

Moore's Creek Submersed Aquatic Vegetation Restoration



FishAmerica Foundation

Final Report

April 2021

Alyssa Jordan

Florida Fish and Wildlife Conservation Commission

Background

Moore's Creek (27.449830, -80.329270) is located in Ft. Pierce, within St. Lucie County. This creek discharges into the Indian River Lagoon (IRL) and often decreases the quality of the water within this portion of the IRL. The IRL is one of North America's largest and most diverse estuaries, and in recent years has suffered from reduced water quality causing extensive loss of seagrass, an important fish community nursery habitat. Planting submersed aquatic vegetation within Moore's Creek will provide a natural filter that will help to remove nutrients and sediment from the water before it enters the IRL. This project is one of many potential projects to increase public awareness of aquatic habitats in urban areas and the important role that they play in the health of the Indian River Lagoon. Municipal leaders will also be educated on ways to save money through proper aquatic habitat management (i.e. reduced herbicide application, reduction of storm water runoff, etc.) while local schools will be encouraged to use the restored areas as an outdoor classroom. Local volunteer organizations also conduct regular shoreline and littoral zone clean-up efforts in this system. Because Moore's Creek is located within downtown Ft. Pierce, it is also used for subsistence fishing and increasing the abundance and health of the species caught in the creek is important for the local community.

Starting in 2016, the Florida Fish and Wildlife Conservation Commission (FWC), with St. Lucie County has planted 1,190 *Vallisneria americana* (eelgrass) plants and 50 *Ruppia maritima* (widgeongrass) plants within exclosures. These exclosures are required to exclude herbivores and allow time for plants to establish. Horizontal and vertical expansion within exclosures has been rapid and previously planted areas filled out within 3 to 6 months. Using only five plants per exclosure reduces the number of plants needed while natural plant growth and expansion allow for rapid filling of the exclosure area. Rhizomes also expanded beyond the exclosures, but have not completely filled in between exclosures. Further plantings in adjacent and upstream pools are now needed to help overcome herbivory, primarily by turtles and ducks, outside the exclosures.

Volunteer groups such as SWORD and Marine Cleanup Initiative have regularly been involved with cleanups and improvements within Moore's Creek. In the last year, about 400 volunteer hours were recorded during these cleanups. Volunteers also regularly help maintain exclosures (keeping them free of algae) and have been involved in other improvement projects on Moore's Creek. Once exclosures are no longer needed in an area, volunteers can also be used to help move exclosures to a new area and help populate with new plants.

Objectives

The main objective of the project funded by the FishAmerica Foundation was to plant 180 *Vallisneria americana* (eelgrass) and 50 *Potamogeton illinoensis* (pondweed) units within 46 exclosures. These new plantings will increase the number of submersed plants within Moore's Creek and help fill in gaps between previously planted areas. This project will be done using a combination of FishAmerica funds and funds from Florida Fish and Wildlife Conservation Commission (FWC). This planting, along with the previous plantings, will increase submersed aquatic vegetation (SAV), particularly eelgrass and

pondweed, improve habitat for fish and wildlife and improve water quality in Moore's Creek prior to it flowing into the Indian River Lagoon. This project will also help increase public awareness of aquatic habitats in urban areas and the role they play in the health of the Indian River Lagoon.

Project Status and Results

On March 3, 2021, FWC received 28 exclosures from our Sea and Shoreline contractor to be used in the planting project. These 28 exclosures were paid for by Fish America funding. On March 10, 2021 the 28 exclosures from Sea and Shoreline, along with an additional 18 exclosures from AquaTech, plus 50 "Rockstar" eelgrass, 130 "Salty Dog" equivalent eelgrass and 50 pondweed plants were delivered, installed and planted in Moore's Creek by AquaTech. FWC paid for all material and work done by AquaTech.

Periodic monitoring of plant survival and growth will be conducted, along with volunteer exclosure and litter clean up events. Once submersed plants are observed growing outside of the exclosures, the exclosures from this project, and previous projects, will be picked up and moved to a second location further upstream to be used to protect further plantings.

Budget and Materials

This project included a budget of \$10,000 from FishAmerica towards this project. \$9,100 of that budget was used to purchase 28 GrowSAV exclosures (equipment) from Sea and Shoreline and \$546 was used for indirect costs (grant management) to the Fish and Wildlife Foundation of Florida for a total of \$9,646 spent. The full \$10,000 was unable to be spent since each exclosure was \$325 and an additional exclosure would have put us over the budgeted amount.

Direct match during this time period included 18 AquaTech exclosures, 50 pondweed in 4" pots, 130 eelgrass in 4" pots, delivery and installation of all materials for \$6,403.12, paid for by Florida Fish and Wildlife Conservation Commission.

A total of \$16,049.12 was spent using the two funding sources. Please see Table 1 for complete breakdown of costs.

Timeline for Completion

As of March 10, 2021 all budgeted components of this project have been completed. St Lucie County, FWC and volunteers will be monitoring the plantings and keeping exclosures clean until exclosures are moved to a new planting area.

Table 1

Item	Amount	Cost Per Item	Fish America Funding: Sea and Shoreline and Foundation	FWC Funding: AquaTech	Total Cost
4" pot Illinois Pondweed (<i>Potamogeton illinoensis</i>)	50	\$5.69	NA	\$284.50	\$284.50
4" pot Rockstar Eelgrass (<i>Vallisneria americana</i>)	50	\$5.69	NA	\$284.50	\$284.50
4" pot Salty Dog Eelgrass or Equivalent Variety (<i>Vallisneria americana</i>)	130	\$5.69	NA	\$739.70	\$739.70
AquaTech Enclosures	18	\$229.69	NA	\$4,134.42	\$4,134.42
Delivery of 230 plants and 18 enclosures	1	\$500.00	NA	\$500.00	\$500.00
Installation of 230 plants	230	\$2.00	NA	\$460.00	\$460.00
Grow SAV enclosures	28	\$325.00	\$9,100	NA	\$9,100
Indirect Costs (6% to Foundation)	NA	NA	\$546	NA	\$546
TOTAL	NA	NA	\$9,646.00	\$6,403.12	\$16,049.12



Figure 1. GrowSAV exclosures from Sea and Shoreline (left) and exclosures from AquaTech (right).

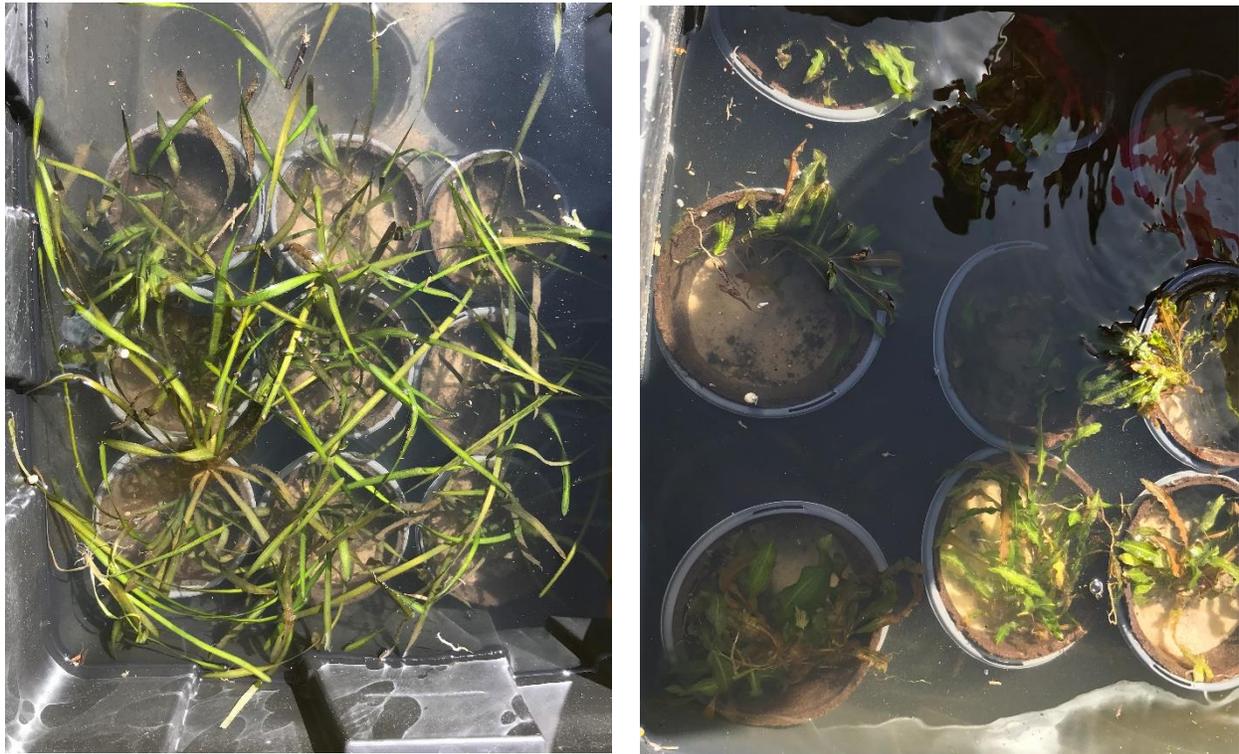


Figure 2. *Vallisneria americana* (eelgrass) on left and *Potamogeton illinoensis* (pondweed) on right, ready for planting.



Figure 3. Planting under exclosures in Moore's Creek.



Figure 4. Final installation of enclosures along Moore's Creek, on both sides of the creek.
Combined with past plantings, this area should grow and expand quickly.



Figure 5. Planted *Vallisneria* within one of the exclosures.

Appendix

Sea and Shoreline Invoice for 28 exclosures

Sea and Shoreline LLC
4331 Cockroach Bay Road
Ruskin, FL 33570
7273482611
jhuenink@seaandshoreline.com



BILL TO
FWC Moores Creek

INVOICE 1452

DATE 03/10/2021 **TERMS** Due on receipt

DUE DATE 03/10/2021

DATE	ACTIVITY	QTY	RATE	AMOUNT
03/08/2021	Exclusion Device:GrowSAV Herbivory Exclusion Device 28 units delivered	28	325.00	9,100.00
03/08/2021	Billing:Sales Tax Exempt Sales Tax Exempt State Tax Number	1	0.00	0.00

Thanks for allowing Sea and Shoreline to partner with you.

Sea and Shoreline LLC.
PO Box 783549
Winter Garden Florida 34778
Wiring Instructions

Chase Bank
Routing Number 267084131
Account Number 272973709

TOTAL DUE USD 9,100.00

Thanks!!
Sea and Shoreline LLC.
PO Box 783549
Winter Garden, Florida 34778

AquaTech Invoice for additional enclosures, plants, delivery and installation. Paid for by FWC.

AquaTech Eco Consultants, LLC
6460 Eureka Springs Rd
Tampa, FL 33610 US
(813) 9186169
beau@aquatecheco.com
http://www.aquatecheco.com

Invoice 1143



BILL TO

Mrs Alyssa Jordan
FWC- Eustis Fisheries Research Lab
601 West Woodward Avenue
Eustis, FL 32726 USA

DATE
03/11/2021

PLEASE PAY
\$6,403.12

DUE DATE
03/11/2021

DESCRIPTION

QTY

RATE

AMOUNT

FWC Moore's Creek

1

6,403.12

6,403.12

Purchase and installation of 18 custom exclusion cages (7sq'x20" tall), 50 (4" Pondweed), 50 (4" Rockstar), 130 (4" Vallisneria american), and planting under FWC provided GrowSAV exclusion cages. PO#B8608B

Purchase Order # B8608B

AquaTech FEIN 46-5681270

Date of Service 3/10/2021-3/10/2021

Description of services are as per quote (installation of 18 custom exclusion cages (7sq'x20" tall), 50 (4" Pondweed), 50 (4" Rockstar), 130 (4" Vallisneria american), and planting under FWC provided GrowSAV exclusion cages.)

TOTAL DUE

\$6,403.12

THANK YOU.

Planting Date: March 10, 2021

Alyssa Jordan
3/11/21