



**Johnson Education Center, FAU Harbor Branch, Fort Pierce, Florida  
February 7-8, 2019**

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We welcome a new sponsor this year: the Indian River Lagoon National Estuary Program.

**HARBOR BRANCH OCEANOGRAPHIC INSTITUTE**  
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**Indian River Lagoon Symposium 2019**  
***Indian River Lagoon: Quo Vadis?***

**Program Schedule – Technical Sessions**  
**Thursday, February 7, 2019**

(Note: The presenting author of talks is the first author, unless indicated by underlining.)

- 0715 - 0815      Registration, Set Up Posters, and Coffee & Tea**
- 0815 - 0830      Welcome**  
M. Dennis Hanisak, FAU Harbor Branch
- 0830 - 0900      Keynote Address**  
***Quo Vadis Northern Indian River Lagoon? What Recent Conditions Might Tell Us about the Future***  
Chuck Jacoby, Lori Morris\*, Ali Simpson\*, Jan Miller\*, Ron Brockmeyer\*, Margaret Lasi\*, Bob Chamberlain\*, Lauren Hall\*, and Rex Ellis\*  
St. Johns River Water Management District, Palatka, FL; \* = order determined by a random number generator
- 0900 - 1000      Oral Session 1 – *Indian River Lagoon: Quo Vadis?***  
Session Chair: Lori Morris, St. Johns River Water Management District
- 0900 – 0915      **Shoreline Characterization in the Northern Indian River Lagoon**  
Melinda Donnelly<sup>1</sup>, Kelly Kibler<sup>1</sup>, Annie Roddenberry<sup>2</sup>, Michelle Shaffer<sup>1</sup>, Suzanne Connor<sup>1</sup>, and Linda Walters<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Florida Fish and Wildlife Conservation Commission, New Smyrna Beach, FL
- 0915 - 0930      **Multi-decadal Shifts in Fish Community Diversity across a Dynamic Biogeographic Transition Zone (STUDENT PRESENTATION)**  
Brittany Troast<sup>1</sup>, Richard Paperno<sup>2</sup>, and Geoffrey Cook<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>FL Fish and Wildlife Conservation Commission, Melbourne, FL
- 0930 - 0945      **Anthropogenic Contaminants in Stranded Cetaceans: How Our Addiction to Convenience is Affecting Charismatic Marine Megafauna (STUDENT PRESENTATION)**  
Catherine F. Lo<sup>1</sup>, Gregory O’Corry-Crowe<sup>1</sup>, Justin R. Perrault<sup>2</sup>, Branson Ritchie<sup>3</sup>, Sayed Hassan<sup>3</sup>, Craig A. Harms<sup>4</sup>, David Rotstein<sup>5</sup>, Vicky Thayer<sup>6</sup>, Jill M. Sullivan<sup>6</sup>, Sushan Han<sup>7</sup>, Emily Christiansen<sup>8</sup>, Andreas Lehner<sup>9</sup>, John Buchweitz<sup>9</sup>, and Annie Page-Karjian<sup>1</sup>  
<sup>1</sup>Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL; <sup>2</sup>Loggerhead Marinelife Center, Juno Beach, FL; <sup>3</sup>University of Georgia, Athens, GA; <sup>4</sup>North Carolina State University, Morehead City, NC; <sup>5</sup>Marine Mammal Pathology Services, Olney, MD; <sup>6</sup>North Carolina Division of Marine Fisheries, Morehead City, NC; <sup>7</sup>Colorado State University, Fort Collins, CO; <sup>8</sup>North Carolina Aquariums Center for Marine Science and Technology, Morehead City, NC; <sup>9</sup>Michigan State University, Lansing, MI
- 0945 - 1000      **Indian River Lagoon: Quo Vadis? The Indian River Lagoon Comprehensive Conservation and Management Plan (CCMP) Revision – Looking Ahead to 2030**  
Duane E. De Freese  
Indian River Lagoon National Estuary Program, Sebastian, FL
- 1000 - 1030      Break**

- 1030 - 1130 Oral Session 2 – HABs & Fish**  
Session Chair: Geoff Cook, University of Central Florida
- 1030 - 1045 **Optical Discrimination of Harmful Algal Blooms in the Indian River Lagoon**  
Nicole Stockley, Malcolm McFarland, Stephanie Schreiber, and Jim Sullivan  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL
- 1045 - 1100 **Habitat Selection and Movement Patterns of Juvenile Goliath Grouper (*Epinephelus itajara*) in the Southern Indian River Lagoon**  
Derek Cox, Erick Ault, and Sarah Webb  
Florida Fish and Wildlife Conservation Commission, Tequesta, FL
- 1100 - 1115 **Business in the Estuary, Party in the Sea: Striped Mullet (*Mugil cephalus*) in the Indian River Lagoon (STUDENT PRESENTATION)**  
Olivia Myers, Eric Reyier, Bonnie Ahr, and Geoffrey Cook  
University of Central Florida, Orlando, FL
- 1115 - 1130 **Elasmobranch Community Dynamics in Florida's Southern Indian River Lagoon (STUDENT PRESENTATION)**  
Grace Roskar, Michael P. McCallister, and Matthew J. Ajemian  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL
- 1130 - 1215 Three Minutes, Three Slides**  
Session Chair: M. Dennis Hanisak, FAU Harbor Branch
- The 2013 Bottlenose Dolphin IRL UME Five Years Later: What Do We Know?**  
Sam Rossmann, Wendy Noke Durden, and Megan Stolen  
Hubbs-Sea World Research Institute, Melbourne Beach, FL
- Health and Population Trends of North American River Otters from East Central Florida**  
Megan K. Stolen<sup>1</sup>, David Rotstein<sup>2</sup>, and Constance Silbernagel<sup>1</sup>  
<sup>1</sup>Hubbs-SeaWorld Research Institute, Melbourne Beach, FL; <sup>2</sup>Marine Mammal Pathology Services, Olney, MD
- Urban Water Quality in the IRL Watershed: What is Going on in Port St. Lucie?**  
Rachel A. Brewton, Lynn E. Wilking, and Brian E. Lapointe  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL
- Searching for a Harbinger of Change within a Long-term Fisheries Database**  
Richard Paperno, Douglas H. Adams, and Agustin P. Sebastian  
Florida Fish & Wildlife Conservation Commission, Melbourne, Florida
- Results of a Risk-based Vulnerability Assessment of the Indian River Lagoon to Climate Change**  
Randall W. Parkinson<sup>1</sup> and Valerie Seidel<sup>2</sup>  
<sup>1</sup>RWParkinson Consulting, Inc., Melbourne, FL; <sup>2</sup>The Balmoral Group, Winter Park, FL
- Genetic Diversity of *Halodule wrightii* Is Resistant to Large Scale Dieback – A Case Study from the Indian River Lagoon**  
Laura K. Reynolds<sup>1</sup>, Kathryn A. Tiling<sup>2</sup>, and Vincent G. Encomio<sup>2,3</sup>  
<sup>1</sup>University of Florida, Gainesville, FL; <sup>2</sup>Florida Oceanographic Society, Stuart, FL; <sup>3</sup>University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant, Stuart, FL

**Genetic Diversity of a Seagrass Nursery – Managing Diversity**

Kathryn A. Tiling<sup>1</sup>, Laura K. Reynolds<sup>2</sup>, and Vincent G. Encomio<sup>3</sup>

<sup>1</sup>Florida Oceanographic Society, Stuart, FL; <sup>2</sup>University of Florida, Gainesville, FL;

<sup>3</sup>University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant, Stuart, FL

**Planting Seagrass: (1) What’s the easiest way to plant seagrass? (2) How to involve the public?**

Robert Virnstein

Seagrass Ecosystems Analysts, East Palatka, FL

**Is the South Central Indian River Lagoon the IRL’s Ark?**

M. Dennis Hanisak

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**1215 - 1330 Lunch (provided)**

**1330 - 1445 Oral Session 3 – Ecology**

Session Chair: Lisa Chambers, University of Central Florida

**1330 - 1345 Understanding the Extremes: Hurricanes and Sediment Microbial Community Resilience (STUDENT PRESENTATION)**

David J. Bradshaw II, Nick Dickens, and Peter J. McCarthy

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**1345 - 1400 Benthic Flux Measures in the Loxahatchee River Estuary**

Rachel J. Harris<sup>1</sup>, D. Albrey Arrington<sup>1</sup>, Zachary A. Taylor<sup>1</sup>, and Michael Townsend<sup>2</sup>

<sup>1</sup>Loxahatchee River District, Jupiter, FL: <sup>2</sup>Waikato Regional Council, Hamilton, New Zealand

**1400 - 1415 Status of the Eastern Oyster (*Crassostrea virginica*) Population in the St. Lucie Estuary Following Hurricane Irma**

Richard Radigan and Melanie Parker

Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL

**1415 - 1430 Ecosystem Trends in Mosquito Lagoon: Are Oyster Reefs Being Replaced by Mangrove Islands?**

Giovanna McClenachan, Linda Walters, and Megan Witt

University of Central Florida, Orlando, FL

**1430 - 1445 Wrack: Is It Good or Bad for Living Shorelines? Nutrient Contributions and CO<sub>2</sub> Fluxes from Mangrove and Seagrass Wrack in Canaveral National Seashore**

Joshua L. Breithaupt, Evan Duga, and Lisa G. Chambers

University of Central Florida, Orlando, FL

**1445 - 1515 Three Minutes, Three Slides**

Session Chair: Zack Jud, Florida Oceanographic Society

**Biological Responses to Aeration in an Estuarine Canal with Fine-Grained Organic-Rich Sediments (STUDENT PRESENTATION)**

Xiao Ma, Kevin B. Johnson, Austin Fox, and John Trefry

Florida Institute of Technology, Melbourne, FL

**Can Elevated Salinity Trigger the Viable But Nonculturable State in the Marine Pathogen *Vibrio vulnificus*? (STUDENT PRESENTATION)**

Brandon McHenry, Gabby Barbarite, and Peter McCarthy  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**Spatial and Temporal Variability of Algal Blooms in the Indian River Lagoon, Summer 2018 (STUDENT PRESENTATION)**

Linda R. Roehrborn, Jessica Morse, and Kevin B. Johnson  
Florida Institute of Technology, Melbourne, FL

**Abundance and Community Richness of Benthic Amphipods in a Shallow Subtropical Estuary (STUDENT PRESENTATION)**

Nayan Mallick and Kevin B. Johnson  
Florida Institute of Technology, Melbourne, FL

**Does Oyster Age Matter? Filtering Ability and Nutrient Release from Young versus Mature Oysters (STUDENT PRESENTATION)**

Bryan Locher, Linda J. Walters, and Lisa G. Chambers  
University of Central Florida, Orlando, FL

**Intervention Strategies for Diseased Corals in Southeast Florida and Potential Impacts on Mucus Microbial Communities (STUDENT PRESENTATION)**

Erin Shilling<sup>1</sup>, Jeff Beal<sup>2</sup>, and Joshua D. Voss<sup>1</sup>  
<sup>1</sup>Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL;  
<sup>2</sup>Florida Fish and Wildlife Conservation Commission, Fort Pierce, FL

**Exploring the Presence of Seahorse Hybrids (*Hippocampus erectus* x *Hippocampus reidi*) in the IRL Using PCR-RFLP and DNA Barcoding (STUDENT PRESENTATION)**

Cassidy Wagner<sup>1</sup>, Nancy Kim Pham Ho<sup>2</sup>, and Jeff Bush<sup>1</sup>  
<sup>1</sup>Vero Beach High School, Vero Beach, FL; <sup>2</sup>Coastal Biology Inc., Gainesville, FL

**Genetic Differences in the Immune Response of Coastal and Indian River Lagoon Dolphins to Pathogens**

Heidi J.T. Pagán, Tatiana Ferrer, and Greg O’Corry-Crowe  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**Central-place Foraging by GPS-tagged Manatees around Warm-water Refuges in the Northern Indian River Lagoon**

Charles J. Deutsch<sup>1</sup>, Margaret E. Barlas<sup>2</sup>, James P. Reid<sup>3</sup>, and Susan M. Butler<sup>3</sup>  
<sup>1</sup>Florida Fish and Wildlife Conservation Commission, Gainesville, FL; <sup>2</sup>Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL; <sup>3</sup>U.S. Geological Survey, Gainesville, FL

**1515 - 1545 Break**

**1545 - 1700 Oral Session 4 – Restoration & Management**

Session Chair: Vincent Encomio, University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant

**1545 - 1600 Options for Remediation of Fine-Grained, Organic-Rich Sediments in the IRL System**

Austin L. Fox and John H. Trefry  
Florida Institute of Technology, Melbourne, FL

- 1600 - 1615 **Hydrodynamic Limitations and the Effects of Living Shoreline Stabilization on Mangrove Recruitment (STUDENT PRESENTATION)**  
Christian Pilato, Kelly Kibler, Melinda Donnelly, and Linda Walters  
University of Central Florida, Orlando, FL
- 1615 - 1630 **Can Biorock Be Used to Restore Oyster Reefs in the Indian River Lagoon?**  
Geoff Swain, Kelli Hunsucker, Harrison Gardner, and Robert Weaver  
Florida Institute of Technology, Melbourne, FL
- 1630 - 1645 **Integrating Construction of a Treatment Wetland to Reduce Nutrient Loading from Stormwater Runoff into Coastal Waters (STUDENT PRESENTATION)**  
Miranda White, Abraham DaSilvio, Samuel Mwenda, and Hyun J. Cho  
Bethune-Cookman University, Daytona Beach, FL
- 1645 - 1700 **Sense of Place into Future Indian River Lagoon Restoration: A Critical Move Forward**  
Hannah R. Torres, Timothy L. Hawthorne, and Fernando I. Rivera  
University of Central Florida, Orlando, FL
- 1700 - 1730 Three Minutes, Three Slides**  
Session Chair: Kelli Hunsucker, Florida Institute of Technology
- What is the Coastal Program?**  
Katie Conrad<sup>1</sup> and Kevin Kalasz<sup>2</sup>  
<sup>1</sup>U.S. Fish and Wildlife Service, Jacksonville, FL; <sup>2</sup>U.S. Fish and Wildlife Service, Washington, DC
- An Overview of the Loxahatchee River District's Volunteer Water Quality Monitoring Program**  
David T. Porter and Susan Noel  
Loxahatchee River District, Jupiter, FL.
- Source and Concentrations of Surface Water Nutrients from Residential Waterfront Homes in Brevard County, Florida**  
Lisa Krimsky, Holly Abeels, Mary Lusk, and Linda Seals  
University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant, Fort Pierce, FL
- A Holistic Approach to Shoreline Restoration: Factoring for Shoreline Nesting Species in Our Living Shoreline Projects**  
Kirk Fusco  
Florida Department of Environmental Protection-Indian River Lagoon Aquatic Preserves, Fort Pierce, FL
- IRL Idiosyncrasies: Lessons Learned on Living Shorelines in Brevard County**  
Honey Whitney<sup>1</sup>, Jake Zehnder<sup>1</sup>, Virginia Barker<sup>2</sup>, and Jane Hart<sup>1</sup>  
<sup>1</sup>Brevard Zoo, Melbourne, FL; <sup>2</sup>Brevard County Natural Resources Management, Melbourne, FL
- Should We Look to the Sediments for Insights Regarding Future Seagrass Recovery in the IRL? (STUDENT PRESENTATION)**  
Andrew Stancil, Alyson Carpenter, John Hart, M. Dennis Hanisak, and Jordon Beckler  
Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**Food or Trash? Plastic Pollution in Birds of Prey (STUDENT PRESENTATION)**

Julia Carlin<sup>1</sup>, Linda Walters<sup>1</sup>, Melinda Donnelly<sup>1</sup>, Casey Craig<sup>1</sup>, and Samantha Little<sup>2</sup>

<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Audubon Center for Birds of Prey, Maitland, FL

**Endangered Birds, Imperiled Oyster Reefs, Citizen Science, and Engaging Children with Cancer**

Linda Walters, Megan Nickels, and Jessie Copertino

University of Central Florida, Orlando, FL

**The Lagoon Science Bus: Rolling out Science and Engineering to Local Schools**

Kelli Hunsucker and Robert Weaver

Florida Institute of Technology, Melbourne, FL

**1730 Closing Comments and Transition to Poster Session & Reception**

**1730 - 2000 Reception**

**1930 Announcement of Student Awards (Auditorium)**

**Notes on How to Vote on People's Choice Student Awards**

This year the Steering Committee has decided to add three People's Choice Student Awards for Best 15-Minute Oral Presentation, Best 3-Minute Oral Presentation, and Best Poster. In the back of each attendee's name badge are three tickets, a red one, a white one, and a yellow one. Please vote for the presentation that you thought was most deserving of this recognition:

**Red Ticket: Best 15-Minute Oral Presentation** – Write time slot and student's last name

**White Ticket: Best 3-Minute Oral Presentation** – Write session time slot and student's last name

**Yellow Ticket: Best Poster Presentation** – Write the poster number and student's last name

**Deposit oral presentation tickets in designated containers at registration desk in Gallery by 6 p.m.**

**Deposit poster presentation tickets in designated containers at registration desk in Gallery by 7 p.m.**

## **1730 - 2000 Poster Session & Reception (Open to the public, too!)**

Posters will be displayed all day in the Education Annex (Posters #1-30) and the Gallery (Posters #31-35). There will be a coffee station at both locations during breaks. We also encourage students to be at their posters during the second half of lunch break. **Please join us in the Auditorium for the presentation of student awards at 1930.**

### **1. Accumulation of Organic Sunscreen Chemicals in Sharks and Teleost Fish Species**

Douglas H. Adams<sup>1</sup>, Ke He<sup>2</sup>, Ethan Hain<sup>2</sup>, Jahir Antonio Batista Andrade<sup>2</sup>, Anna Feerick<sup>2</sup>, and Lee Blaney<sup>2</sup>

<sup>1</sup>Florida Fish and Wildlife Conservation Commission, Melbourne, FL; <sup>2</sup>University of Maryland Baltimore County, Baltimore, MD

### **2. Population Decline of a Sentinel Fish Species in the Indian River Lagoon: Habitat Shifts and Ecosystem Stressors**

Douglas Adams, Agustin Sebastian, and Richard Paperno

Florida Fish and Wildlife Conservation Commission, Melbourne, FL

### **3. Seagrass Beds along the Coastal Oaks Preserve Are Stable (STUDENT PRESENTATION)**

JonDavid Bortolotti<sup>1,4</sup>, Anjaleah-mae Leviste<sup>2,4</sup>, Shane Michos<sup>3,4</sup>, Alejandro Vazquez<sup>2,4</sup>, and Logan Votzi<sup>1,4</sup>

<sup>1</sup>Vero Beach High School, Vero Beach, FL; <sup>2</sup>Sebastian River High School, Sebastian, FL; <sup>3</sup>Indian River Charter High School, Vero Beach, FL; <sup>4</sup>Junior Scientist Fellows Program

### **4. DNAngler: Using Citizen Scientists and Innovative Molecular Techniques to Monitor Fish in the Indian River Lagoon (STUDENT PRESENTATION)**

John Brandon, Brandon G. McHenry, Alia Garrett, Madeleine S. Arencibia, Carlie S. Perricone, Nicholas J. Dickens, and Gabrielle M. Barbarite

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

### **5. Influence of Culverts on Mangrove Invertebrate Communities in the Indian River Lagoon (STUDENT PRESENTATION)**

Meg Cabras<sup>1,3</sup>, Skye Carbone<sup>1,3</sup>, and Jillian Sweetland<sup>2,3</sup>

<sup>1</sup>Indian River Charter High School, Vero Beach, FL; <sup>2</sup>Vero Beach High School, Vero Beach, FL;

<sup>3</sup>Junior Scientists Program

### **6. Improvements in Water Quality with the Opening of an IRL Impoundment Culvert (STUDENT PRESENTATION)**

Vincent Celano<sup>1,3</sup>, Michael Kolodziejczak<sup>1,3</sup>, Jose Martinez<sup>2,3</sup>, Tristan Novak<sup>1,3</sup>, and Griffin Wagner<sup>1,3</sup>

<sup>1</sup>Vero Beach High School, Vero Beach, FL; <sup>2</sup>Indian River Charter High School, Vero Beach, FL;

<sup>3</sup>Junior Scientists Program

### **7. Impacts of Scleractinian Tissue Loss Disease on Corals in Southeast Florida (STUDENT PRESENTATION)**

Ian R. Combs<sup>1</sup>, Jeff Beal<sup>2</sup>, and Joshua D. Voss<sup>1</sup>

<sup>1</sup>Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL; Florida Fish and Wildlife Conservation Commission, Fort Pierce, FL

### **8. Save Our Indian River Lagoon (SOIRL) Living Shoreline Monitoring for Brevard County**

Suzanne Connor, Michelle Shaffer, Rebecca Sweatman, Melinda Donnelly, and Linda Walters

University of Central Florida, Orlando, FL



- 9. Impacts of Oyster (*Crassostrea virginica*) Reef Restoration on Threatened and Endangered Bird Populations in Mosquito Lagoon (STUDENT PRESENTATION)**  
 Jessica Copertino, Michelle Shaffer, Melinda Donnelly, and Linda Walters  
 University of Central Florida, Orlando, FL
- 10. The Indian River Lagoon: A Microplastics Hotspot? (STUDENT PRESENTATION)**  
 Casey Craig<sup>1</sup>, Linda Walters<sup>1</sup>, Jessy Wayles<sup>2</sup>, Emily Dark<sup>3</sup>, Kirk Fusco<sup>3</sup>, Vincent Encomio<sup>4,5</sup>, David Fox Jr<sup>6</sup>, and Lei Zhai<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Marine Discovery Center, New Smyrna Beach, FL;  
<sup>3</sup>Florida Department of Environmental Protection, Fort Pierce, FL; <sup>4</sup>University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant, Stuart, FL; <sup>5</sup>Florida Oceanographic Society, Stuart, FL
- 11. Comparing Groundwater Nutrient Concentrations in Turkey Creek Neighborhoods with Septic Tanks, Sewer, and Reclaimed Irrigation**  
 Kayleigh Douglass<sup>1</sup>, Danielle Huffner<sup>1</sup>, Claudia Listopad<sup>1,2</sup>, and Leesa Souto<sup>2,3</sup>  
<sup>1</sup>Applied Ecology, Inc., Indialantic, FL; <sup>2</sup>Florida Institute of Technology, Melbourne, FL; <sup>3</sup>Marine Resources Council, Melbourne, FL
- 12. Mercury Exposure and Tissue Concentrations among Elasmobranchs in the Southern Indian River Lagoon, Florida**  
 Christa Edwards<sup>1</sup>, Luke Yrastorza<sup>2</sup>, Amelia Grace Roskar<sup>2</sup>, Matthew J. Ajemian<sup>2</sup>, and Adam M. Schaefer<sup>2</sup>  
<sup>1</sup>The University of Tampa, Tampa, FL; <sup>2</sup>Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL
- 13. A Living Shoreline Suitability Model for Indian River Lagoon: Integrating Hydrodynamic Frequency Analysis with Shoreline Surveys to Target Site-Specific Stabilization Techniques (STUDENT PRESENTATION)**  
 Arash Aliabadi Farahani<sup>1</sup>, Kelly Kibler<sup>1</sup>, Melinda Donnelly<sup>1</sup>, Vasileios Kitsikoudis<sup>1</sup>, Giovanna McClenachan<sup>1</sup>, Annie Roddenberry<sup>2</sup>, and Linda Walters<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Florida Fish and Wildlife Conservation Commission, New Smyrna Beach, FL
- 14. Modeling Patterns of Occurrence in Eastern Oysters (*Crassostrea virginica*) Growing on Alternative Intertidal Substrate (STUDENT PRESENTATION)**  
 Rebecca Fillyaw, Giovanna McClenachan, Kristy Lewis, Melinda Donnelly, and Linda Walters  
 University of Central Florida, Orlando, FL
- 15. Adventures of Seagrass Wrack: How Wrack Effects Growth and Survival of Mangroves along Living Shoreline Restoration (STUDENT PRESENTATION)**  
 Noah Friedland, Julia Carlin, Megan Witt, Rebecca Sweatman, Michelle Shaffer, Suzanne Connor, Melinda Donnelly, and Linda Walters  
 University of Central Florida, Orlando, FL
- 16. eDNA Surveys in the Indian River Lagoon: Baseline Data for Long-term Monitoring of Fishery Resources in the Face of a Changing Ocean**  
 Michelle R. Gaither<sup>1</sup>, Girish Kumar<sup>1</sup>, Jeff Eble<sup>2</sup>, and Kristy Lewis<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Florida Institute of Technology, Melbourne, FL
- 17. Effects of Toxic *Pyrodinium bahamense* on the Clearance Rate of Eastern Oysters and Hard Clams**  
 Sara Garcia, Cary Lopez, Sugandha Shankar, Kevin Vazquez-Cruz, and Stephen P. Geiger  
 Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL

**18. Florida East Coast Diamondback Terrapin in the Southern Indian River Lagoon (STUDENT PRESENTATION)**

Jeffrey S. Herr<sup>1</sup>, Nancy Pham Ho<sup>2</sup>, Emily Dark<sup>3</sup>, and Jon A. Moore<sup>1</sup>

<sup>1</sup>Florida Atlantic University, Jupiter, FL; <sup>2</sup>Coastal Biology Incorporated, Sanford, FL; <sup>3</sup>Florida Department of Environmental Protection-Indian River Lagoon Aquatic Preserves, Fort Pierce, FL

**19. Developing Biogeochemical Indicators of Oyster Reef Restoration Success: Changes in Carbon Cycling and Microbial Dynamics**

Nia R. Hurst, Bryan Locher, and Lisa G. Chambers

University of Central Florida, Orlando, FL

**20. Culverts Work: A Case Study into Enhanced Water Flow in Impounded Wetlands (STUDENT PRESENTATION)**

Andrew Keller<sup>1,3</sup>, Anika Heuberger<sup>1,3</sup>, Max Tardif<sup>1,3</sup>, Ben Vandenhanel<sup>1,3</sup>, and Melissa Gamez<sup>2,3</sup>

<sup>1</sup>Vero Beach High School, Vero Beach, FL; <sup>2</sup>Sebastian River High School, Sebastian, FL; <sup>3</sup>Junior Scientists Program

**21. Quantifying the Relationship among Dissolved Oxygen, Algal Blooms, and Fish Kills in the Indian River Lagoon (STUDENT PRESENTATION)**

Dakota M. Lewis and Geoffrey S. Cook

University of Central Florida, Orlando, FL

**22. Community and Trophic Dynamics of Sportfish in Response to Restoration in the Indian River Lagoon (STUDENT PRESENTATION)**

Jennifer M. Loch and Geoffrey S. Cook

University of Central Florida, Orlando, FL

**23. 2007-2018 Changes in Seagrass Distribution in the Loxahatchee River Estuary**

Jerry L. Metz, Kenneth 'Bud' Howard, Rachel J. Harris, and D. Albrey Arrington

Loxahatchee River District, Jupiter, FL

**24. Pulling Back the Curtain on Biosynthesis in Harmful Algal Blooms (STUDENT PRESENTATION)**

René K. Miller-Xavier, David J. Bradshaw, Dedra Harmody, Carlie S. Perricone, Guojun Wang, Peter J. McCarthy, and Nicholas J. Dickens

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**25. Severe Pneumonia and Lymphoid Depletion in a Stranded Bottlenose Dolphin (*Tursiops truncatus*) from the Indian River Lagoon**

Annie Page-Karjian<sup>1</sup>, Adam M. Schaefer<sup>1</sup>, Wendy Marks<sup>1</sup>, Anne Sleeman<sup>1</sup>, Steve Burton<sup>1</sup>, and Sushan Han<sup>2</sup>

<sup>1</sup>Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL; <sup>2</sup>Colorado State University, Fort Collins, CO

**26. Understanding the Unculturability of *Paracoccidioides brasiliensis* variant *ceti* through Novel Genomic Exploration**

Carlie S. Perricone, Laura King, Peter J. McCarthy, Adam M. Schaefer, and Nicholas J. Dickens

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

**27. Preliminary Exploration of Algal Molecular Diversity in Florida's Waterways via Environmental DNA Sequencing**

Thomas Sauvage, Larissa dos Santos, and Valerie Paul

Smithsonian Marine Station, Fort Pierce, FL

**28. Integrated Observing Systems: An Approach to Studying Harmful Algal Blooms in South Florida**

Adam M. Schaefer, M. Dennis Hanisak, Malcolm McFarland, and James M. Sullivan

Harbor Branch Oceanographic Institute at Florida Atlantic University, Fort Pierce, FL

- 29. Assessing the Effects of Oyster Reef Restoration on Macroinvertebrate Assemblages in Mosquito Lagoon, FL (STUDENT PRESENTATION)**  
Adam R. Searles, Emily E. Gipson, and Geoffrey S. Cook  
University of Central Florida, Orlando, FL
- 30. ScienceIRL (In Real Life)**  
Jennifer M. Sneed<sup>1,2</sup>, Jasmine Fox<sup>1,2</sup>, David Wood<sup>2</sup>, Damian Spotts<sup>2</sup>, Enrique Carmona<sup>2</sup>, Philip Baldwin<sup>2</sup>, Paul Reif<sup>2</sup>, Kimberly Trosvik<sup>2</sup>, and Gabby Barbarite<sup>2</sup>  
<sup>1</sup>Smithsonian Marine Station, Fort Pierce, FL; <sup>2</sup>Indian River Lagoon Science Festival, Fort Pierce, FL
- 31. Have We Lost All Hope? Benthic Infaunal Monitoring across the St. Lucie River**  
Michelle Stephens<sup>1</sup>, Sherry Reed<sup>1</sup>, and Jessica Lunt<sup>2</sup>  
<sup>1</sup>Smithsonian Marine Station, Fort Pierce, FL; <sup>2</sup>Dauphin Island Sea Lab, Dauphin Island, AL
- 32. *Pyrodinium bahamense* Growth and Toxicity: Are Indian River Lagoon Cells More Toxic?**  
Kevin Vazquez-Cruz, Sugandha Shankar, Cary B. Lopez, and Sara Garcia  
Florida Fish and Wildlife Conservation Commission, St. Petersburg, FL
- 33. A Comparison of Oyster Settlement Monitoring Techniques (STUDENT PRESENTATION)**  
Arielle M. Velazquez<sup>1,2</sup>, Glenn A. Coldren<sup>2</sup>, and Vincent G. Encomio<sup>3</sup>  
<sup>1</sup>Indian River State College, Fort Pierce, FL; <sup>2</sup>Florida Oceanographic Society, Stuart, FL; <sup>3</sup>University of Florida/Institute of Food and Agricultural Sciences, Florida Sea Grant, Stuart, FL
- 34. Determining the Genetic Relationship of Sympatric Croaker (*Micropogonias* spp.) Inhabiting the Indian River Lagoon (STUDENT PRESENTATION)**  
Bridget A. Vincent<sup>1</sup>, Adam R. Searles<sup>1</sup>, Alexa Trujillo<sup>1</sup>, Rich Paperno<sup>2</sup>, Douglas H. Adams<sup>2</sup>, Geoffrey S. Cook<sup>1</sup>, and Eric A. Hoffman<sup>1</sup>  
<sup>1</sup>University of Central Florida, Orlando, FL; <sup>2</sup>Florida Fish and Wildlife Conservation Commission, Melbourne, FL
- 35. Full Mangrove Takeover: Exploring Ecosystem Shifts within the Indian River Lagoon (STUDENT PRESENTATION)**  
Megan Witt, Giovanna McClenachan, and Linda Walters  
University of Central Florida, Orlando, FL