

**Timeline of Recent Research and Restoration Events**

**July 10** – Glenn Coldren began a study to measure mangrove reproduction and infestation along the FOS impoundment with the Summer Teen Ambassador Program. Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**July 11** – Glenn Coldren with Vincent Encomio (FL Sea Grant) collected live oysters for use in the microplastic grant. These oysters were used to determine if microplastics occur in the oysters' digestive track. Kathryn Tiling continued seagrass surveys at potential restoration sites for permit applications.

**July 16** - Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**July 18** – Monthly seagrass survey was canceled due to thunderstorms.

**July 19** – Glenn Coldren and Kathryn Tiling deployed two new oyster reefs at Indian Riverside Park with the help of 15 volunteers. A small set of CORE modules were also deployed to test their stability.

**July 22** – Kathryn Tiling held a seagrass matting event where 18 volunteers created 60 seagrass mats.

**July 23** – Glenn Coldren, Vincent Encomio (FL Sea Grant), and Katie Bowes (Martin County) tested methods that will be used for ground truthing oyster habitat as part of the subcontract with Johnson Engineering for SFWMD.

**July 24** – Kathryn Tiling and Glenn Coldren deployed the seagrass mats created on July 22 at Driftwood.

**July 25** – Glenn Coldren deployed 3 reefs at Indian Riverside Park with the help of 25 volunteers from Pastor Mike Grout's group. FOS camp participated in CORE module creation with Kathryn Tiling and interns (Zach) as part of the IRL NEP Small Grant project.

**July 26** – Samantha Smith joined the research department as the new Shell Recycling Coordinator and Microplastics Research Assistant. Glenn Coldren led a shell bagging with 14 volunteers creating 142 bags of shell.

**July 29** – Glenn Coldren held a public event to construct CORE modules as part of the IRL NEP Small Grant project. Kathryn Tiling met with staff from Brevard Zoo to discuss their "Grasses in Classes" program where they are piloting growing seagrasses in classrooms, in addition to salt marsh.

**July 30** – Kathryn Tiling and Glenn Coldren worked with FOS camp to harvest and deploy salt marsh plants into 12 oyster reef planters at Indian Riverside Park.

**July 31** – Jensen Beach Plumbing completed contracted work on the seagrass and shoreline nursery.

**August 1** – Summer Intern Zach Akdag's last day.

**August 2** – Kathryn Tiling and Glenn Coldren began work on plumbing pumps to the seagrass nursery.

**August 3 – 6** – Microplastic sampling for the month of August completed.

**August 5** – Kathryn Tiling held a seagrass matting event where 11 volunteers created 30 seagrass mats. Glenn Coldren continued work on pumps in the seagrass nursery.

**August 6** – Kathryn Tiling deployed seagrass mats created on August 5 at Driftwood with the help of the Smithsonian Marine Station Summer Camp (7 campers).

**August 12 – 16** – Glenn Coldren conducted St. Lucie Estuary Oyster Mapping Field Work as part of the ground truthing work with Johnson Engineering. He was assisted by staff members, Kathryn Tiling and Samantha Smith, throughout the week. The mapping was a joint effort with staff from Florida Sea Grant and Martin County.

**August 14** – Kathryn Tiling held a CORE module creation private event with Premier Realty as part of the IRL NEP Small Grant project.

**August 16** – Kathryn Tiling meet with Kyle Bartow of IRSC regarding establishing a long-term partnership with the Clark Advance Learning Center's Service Learning Course. Students will work with FOS research staff collecting data each year (2 days in spring and 2 days in fall).

**August 20** – Glenn Coldren met with Martin County and FWC partners regarding the Jensen Beach Impoundment Restoration grants and proposed work.

**August 21** – Kathryn Tiling lead the FOS monthly seagrass survey with 6 volunteers.

**August 22 – 23** – Glenn Coldren conducted St. Lucie Estuary Oyster Mapping Field Work as part of the ground truthing work with Johnson Engineering. He was assisted by staff member, Kathryn Tiling. The mapping was a joint effort with staff from Florida Sea Grant and Martin County.

**September 4** – Glenn Coldren met with Martin County partners regarding the Jensen Beach Impoundment Restoration grants and proposed work.

**September 6 – 10** – Microplastic sampling for the month of September completed.

**September 13** – Glenn Coldren held a CORE module creation event as part of the IRL NEP Small Grant project.

**September 17** – Glenn Coldren met with Martin County partners regarding the Jensen Beach Impoundment Restoration grants and proposed work.

**September 18** – Glenn Coldren and Kathryn Tiling attended “A Day in the Life” planning meeting for the October 10<sup>th</sup> event.

**September 19** – Glenn Coldren, Kathryn Tiling, Samantha Smith, and Pam Hopkins attended the East-Central Estuarine Restoration Team meeting.

**September 20** – A Lagoonwatch partner meeting was held at FOS. The water quality program at FOS is one of the partner programs for lagoon wide citizen science water quality monitoring.

**September 23** – Kathryn Tiling and Glenn Coldren held a conference call with Nick Sanzone regarding the Samson’s Island Restoration project in Satellite Beach for FY2020.

**September 24** – Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**September 25** – Kathryn Tiling lead the FOS monthly seagrass survey with 3 volunteers. Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**September 26** – Samantha Smith led a shell bagging with 7 volunteers creating 200 bags of shell. Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**September 27** – Kathryn Tiling and Glenn Coldren conducted seagrass surveys at potential restoration sites for permit applications.

**October 2** – Kathryn Tiling and Glenn Coldren meet with Martin County High School partner for “A Day in the Life” to perform pre-field training with students.

**October 3** – Glenn Coldren attended a shoreline characterization field workshop lead by Melinda Donnelly from UCF. Kathryn Tiling met with staff from Palm Beach County Environmental Resource Management to discuss seagrass restoration in Palm Beach County.

**October 4** – Kathryn Tiling and Glenn Coldren hosted the Clark Advance Learning Center’s Service Learning Course students to conduct seagrass surveys along FOS’s shoreline. This allows us to survey a wider area twice a year expanding our mapping efforts.

**October 4 – 8** – Microplastic sampling for the month of October completed.

**October 6** – Kathryn Tiling led a discussion group and tour with the Natural History of the Indian River Lagoon course on seagrass restoration.

**October 9** – Glenn Coldren attended via webinar/conference call the OIMMP meeting.

**October 10** – Glenn Coldren, Kathryn Tiling, and Samantha Smith participated in the “A Day in the Life” program with Martin County High School. This is lagoon wide program that is held between schools and environmental groups to sample the lagoon on the same day. It is organized through ORCA.

**October 14** – Samantha Smith led a shell bagging with 11 volunteers creating 243 bags of shell. This was a private event held with Publix employees.

**October 16 – 17** – Glenn Coldren led St. Lucie Estuary Oyster Mapping Field Work as part of the ground truthing work with Johnson Engineering. He was assisted by staff member, Samantha Smith. The mapping was a joint effort with staff from Florida Sea Grant.

**October 18** – Kathryn Tiling and Glenn Coldren hosted the Clark Advance Learning Center’s Service Learning Course students to conduct mangrove studies along the FOS boardwalks. This is the beginning of a long-term dataset to track vegetation community changes in our impoundment.

**October 22** – Glenn Coldren led St. Lucie Estuary Oyster Mapping Field Work as part of the ground truthing work with Johnson Engineering. The mapping was a joint effort with staff from Florida Sea Grant.

### **Research Interns and Students**

- Research had two interns over the 2019 summer:
  - Elliot Hoogerland, Michigan State University
    - Internship end date August 14<sup>th</sup>
  - Zachary Akdag, Martin County High School
    - Internship ended August 1<sup>st</sup>
- The research department had one visiting student conducting summer research.
  - Theresa Gruninger, Master’s Student, University of Florida: The effect of oyster reefs on seagrass herbivory

### **Seagrass Nursery Expansion**

The main seagrass exhibit nursery is up and running. Seagrass from the experimental nursery were transferred into the main nursery at the beginning of September. These trays are now viewable by the public. Work to be completed includes lining and plumbing the shoreline tanks and reinforcing the tables in the experimental nursery.

### **Research Trailer Update**

The current trailer is being cleared and prepped for removal scheduled on November 7<sup>th</sup>. Quotes and plans have been drawn up for the research trailer replacement. The replacement is expected to be installed in earlier December.

**Externally Funded Projects - Awarded and Active**

Proj. #	Status	Project Title	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year	Income Type	Expected Income Year and Month	Income	Expense
4	In Progress	Seagrass nursery expansion	Donations	Oceans Alive Cash Call	FOS Primary	\$72,000	2018 & 2019	Ocean's Alive Cash Call	Already Received	4835	6335
<b>Staff</b>	PI: Tiling; Support Staff: Coldren										
<b>Description</b>	Supports expanding the seagrass nursery system with an anticipated increase from 6 to 50 seagrass tanks and 9 large-scale shoreline vegetation tanks. Funds are for supplies for expansion.										
<b>Progress</b>	Projected extended into Fiscal Year 2019; FY18 Income was 4680 and Expense was 5690; FY19 Expense was changed to 6335. Plumbing was installed in June/July 2019. Majority of table and tank construction is complete. Main nursery plumbing is on and being tested.										
5	Awaiting Payment	Sewall's Point Living Shoreline	Donation	Private	FOS Primary	\$5,600	2019	One Time Payment @ Completion	June/July 2019	4680	5700
<b>Notes</b>	PI: Coldren										
<b>Description</b>	Supports creating a living shoreline (oysters and shoreline plants) at private shoreline in the St. Lucie Estuary. Funds are for personnel time for surveys, permitting and construction.										
<b>Progress</b>	Project moved into FY19 due to discharges. All reefs are built and salt marsh was planted. Completed, payment needs followed up on.										
6	In Progress	Mapping of oyster reefs in St. Lucie River	Govt. contract	SFWMD to Johnson Engineering	Subcontract for Johnson Engineering	\$6,214	2019	One Time Payment @ Completion	August 2019	4680	5700
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Subcontract with Johnson Engineering to perform ground truthing oyster surveys. Funds are for personnel time.										
<b>Progress</b>	Sonar mapping by Johnson Engineering is complete. FOS completed Middle and Lower Estuary. End of October is the estimated time frame completion										
7	In Progress	Assessing the effects of restored oyster reefs and seagrasses on shoreline stabilization.	Competitive Grant	IRL NEP Small Grants	FOS Primary	\$4,812	2019 & 2020	One Time Payment @ Completion	May 2020	4680	5690
<b>Staff</b>	PI: Coldren; Support Staff: Tiling										
<b>Description</b>	Supports purchasing supplies for sediment elevation studies on oysters and seagrasses.										
<b>Progress</b>	Final executed contract received May 2019. Working with Kathy Fitzpatrick (MC) for additional sites due to delay in grant execution.										
8	In Progress	New planting methods to enhance the resiliency of Living Shorelines	Competitive Grant	IRL License Plate Grant; SFWMD	FOS Primary	\$16,273	2019	One Time Payment @ Completion	Dec 2019	4680	5700
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Supports oysters and shoreline plant restoration in the IRL. Restoration efforts are testing new styles of reef and their effectiveness.										
<b>Progress</b>	Grant was completed by September 30th. Due to staffing, an extension for the final report was given, which is now due December 31st.										

**Externally Funded Projects - Awarded and Active**

Proj. #	Status	Project Title	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year	Income Type	Expected Income Year and Month	Income	Expense
9	In Progress	Immersing CORE (Community Oyster Restoration Enhancement) Modules Into Restoration and Education	Competitive Grant	IRL NEP Small Grants	FOS Primary	\$2,440	2019 & 2020	One Time Payment @ Completion	May 2020	4680	5690
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Supports supplies to test out a patented alternative to oyster bags called COREs. This includes a strong outreach component with modules being built with FOS and visiting camps over summer 2019.										
<b>Progress</b>	Final executed contract received May 2019. CORE events are being held and 400 of 500 modules have been made.										
10	In Progress	Microplastics, Oysters and the Indian River Lagoon	Competitive Grant	IRL NEP	Subcontract for UCF	\$14,998	2019	One Time Payment @ Completion	February 2020	4680	5640
<b>Staff</b>	PI: Coldren; Support Staff: Smith										
<b>Description</b>	Supports testing for the presence of microplastics throughout the Indian River Lagoon (IRL). FOS is responsible for sampling, filtering, and counting 10 sites in the southern IRL.										
<b>Progress</b>	Regular sampling began in March of 2019 and will continue for one year. Infrastructure built and volunteer training ongoing. ID training was completed.										
11	Complete	Lululemon	Donation	LuluLemon	FOS Primary	\$3,000	2019	One Time Payment @ Initiation	Already Received	5680	5690
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Funds received supported oyster bagging, mangrove planting and oyster deployment.										
<b>Progress</b>	Events completed. Funds used to support FLOOR as needed. Planned to be spent out by end of FY19										
12	In Progress	Research Lab Replacement Trailer	Donations	Private	FOS Primary	\$40,000	2019	One Time Payments via Donors	Already Received		
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Funds replacement of research lab trailer.										
<b>Progress</b>	Received quote on new shed. Currently vacating trailer which is scheduled to be removed Nov. 7th. Once removed, new shed will be ordered.										
13	In Progress	Living Shorelines to Save Our Waters	Competitive Grant	Impact 100 Martin County	FOS Primary	\$25,000	2019 & 2020	One Time Payment @ Initiation	May 2019		
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Supports the oyster shell recycling program and one FLOORED trip. For the shell recycling program this includes personnel and supplies.										
<b>Progress</b>	Received check on June 25, 2019. Shell recycling coordinator hire. Bagging materials purchased. In the process of expanding # of restaurants.										

**Externally Funded Projects - Awarded, Not Executed**

Proj. #	Status	Project Title	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year	Income Type	Expected Income Month	Income	Expense
TBD	Waiting for Paper-work	Jensen Beach Impoundment Mangrove Restoration Project	Competitive Grant	State Wildlife Grant	Subcontract for Martin County	4800 (TBF)	2020	TBD	TBD	TBD	TBD
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Supports personnel time to perform mangrove, salt marsh, and water quality monitoring during restoration efforts at Jensen Beach Impoundment.										
<b>Progress</b>	MC has executed their contract. Finalizing subcontract details for FOS with ongoing meetings - Planned to be a 4 year project for the restoration.										
TBD	Waiting for Paper-work	Jensen Beach Impoundment Restoration IRMA funding	Competitive FWC IRMA funds	FWC Funds for IRMA Recovery	Subcontract for Martin County	6000 (TBF)	2020	TBD	TBD	TBD	TBD
<b>Staff</b>	PI: Coldren										
<b>Description</b>	Supports personnel time to perform mangrove, salt marsh, and water quality monitoring during restoration efforts at Jensen Beach Impoundment.										
<b>Progress</b>	MC has executed their contract. Finalizing subcontract details for FOS with ongoing meetings - Planned to be a 4 year project for the restoration.										
TBD	Partially Funded	Samsons Island Submerged Lands Restoration (SISLR)	Competitive Grant	IRL NEP	Subcontract for City of Satellite Beach	11310 (TBF)	2020	N/A	N/A	N/A	N/A
<b>Staff</b>	PT: Coldren; Support Staff: Tiling										
<b>Description</b>	Funds received would support seagrass and oyster restoration at Samsons Island in Satellite Beach										
<b>Progress</b>	Project was fully funded; awaiting contract executions										

**Externally Funded Projects - Letters of Intent and Proposals Out for Review**

Proj. #	Status	Project Title	Funding Type	Source	Type	Funding Amount to FOS	Fiscal Year	Income Type	Expected Income Month	Income	Expense
N/A	Not Awarded	A new sediment geochemical health metric for Florida seagrass restoration	Competitive Grant	FL Sea Grant	Collaboration w/ HBOI	-	2020 & 2021	N/A	N/A	N/A	N/A
<b>Staff</b>	PI: Tiling										
<b>Description</b>	Supports sediment analyses at our current sites. No direct funds, but HBOI will purchase few supplies needed (burlap, gas). Grant funding is primarily for student stipends, electrochemical analyzers, and travel as per FL Sea Grant student focus.										
<b>Progress</b>	HBOI LOI was accepted. Full proposal was submitted in early June. Proposal was not selected for funding										
N/A	Not Awarded	The role of seeds in the resilience and restoration of shoal grass, Halodule wrightii, in the Indian River Lagoon	Competitive Grant	FL Sea Grant	Subcontract for UF	LOI only; No final budget	2020 & 2021	N/A	N/A	N/A	N/A
<b>Staff</b>	PI: Tiling										
<b>Description</b>	Funds received would support a study on seagrass seeds. FOS would be involved in seed germination and nursery growth with test plantings.										
<b>Progress</b>	Letter of Intent was submitted to FL Sea Grant. We received 2 positive and 1 negative reviews, but LOI was not selected for full proposal.										
N/A	Not Awarded	Multiple Stressors and Mutualism Breakdown- When and where do we find positive effects of the seagrass bivalve interactions?	Competitive Grant	NSF Biological Oceanography	Subcontract for UF	\$25,000	2020 & 2021	N/A	N/A	N/A	N/A
<b>Staff</b>	PI: Tiling										
<b>Description</b>	Funds received would support personnel and supplies for seagrass-bivalve in field restoration experiments.										
<b>Progress</b>	Proposal was submitted to NSF but was not selected.										