Research and Conservation November 2020

Flagship Programs

FLOOR

- We are currently collecting 20 – 30 buckets of shell a week from our partnering restaurants.
- We hired a new shell collector, as that our last moved on to a full time job. We are excited to have Dustin Gardner aboard!
- We signed on two new restaurants last month! Kork in Hobe Sound and 12A Buoy in Fort Pierce.
- We held one bagging event this month with a limited capacity of volunteers in order to maintain social distancing. With the help of 7 volunteers, we bagged 319 bags in just 2 hours!
- Oyster spat was collected and counted in early November. See Figure 1 for results and details.

FOSTER

- Seagrass nursery volunteers are lending a helping hand in the nursery and wet lab. Volunteers are keeping the tanks and wet lab clean and free of algae while maintaining social distance. We could not do it without them!
- Seagrass work is on hold until the spring when seagrass is the most productive.

WaterQUEST

- Individuals that are comfortable with testing at public sites are doing so while maintaining social distancing guidelines. Out of the 29 active testing sites, we are averaging 22 sites a week, with one site tested by staff (FOS Dock).
- Weekly water quality reports are being published each week: Click here to see the latest report.
- Click here to subscribe to the weekly Water Quality report.

Living Shorelines

- The permitting process is well underway for 5 potential living shorelines. These shorelines will be used to test plastic-free alternatives to plastic mesh oyster bags. To construct a living shoreline in the IRL or SLE, a number of steps must be completed to obtain a permit through the Department of Environmental Protection (DEP) and the Army Corp of Engineers (ACOE). We plan on having our permits submitted to DEP in early spring and hope to be issued permits by late spring.
- ***Plastic-Free Alternatives to Oyster Bags (Grant)*** –While waiting on the permits, the hands-on portion of the project will begin in mid-December. We plan on constructing 4 plastic-free modules to be tested in the IRL and SLE.
- ***Hagan Family Foundation Project*** – No updates. This work is dependent on permitting and cannot begin until DEP and ACOE permits are obtained.

Additional Projects and Activities

Research Lab Replacement – The finishing touches to the lab (carport, pavers, etc.) are still on hold.

Shoreline Tanks – One of the tanks is now full of planted mangrove (red, black and white) propagules. Six volunteers helped plant over 600 mangrove propagules for use in upcoming mangrove research and restoration projects.

Clam Restoration Workshop – FOS will be hosting a workshop in the new EcoCenter (May 21st, 2021) with SFWMD, the University of Florida Whitney Laboratory for Marine Bioscience, and Ducks Unlimited. More to come in early 2021.

Clam Restoration in the IRL – We submitted two proposals in August, in collaboration with University of Florida Whitney Laboratory for Marine Bioscience, and Ducks Unlimited, to help fund clam restoration and research in the Northern and Southern IRL. One of the proposals was unsuccessful, and we are still waiting to hear back from the other grant committee.

Mangrove Productivity in Transitional Systems– In collaboration with the University of Alabama and the United States Geological Service (USGS) we are studying the effects of saltwater intrusion on interspecific competition between the black mangrove (*Avicennia germinans*) and black needlerush (*Juncus roemerianus*). The lab just completed processing all samples from a year-long greenhouse study. Stay tuned for preliminary results!

Jensen Beach Impoundment Restoration – We were busy monitoring mangrove growth in the Jensen Beach Impoundment in Stuart, FL last month. The impoundment contains 61 ha of mangrove tidal swamp, however in the aftermath of hurricane Irma, mass mortality of 22 ha took place due to high water levels and poor water quality. We have been monitoring the growth and recovery of the 22 ha, especially the amount of carbon (C) within the system, as that mangrove habitats have been shown to sequester huge amounts of C relative to their spatial extent. We have found that the mass mortality resulted in the transformation and loss of approximately 1708 Mg C from aboveground biomass. Restoration of the impoundment aims to restore the hydrology and connectivity of the system to the IRL, and to date, 267 Mg C have been restored through natural recruitment. We are also working in collaboration with FWC and FWRI to put in for an IRL NEP grant to expand our work in this critical system.

Seagrass Signs – Our new, show quality seagrass signs are in! They look fantastic and are ready to be mounted with the help of Operations.

Oyster Spat Monitoring – We are six months into our monthly monitoring program. We monitor oyster spat recruitment at three sites in the SLE (0.25 – 12 ppt) and three sites in the IRL (15 – 27 ppt). Each month we put out oyster shells and then collect them a month later. The number of spat per shell is counted (Figure 1). Last month we recorded less than 1 spat settling per shell in the SLE, and of those 42% were dead. However, in the IRL, there were 10 spat per shell and of those only 20% were dead. We are in the slow recruitment months, so the numbers are not abnormal, however the number of dead spat are. Over the six months of monitoring, we have seen an average of 20% mortality of spat in the SLE. Oyster spat and juveniles die after 7 days of exposure to low salinities – which is of concern due to freshwater conditions that the SLE has been experiencing.

Amazon Wish list – We have populated the FOS Amazon wish list with items our department desperately needs (along with the Animal Care Department). Please share with your family and friends!

Wetland Biogeochemistry Symposium – Dr. Simpson is chairing a session at the 13th Annual Wetland Biogeochemistry Symposium in March 2021. Her session is titled *Shifting Ecosystems: Consequences for Decomposition in Coastal Wetlands*, and has speakers in it from multiple government and academic institutions from around the country. She is excited to introduce Florida Oceanographic to the group. The meeting will be virtual this year, and Dr. Simpson is busy with the other organizers in making a smooth transition from an in-person to virtual meeting.

Indian River Lagoon Symposium – The department submitted abstracts to present their research at the Indian River Lagoon Symposium hosted by Harbour Branch in February 2021. The symposium will be virtual this year, and the department will be presenting on their oyster and mangrove monitoring work.

Tucker Cove Restoration – The department partnered with St. Lucie County, FWC and DEP on a proposal for oyster enhancement in Tucker Cove, Florida. If funded, we plan on adding approximately 2,000 square feet of native limestone bedrock as oyster substrate to the cove. Additionally, St Lucie County will add 4-5 reef modules and some oyster shell. FOS would provide oyster shell as match to the project.

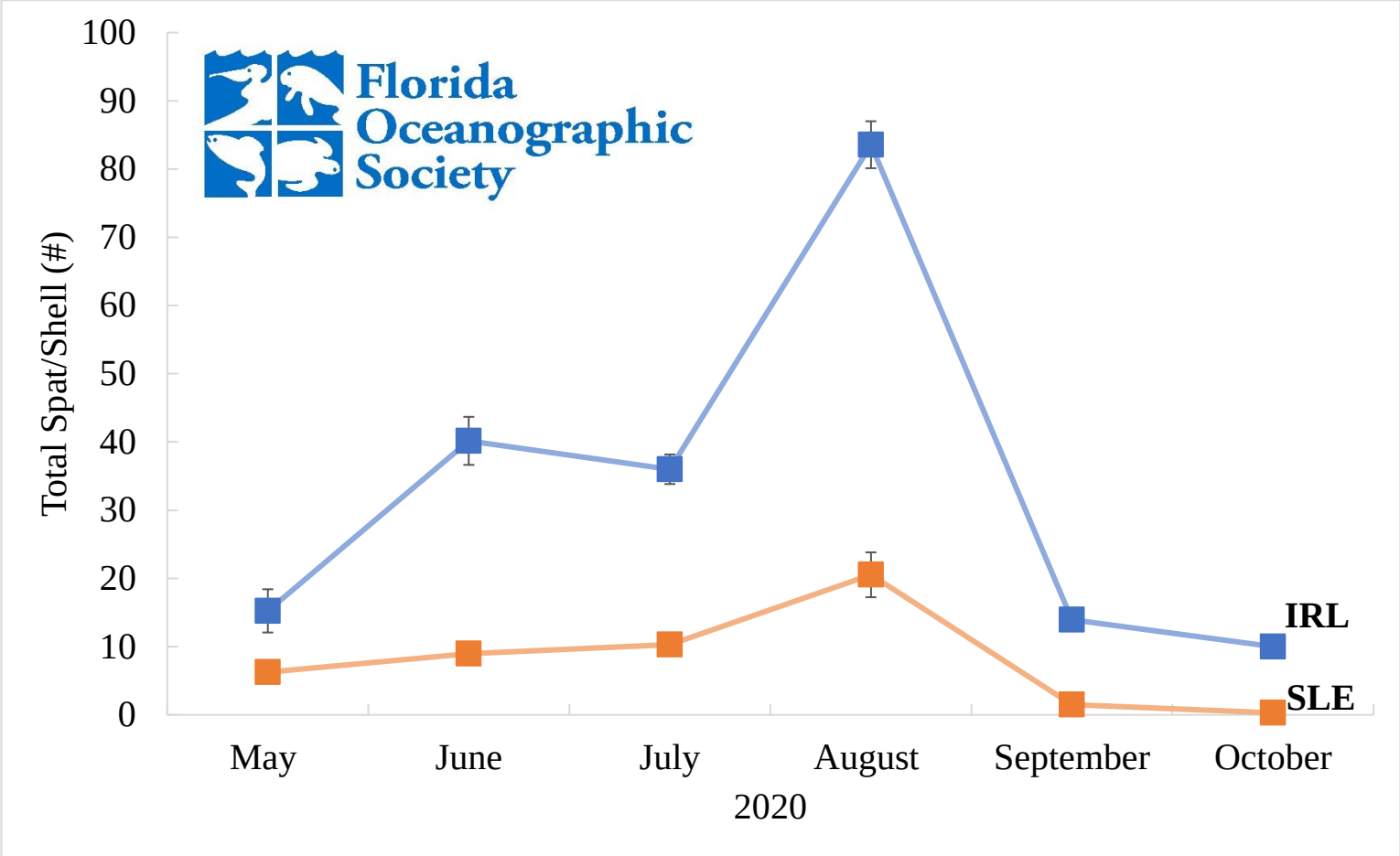

Figure 1. Oyster spat per shell in the Indian River Lagoon (IRL) (blue) and St. Lucie Estuary (SLE) (orange). Data are means ± SE. Each month oyster shells are deployed at 6 sites and then collected a month later. The number of spat per shell is counted.

Additional details on all projects and programs are available by contacting Dr. Simpson at: lsimpson@floridaocean.org – 772.225.0505 x 114. Or check out our website!

Externally Funded Projects - In Progress									
#	Project Title	Status Details	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year	Income Expected at?	Income Expected Date?
1	Seagrass Nursury Expansion	Funds received, but are still being spent out. Finalizing shoreline nursery. Anticipated Completion by April 2020	Donations	Oceans Alive Cash Call	FOS	$72,000	2018-2020		Actual - Mar. 2018
2	Research Lab Replacement Trailer	Carport and outside area is last big project. Anticiapte to finish up in by December 2020	Donations	Private	FOS	$40,000	2019 - 2020		Actual - ???
3	Jensen Beach Impoundment Restoration	Water quality sites established. Vegetation work done in March, June and October 2020. Water quality sampling occurs weekly.	Competitive FWC IRMA funds	FWC Funds for IRMA Recovery	Martin County	$10,925	2020	Completion	Expected - Jun. 2020 & Jun. 2021
4	Water Quality Monitoring Network	Waiting for MOU to be signed by MRC.	Competitive Grant	IRL NEP	MRC	None	2020		
5	Samsons Island Submerged Lands Restoration (SISLR)	Project was fully funded; awaiting contract executions and permitting. Due to COVID project has been pushed back to March 2021	Competitive Grant	IRL NEP	City of Satellite Beach	$11,310 (TBF)	2020 - 2021	Completion	Expected - Nov. 2021
6	Developing plastic-free alternatives for community-based oyster restoration in the Indian River Lagoon	Supports developing plastic-free alternatives to current shell bagging. Currently deciding on what protoypes to make	Competitive Grant	IRL NEP	FOS	$22,364	2021	Completion	Nov. 2021
7	Creating a Citizen Science Seagrass Monitoring Network	Recruiting volunteers and buying supplies to begin	Competitive Grant	IRL NEP	FOS	$3,119	2020 - 2021	Completion	July 2021
8	Restoring Shorelines in Martin County	Working on permitting.	Competitive Grant	Hagan Family Foundation	FOS	$10,000	2021	Initiation	Paid
9	Clam Restoration Workshop	Workshop will be held in May or June 2021. Currently working with collaborators on logistics	Competitive Grant	CERF	SEERS	$2,000	2021	Completion	June 2021

Externally Funded Projects - Complete - Awaiting Payment								
Project Title	Status Details	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year	Income Expected at?	Income Expected Date?

Externally Funded Projects - Proposals Submitted							
#	Project Title	Status Details	Funding Type	Source	Lead Institution	Funding Amount to FOS	Fiscal Year
1	Leveraging natural selection in clam populations for improved water quality in the Indian River Lagoon	Full proposal submitted on August 21, 2020	Competitive Grant	SJRWMD	Whitney Laboratory	$130,000.00	2021 - 2022
2	Oyster Enchancement at Tucker Cove	Full proposal submitted on Dec 4, 2020	Competitive Grant	FWC MEHRMA	DEP	none	2021-2022