Measuring Bahamian lionfish impacts to marine ecological services using Habitat Equivalency Analysis. *Marine Biology* 162 (12), 2501-2512.
8. **Johnston MW**, Purkis SJ (2015) A coordinated and sustained international strategy is required to turn the tide on the Atlantic lionfish invasion. *Marine Ecology Progress Series*. 533:219-235 <http://dx.doi.org/10.3354/meps11399>
7. **Johnston MW**, Purkis SJ (2015) Hurricanes accelerated the Florida–Bahamas lionfish invasion. *Global Change Biology* 21, 2249–2260. <http://dx.doi.org/10.1111/gcb.12874>
6. **Johnston MW**, Purkis SJ (2014) Are lionfish set for a Mediterranean invasion? Modelling explains why this is unlikely to occur. *Mar. Pollut. Bull.* <http://dx.doi.org/10.1016/j.marpolbul.2014.09.013>
5. **Johnston MW**, Purkis SJ (2014) Lionfish in the eastern tropical and north Pacific; A cellular automaton approach to risk assessment. *Biological Invasions*. 1–15
4. GIGA Community of Scientists (2013) Global Invertebrate Genomics Alliance (GIGA): developing community resources to study diverse invertebrate genomes. *Journal of Heredity*. 2014:105(1):1–18
3. **Johnston MW**, Purkis SJ (2013) Modeling the potential spread of the recently identified non–native panther grouper (*Chromileptes altivelis*) in the Atlantic using a cellular automaton approach. *PloS one* 8.8 (2013): e73023.
2. **Johnston MW**, Purkis SJ (2012) Invasionsoft: A web–enabled tool for invasive species colonization predictions. *Aquatic Invasions* 7(3), 405–417.
1. **Johnston MW**, Purkis SJ (2011) Spatial analysis of the invasion of lionfish in the western Atlantic and Caribbean. *Marine Pollution Bulletin* 62 (6), 1218–1226.

Conference and poster presentations:

24. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA.
23. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 HCNSO Science Symposium, Dania Beach, Florida, USA.
22. **Johnston MW**, Milligan RJ, Easson CG, English D, de Rada S, Penta B, Sutton TT (2018) DEEPEND: A Tool for Classification of Mesoscale Water mass Structure for Pelagic Community Analyses. 2018 Ocean Sciences Meeting, Portland, Oregon, USA.
21. **Johnston MW**, Purkis SJ (2017) Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. 20th International Conference on Aquatic Invasive Species, Coral Springs, Florida, USA.
20. **Johnston MW**, Purkis SJ (2017) Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. 38th Meeting of the United States Coral Reef Task Force, Fort Lauderdale, Florida, USA.
19. **Johnston MW**, Purkis SJ (2017) Biophysical Modeling Suggests Hurricanes Accelerated the Florida–Bahamas Lionfish Invasion. American Fisheries Society 147th Annual Meeting, Tampa, Florida.
18. **Johnston MW**, Bernard AM (2017) Forecasting Lionfish Sources and Sinks in the Atlantic Using Biophysical Modeling. American Fisheries Society 147th Annual Meeting, Tampa, Florida.
17. deRada S, Penta B, Sutton T, **Johnston M**, Milligan R, Easson C, Cook A, Boswell K, Lembke C, English D, Hu C (2017) Physical-bio-optical modeling in the Gulf of Mexico: Analysis of water mass relationships to pelagic habitat. 2017 ASLO Ocean Sciences Meeting, Honolulu, Hawai'i.
16. Sutton T, Cook A, Boswell k, Bracken-Grissom H, deRada S, English D, Eytan R, Hu C, **Johnston M**, Judkins H, Lembke C, Lopez J, Moore J, Nizinski M, Penta B, Romero I, Rooker J, Shivji M, Vecchione M, Wells D, Youngbluth M, Fenolio D, Frank T (2017) Deep-pelagic research in the Gulf of Mexico: The DEEPEND Consortium. 2017 ASLO Ocean Sciences Meeting, Honolulu, Hawai'i.
15. **Johnston MW**, Milligan RJ, Easson CG, de Rada S, Penta B, Sutton T (2017) DEEPEND: Characterizing Pelagic Habitats in the Gulf of Mexico Using Model, Empirical, and Remotely-Sensed Data. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA
14. deRada S, Penta B, **Johnston MW**, Milligan RJ, Easson CG, Sutton T (2017) DEEPEND: Relating Pelagic Habitat to Ocean Stratification. Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, Louisiana, USA
13. **Johnston MW**, Bernard AM, Shivji MS (2016) Genetic and Biophysical Modeling Assessment of Red Grouper (*Epinephelus Morio*) Connectivity in the Gulf of Mexico and Southeastern USA. 69th Annual Gulf and Caribbean Fisheries Institute Conference, Grand Cayman, Cayman Islands.
12. **Johnston MW**, Bernard AM, Shivji MS (2016) Lionfish sources and sinks in the Atlantic: are reef fisheries in the Gulf of Mexico at risk? 69th Annual Gulf and Caribbean Fisheries Institute Conference, Grand Cayman, Cayman Islands.
11. **Johnston MW**, Bernard AM, Reichert MJ, Shivji MS (2016) Genetic and biophysical modeling assessment of connectivity in the red grouper, *Epinephelus Morio*. 13th International Coral Reef Symposium, Honolulu, HI, USA.
10. Cowen N, **Johnston MW** (2016) Monitoring a problem: evaluating the ecological status of the invasive Nile Monitor in

Florida and forecasting population expansion using computational GIS. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.

9. **Johnston MW** (2016) A bank divided: quantifying the spatial-temporal connectivity break on the Campeche Bank. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.
8. O'Brien C, **Johnston MW** (2016) Port Mariel, Cuba: promise, prosperity, and pests. HCNSO Ocean Science Jamboree, Dania Beach, FL, USA.
7. deRada S, Penta B, **Johnston MW**, Sutton T (2016) A Gulf of Mexico comparative analysis of numerical model results, cruise-based observations, and historical data. Gulf of Mexico Oil Spill and Ecosystem Science Conference. Tampa, Florida, USA.
6. Sutton TT, **Johnston MW**, and 18 others (2015) Understanding deep–pelagic ecosystem variability in an age of increasing deep–ocean commercial activity: A Gulf of Mexico case study and new research initiative (DEEPEND). Deep–Sea Biology Symposium, Aveiro, Portugal.
5. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. Deep–Sea Biology Symposium, Aveiro, Portugal.
4. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. 2015 Joint Meeting of Ichthyologists and Herpetologists, Reno, Nevada, USA.
3. Sutton TT, Cook AC, **Johnston MW**, and 17 others (2015) DEEPEND: Deep Pelagic Nekton Dynamics of the Gulf of Mexico. Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, TX
2. Lopez J, **Johnston MW** (2014) Establishing a “Global Invertebrate Genome Alliance” (GIGA) for comparative genomics. Society of Molecular Biology and Evolution Meeting
1. **Johnston MW**, Purkis SJ (2013) Lionfish in the eastern Pacific and Mediterranean – assessing the invasion risk with cellular automaton models. FWC Lionfish Summit Report

MANUSCRIPT REVIEWS

Scientific Reports; Coral Reefs; Marine Biology; Marine Ecology Progress Series; Marine Pollution Bulletin; Biological Invasions; Aquatic Invasions; Management of Biological Invasions; Peerj; Aquatic Biology

TEACHING

2018-present: Biology II (undergraduate), Intro to Cellular Biology (undergraduate)

2016-present: GIS and Remote Sensing (graduate)

2013-14: GIS and Remote Sensing – ArcGIS lab, web–based GIS programming (TA) (graduate)

GRADUATE STUDENTS

Primary Advisor:

*Cynthia Cleveland** – MS Marine Science – “Empirical validation and comparison of the Hybrid Coordinate Ocean Model (HYCOM) between the Gulf of Mexico and the Tongue of the Ocean”

*Noah Cowen** – MS Marine Biology – “Evaluating the ecological status of the introduced Nile monitor (*Varanus niloticus*) in Florida: Forecasting presence and population expansion using computation geographic information systems”

*Charleen O'Brien** – MS Marine Biology – “Ports, prosperity, and pests: assessing the threat of aquatic invasive species introduced by maritime shipping activity in Cuba”

*Stephanie Reilly** – MS Marine Biology – “Forecasting the spread and invasive potential of apple snails (*Pomacea spp.*) in Florida”

Committee Member:

*Jaime Ahn** – MS Marine Biology – “Geospatial analysis of NOAA cetacean stranding data in Florida to explore for human impacts”

*Ryan Brookbank** – MS Marine Biology – “Mapping the spatial–temporal variation in Ras Ghanadah seagrass meadows and sand shoals between 1996, 2006 & 2012”

Kayla Caldwell – MS Marine Biology – “Shifting Future of The Mangrove Population At Oleta River State Park Resulting From Climate Change Induced Sea Level Rise.

*Nicolas Jones** – MS Marine Biology – “Spatiotemporal Change in the Benthic Community of Southeast Florida”

*Adam Ritterman** – MS Marine Biology – “A review of present and alternative lionfish controls in the western Atlantic”

Liz Fromuth – MS Marine Biology – “Investigating the Temporal Dynamics and Stony Coral Community Assemblage of Dense *Acropora cervicornis* patches in Southeast Florida”

Gaston Hayworth – MS Marine Biology – “Salinity-Induced Barrier Layer impact on Rapid Intensification of Hurricanes (2000-2018) in the Atlantic Ocean”

Drew Mertzlufft – MS Marine Biology – “Pelagic Habitat Use by Benthic Fishes: Juvenile Scorpaenoids (Teleostei: Scorpaeniformes: Scorpaenidae, Sebastidae, and Setarchidae) of the Oceanic Gulf of Mexico”

Deepesh Tourani – MS Marine Biology – “Structure and Predictive Function of Microbial Communities from northern Gulf of Mexico”

* graduated

FUNDING

Grants/Contracts:

2015–19 DEEPEND Consortium
2011–19 Guy Harvey Research Institute
2013 Global Invertebrate Genomics Alliance
2012 International Union for the Conservation of Nature
2011 Living Oceans Foundation
2011 Association L'OEil d'Andromède

Scholarships:

2014–15 Oceanographic Center Fishing Tournament Scholarship
2012–14 Oceanographic Center Scholarship

SPEAKING INVITATIONS

2019:

Saint Louis Science Center Summer Camp – Invited Guest Scientist – Skype interview with summer campers
NSU Computer OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”

2018:

Broward College International Education – Invited Speaker: “Climate change effects on land and sea”
NSU Computer OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”
NSU OSTEM Summer Camp – Invited Speaker: “Computer modeling the connectivity patterns of marine organisms”
NSU Faculty Lecture Series – Invited Speaker: “Visualizing your data to aid interpretation: more than pretty pictures”

2017:

REEF Monthly Seminar Series – Invited speaker: “Modelling the dispersal of non-native marine fish using three-dimensional computer simulation”
NSU Dive In! Lecture Series – Invited speaker: “Lionfish on Our Reefs: What Have We Learned 30 Years Post Introduction?”

2016:

Gear Up! Faculty Lecture Series – Invited speaker – ‘Data visualization in the marine sciences’
NSU OSTEM – Invited speaker – “Modeling marine invasive species”
NSU Ambassadors Board – Invited speaker – “Prowling lions and damsels causing distress: can computation help save our oceans from invasions?”

NSU – Faculty seminar – “Modelling generational connectivity of marine organisms using three-dimensional, Lagrangian computer simulation”

2015:

OceanTeacher Global Academy (OTGA) Research Data Management Conference – Guest lecturer – “DEEPEND data management and visualization”
U.S. Fish and Wildlife Service, Aquatic Nuisance Species Task Force – Invited speaker – “The Economics of invading lionfish”
NSU Mathematics Colloquium – Invited speaker – “Learning from lionfish: modeling marine invaded systems”
NSU OSTEM – Invited speaker – “Modeling marine invasive species”
Rosenstiel School of Marine and Atmospheric Science – Invited speaker – “Computer modeling the incursion patterns of marine invasive species”

2014:

NSU OSTEM – Invited speaker – “Web-based GIS and applications for modeling marine invasive species”
NSU – Invited speaker – “Learning from lionfish; modeling marine invasive species in the world’s oceans”

2013:

NSU OC Librarian Conference – Invited speaker – “The lion, the web, and the globe: web-based software

development and data visualization"

Oceangate Expedition Lionfish – Panel member – “Expedition Lionfish” symposium panel of experts
(<http://www.oceangate.com/expeditions/expedition-lionfish.html>)

PROGRAMMING AND TECHNICAL SUMMARY

- Visual Studio 2003–2012/VB.Net/.Net Framework 1.1–4.0
- ASP.Net,AJAX, Javascript, PHP, SVG, HTML
- SQL Server 2000–2016, SQL Server Management Studio (2005-2016)
- Object Oriented Analysis and Design
- Joomla 1.6/2.5/3.0
- ArcDesktop 9.2/10
- MatLab 2011b, 2014a
- R

WEBSITES/WEB APPLICATIONS

Guy Harvey Research Institute Shark tracking web application: <http://www.nova.edu/ocean/ghri/tracking/>

DEEPEND Consortium: <http://www.deependconsortium.org>

Professional Web Portal: <http://www.nova.edu/~johnmatt>

RELEVANT PROFESSIONAL EXPERIENCE

Nova Southeastern University, Halmos College of Natural Sciences and Oceanography Dania Beach, FL, USA Assistant Professor, DEEPEND Consortium Data Manager	3/11–Present
DJSP Processing Plantation, FL, USA Software Developer	9/08–10/10
Viewpoint Construction Software Portland, OR, USA Senior Software Developer	2/04–8/07