

2020 - 2021
KINGS BAY
RESTORATION
PROJECT

ANNUAL REPORT



KINGS BAY RESTORATION PROJECT

www.KingsBayRestorationProject.com



Crystal River

www.SaveCrystalRiver.com

Restore

Healthy Ecosystems through
vacuuming and replanting eelgrass

700+ previously unidentified spring vents
opened and flowing

213,000+ native "Rockstar" and "Salty
Dog" grasses planted

Remove

Invasive algae that has overtaken
native grasses and habitats.

50 acres of canals cleaned.. Roughly
22 football fields

175 Million LBS of *Lyngbya*
removed

95% of phosphorous removed through
specialized filtration

50% of nitrogen pollution removed
through specialized filtration

Maintain

Newly planted grasses to
reccurance of algae overgrowth

Improve water quality

Provide food & shelter for
native species

Natural growth and spreading
of eelgrass plants in unrestored
areas of King's Bay

Whats Next?

Target Completion Date :
Crystal River's Centennial Anniversary

July 2, 2023

Left to be cleaned :

42 more acres

Stay "In The Know" with our weekly Neighborhood Update!

www.KingsBayRestorationProject.com

HOME THE PROBLEM THE SOLUTION SCIENCE OUTREACH **NEIGHBORHOOD UPDATE** VIDEO LIBRARY GET INVOLVED NEWS Q

Click here for updates

Who's Cleaning in my backyard?

Stay up to date on our current project status and location

Happening Now

09/08/20 – (Cleaning) This week both vacuum crews will work in 2A2 (See map to right). One crew will begin just east of the 2A1 canal (See map to right) and the other by the west end of Three Sisters Springs. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Cage Cleaning: Cages scrubbed in canals 6 2A1, 2A3, 2A4 (see map to right).
Bonus Maintenance: This week we will continue work in the Hunter Springs area of Pilot Project for some additional maintenance during the month of September.

09/14/20 – (Cleaning) This week both vacuum crews will work in 2A2 (See map to right). One crew will begin just east of the 2A1 canal (See map to right) and the other by the west end of Three Sisters Springs. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Cage Cleaning: All Cages will be scrubbed this week by the Biological Crew starting Wednesday.
Bonus Maintenance: This week we will continue work in the Hunter Springs area of Pilot Project for some additional maintenance during the month of September.

09/21/20 – (Cleaning) This week crews worked on maintenance at the dewatering site on Paradise Point. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Cage Cleaning: No cage cleaning this week.
Planting: Planting was done in the Hunter Springs area. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Bonus Maintenance: This week we will continue work in the Hunter Springs area of Pilot Project for some additional maintenance during the month of September.

09/28/20 – (Cleaning) This week crews worked on maintenance at the dewatering site on Paradise Point. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Cage Cleaning: No cage cleaning this week.
Planting: No planting was done this week. *Please help us keep the project protected and watch your anchors to be sure you do not damage the newly planted grasses and cages.*
Bonus Maintenance: This week we will continue work in the Hunter Springs area of Pilot Project for some additional maintenance during the month of September.



Subscribe to our mailing list

Email Address * * indicates required

Greeting *



DIRECTOR'S STATEMENT

2020 has been a year like no other. Every day we seem to hear about another unprecedented event. But despite the challenges, there are silver linings if you know where to look. I'd like to take a moment and focus on some unprecedented good news. Save Crystal River crossed a milestone this year. We have restored over half of the acres we have set out to do. Each year we get better and more efficient in refining our process. Each year we prove that a small community can do mighty things that are literally saving our local ecosystem. Each year we prove that this process is sustainable and long-lasting. Each year we come one step closer to our goal of a clean Kings Bay. We are pushing hard to finish the 92 acres we have permitted by July 2, 2023, and we are confident that we can make that happen with the continued support of stakeholders, business leaders, citizens, local government, and legislators. We are all in this together and it's working. We have six years of restoration going strong. This project has survived and thrived despite hurricanes, hungry manatees, and increased tourism. We still have more to do and we need everyone's continued support. Whether you donate to help us, pledge to boat safely, switch to a spud or hydraulic anchor to protect the eelgrass from anchor damage, help spread the word about our project, or volunteer with us – there is something for everyone to do to ensure that this restoration lasts for generations to come. Thank you to everyone who cares so deeply about this beautiful waterway so that residents, visitors, and our hungry manatees can continue to enjoy for generations to come.



DR. MICHELLE SIVILICH

Executive Director

BOARD OF DIRECTORS



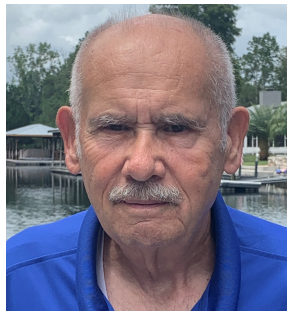
Lisa Moore, President



Steve Lamb, Vice President



Silvia Grillo, Secretary



Terry Thompson, Treasurer

Marie Bienkowski
Don Bienkowski
Tina Champagne
Steve Coop
Candy Murphy

Holly Costello
Katy Henry
Liz Thompson
Harriet Jones
Joe Meek

Jack Reynolds
Jo Sonerholm
Doug Sonerholm
Lisa Vandebøe
Jannis Tripp
Candy Murphy

Save Crystal River is a non-profit organization comprised of dedicated local citizens who have banded together with the common goal of restoring our beautiful waterways for generations to come.

"There is no power for change greater than a community discovering what it cares about." – Margaret J. Wheatley





2020 HABITAT ASSESSMENT

BY: DAVID CEILLEY/ JOHNSON ENGINEERING



The macroinvertebrate (snails, mussels, insects, ect) community structure has changed significantly from the baseline to post-restoration with an increase in diversity and overall increase in indicator species, including the common amphipod, *Hyaella azteca*, and several species of midge larvae, in the family Chironomidae.



Fish communities are responding favorably to the muck removal and the natural colonization of Phase 2A by *Vallisneria Americana* (eelgrass) along the easternmost connection to Three Sisters Spring. Sunfishes, including spotted sunfish (*Lepomis Punctatus*) redear sunfish (*Lepomis Microlophus*) warmouth (*Lepomis Gulosus*) all increased in abundance and were closely associated with established *Vallisneria* beds. Juvenile sunfish and juvenile largemouth bass (*Micropterus Salmoides*) were in the young of the year class sizes and indicated that successful spawning had occurred in 2020. Since all of these sunfish require suitable substrates and oxygenated waters, their presence indicates habitat restoration is resulting in reproduction of these valued sport fishes.



DIRECT IMPACT

Food: While some organisms, including the threatened West Indian manatee, graze directly on eelgrass leaves, others use eelgrasses to provide nutrients. Bottlenose dolphins are often found feeding on organisms that live in eelgrass areas.

Nursery areas: The relative safety of seagrass meadows provides an ideal environment for juvenile fish and invertebrates to conceal themselves from predators. Much of Florida's recreationally and commercially important marine life can be found in seagrass meadows during at least one early life stage.



MEET OUR SCIENTISTS.



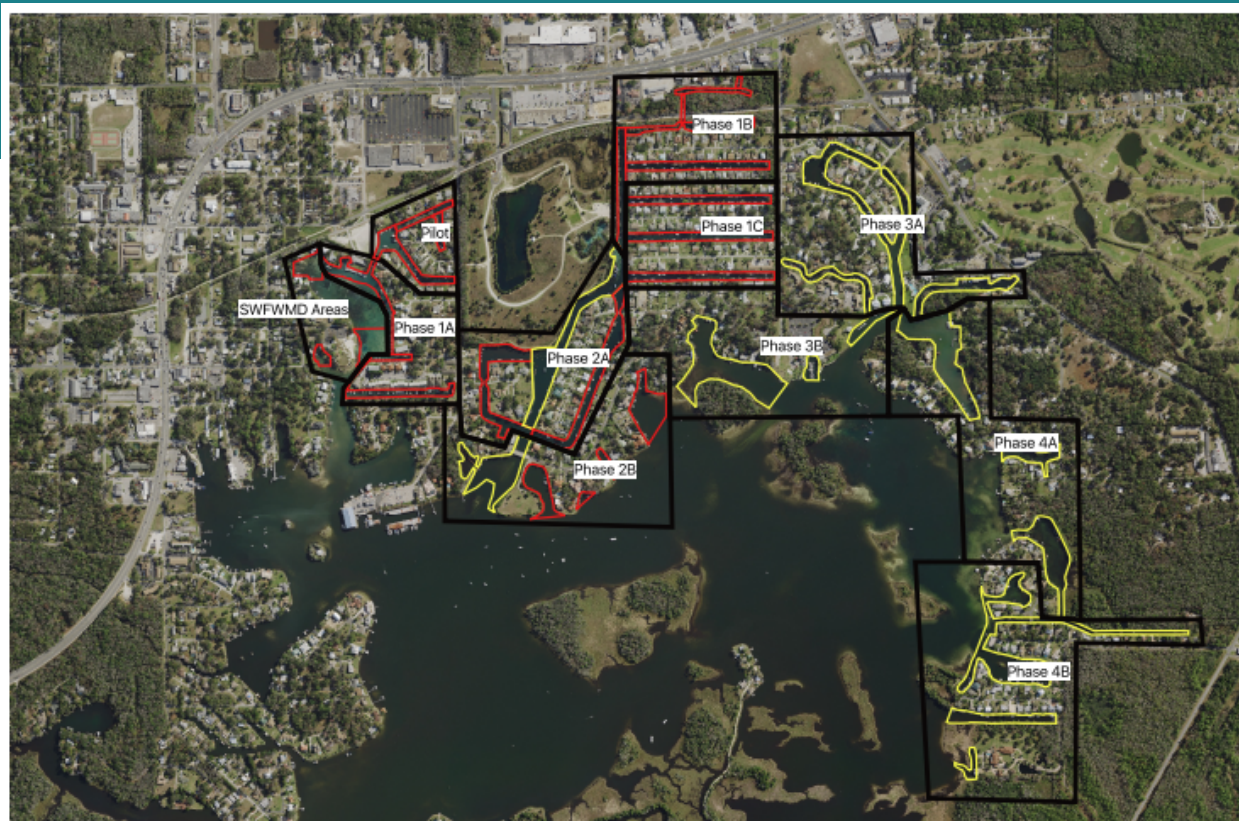
Sea & Shoreline Founder Jim Anderson started his career cultivating lawn grasses of various species to accompany his nursery operations. Jim ventured into seagrasses when a local favorite fishing area was threatened with closure to boats as a result of extensive propeller scarring. He argued that repairing the seagrasses was more logical, and began developing technologies to address seagrass-restoration needs. As a turf farmer/grower, he felt using farming skills and retooling them to fit the aquatic arena would be a logical transition.



Sea & Shoreline President Carter Henne was born and raised in central Florida. His passion for environmental stewardship and outdoor recreational sports have always been a life priority. Trained as a marine biologist, Carter has an extensive history in restoration efforts including seagrass restoration and enhancement, living shoreline studies, and habitat enhancement in many areas throughout Florida.



David Ceilley with Johnson Engineering is a Certified Senior Ecologist by ESA. David is also a Research Associate and Graduate Faculty member at the Florida Gulf Coast University. David has over 29 years of professional experience in limnology, marine biology, wetland ecology, fish, wildlife, and macroinvertebrate studies. He has worked in a professional scientific supervisory role since 1987 and produced numerous technical and scientific reports related to aquatic and terrestrial ecosystems.



Completed Areas 

 To Be Completed Areas

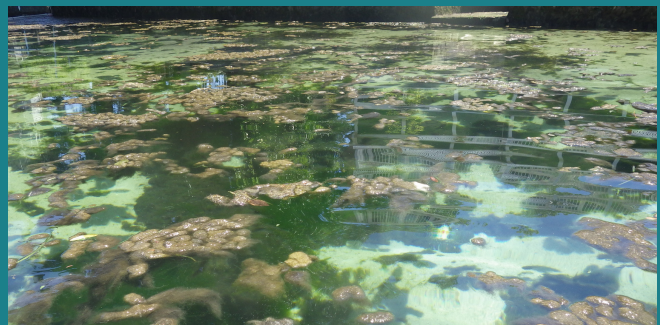
UNDERSTANDING THE PAST

WHAT HAPPENED TO KINGS BAY?

Kings Bay, along with many of Florida's waterways, is no stranger to aggressive and/or invasive species. In the 90's, Hydrilla was a cause for much concern as it began choking out the native plants in the Bay. A mixture of man-made and natural activity killed off this unwanted plant. Unfortunately as the Hydrilla died it fell to the bottom and decayed killing our native grasses, creating a low oxygen environment, and leaving the perfect condition for the aggressive blue-green algae, known as *Lyngbya* we now see smothering our bay

LYNGBYA

may not be a name you recognize, but if you swim, boat, or watch manatees in Kings Bay then you have seen it. Lyngbya looks and feels like dark, slimy, strands of hair that seem to grow from canal bottoms and get tangled in long, floating mats. Unlike Hydrilla, *Lyngbya* is in-fact native to our area but the conditions created by the decaying Hydrilla left the perfect breeding ground for this aggressive algae to take control in our once beautiful waterways.



THE REMOVAL PROCESS



The first step is removing the *Lyngbya* through specially designed vacuum equipment that doesn't disturb the existing sand and sediment. The suctioned material is pumped through vacuum tubes into a mechanical separator located on shore at our dewatering site.

The water is further filtered through a bag system then is returned to the canal. This approach removes 50%+ nitrogen and 95% phosphorus from the water. The clean water is returned to the ecosystem.

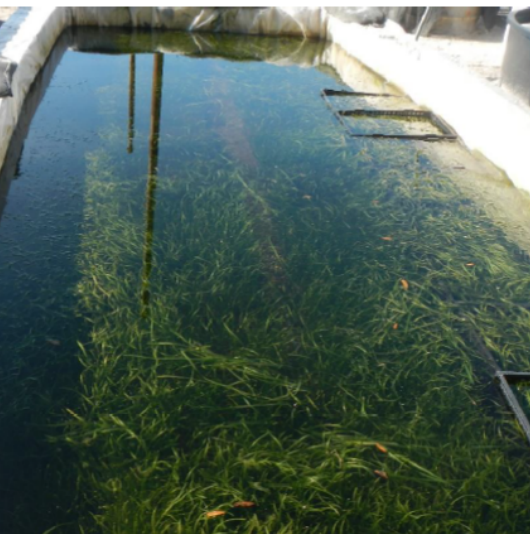
The removed organic material is transported to an offsite farm where it will be used for fertilizer and soil enrichment. Removal of the muck from our waterways is essential to allow the eelgrass plants the proper environment to take root. The muck causes a very soft and pliable bottom as opposed to the nice sandy bottoms left after cleaning.

A close-up photograph of a dense field of eelgrass. The blades are long, narrow, and green, with some showing signs of being cut or broken. The background is a soft, out-of-focus green.

Our cleaning process not only removes the muck and detrital material from our waterways, but also 95% of phosphorus and 50% of nitrogen!



WHERE THE EELGRASS GROWS



Before the eelgrass plants take the dive into their new home they are cultivated by our contractor, Sea & Shoreline, in the largest inland eelgrass and Submerged Aquatic Vegetation (SAV) nursery in the world! The two ecotypes planted in Crystal River are affectionately called “Rock Star” and “Salty Dog”. These varieties were specifically chosen for Crystal River. Rockstar is a fast grower, while Salty Dog can withstand higher saltwater influx making it more able to withstand hurricane-like weather conditions.



Grown in long raceways underwater, the plants are all propagated from other plants and slowly and carefully acclimated to match the conditions of each area into which they are going to plant the eelgrass. They consider variables such as depth, light, grazing pressure, salinity and temperature, and adjust conditions as needed.



Sometimes this process can take months or even years. When the pre-rooted grasses are ready to plant, they are packaged in small mechanical planting units or four-inch peat pots, kept damp, and transported to Crystal River in large containers and enclosed trailers that keep the plants out of direct sunlight and wind to prevent them from drying out.

BUILDING A GARDEN



Once the pre-rooted plants arrive in Crystal River, they are then planted into clean substrate or sand on the river's bottom where they are protected, depending on the depth of the water, with GrowSAV™ Herbivory Exclusion Devices (cages) until the plants can take root and grow without the risk of fish or animals disturbing or eating them.

Monthly, these devices are inspected by our contractor and cleaned to remove any biofouling materials so that light from the surface can penetrate the devices and help the plants to grow. Part of this maintenance also includes injecting the sediment with organic and proprietary Sediment Amending Growth Hormone (SAGE) that promotes plant growth. SAGE is not a fertilizer and contains no nitrogen or phosphorous. It is a mixture of macronutrients and plant growth hormones that is completely eco-friendly.

In addition to maintaining the eelgrass in our river, Sea & Shoreline biologists also monitor its growth and surrounding conditions monthly and provide detailed scientific reports and photos of all planted areas for a three-year period.

To address any *Lyngbya* that attempt to creep back into the river, maintenance is conducted in planted areas to keep the bottom and the water crystal clear.

WHEN SCARS WON'T HEAL

MINDING YOUR BOTTOM

This is a term we use frequently to encourage residents and visitors to take care of the beautiful eelgrass beds we have all worked so hard to restore. Why is eelgrass so important? We know that it produces oxygen and helps fight against storm surge. Eelgrass also helps clarify our waterways back to the “Crystal” clear river that has been gone for years due to an overabundance of *Lyngbya* and other natural and man-made factors. It has also had a great impact on local businesses by increasing the resident manatee (and aquatic life) population with a consistent food source.

PROP SCARS AND ANCHOR SCARS

"I just need to move a few feet, I don't need to pull up my anchor". It may not seem like a big deal, but in the grand scheme of things, this minor inconvenience can prevent more damage than many realize. Just the simple act of dropping an anchor can potentially tear up a square foot of eelgrass on it's own. Imagine the possible damage of then dragging that anchor just 3 feet. Propeller scars can be just as damaging, if not worse, if boaters do not raise their props while passing through shallow water.

BUT WHY IS IT SO DETRIMENTAL?

As we have seen, our eelgrass in King's Bay is doing a phenomenal job of growing and spreading naturally. The issue we see with propellor and anchor damage is when we look at how long it takes for eelgrass meadows to repair their deep scars. When anchors and propellers dig into the sandy bottom of our waterways, they create trenches where the eelgrass has a difficult time naturally reestablishing. In some cases, we have seen eelgrass meadows heal these scars but it can take years for this to happen. Think about that for a moment. Years to heal the damage that could have been avoided with a couple of minutes of care.



RESPONSIBLE ANCHORING PROGRAM

Save Crystal River's "Responsible Anchoring Program" was developed in an effort to encourage local boaters to practice safe anchoring techniques in order to preserve and maintain our beautiful ecosystem.

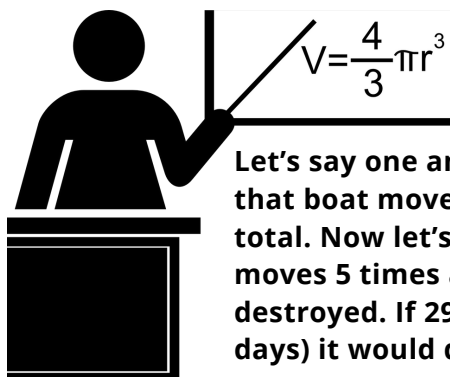
We would like to thank the Ryans, Sea & Shoreline, Plantation Realty, the Margaret and David Perry Foundation, and the Woodnote Foundation for their support of this program. Watch for the boats that have our official "Eelgrass Approved" seal and thank them for ensuring our beautiful waterways for generations to come!

Seagrasses are in decline, worldwide, by 7% a year. If these estimates are correct then seagrasses are amongst the fastest disappearing habitats on the planet.



The Importance of Seagrass!

- One acre of seagrass supports up to 40,000 fish and 50,000 small animals.
- Seagrass plays a vital role in the offset of carbon emissions. Seagrass can sequester as much as 50 times the amount of carbon in its soil per hectare as a tropical forest, and for a longer period of time.
- In Florida, healthy aquatic ecosystems are vital to local economies, commercial fishing, and ecotourism. Florida seagrass beds contribute more than \$20 billion a year to the State's economic health by providing for commercially and recreationally important fish and shellfish, stabilizing the seafloor, and filtering pollution, which keeps the water clear and healthy for marine species and human enjoyment.



Let's do some math!

Let's say one anchor pulls up about one square foot of grass. Now if that boat moved 5 times it would pull up 5 square feet of grass in total. Now let's say that boat goes out every day for 30 days and moves 5 times a day. That equals 150 square feet of eelgrass destroyed. If 290 boats did that (move 5 times a day multiplied by 30 days) it would destroy an acre of eelgrass every month!

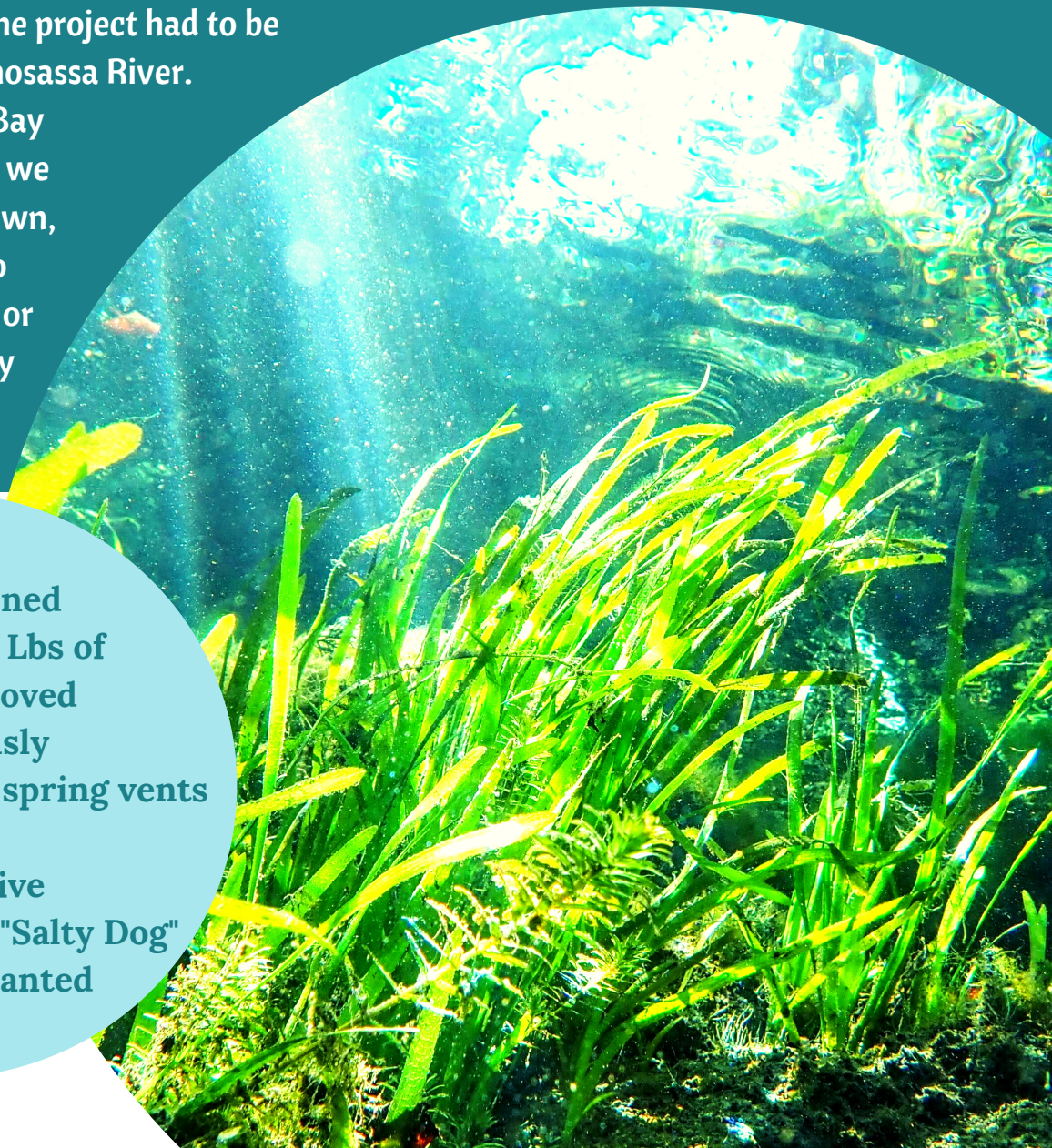
BECOMING A MODEL

After 6 years of continued success, Save Crystal River's Kings Bay Restoration Project is proud to be considered a model to other aspiring groups and restoration efforts. The Homosassa River Restoration Project is a great example of the role Save Crystal River has played in developing a successful and transferable method.

When asked why they chose to look at our model when developing their project president Steve Minguy responded, "A group of several Homosassa citizens were invited by Lisa Moore to visit the Kings Bay worksite to see, first hand, what was being done to help restore that section of Crystal River. Within the first 10 minutes we, as a group, had decided the same project had to be brought to the Homosassa River.

Without the Kings Bay Restoration Project we would not, on our own, have been able to develop the project or obtain the necessary funding."

- 50 acres cleaned
- 200+ Million Lbs of *Lyngbya* removed
- 700+ previously unidentified spring vents opened
- 213,000+ native "Rockstar" & "Salty Dog" eelgrasses planted



FOSTERING AN ECO FRIENDLY FUTURE

Ensuring our waterways for generations to come involves much more than cleaning and planting. Remove, Restore, PREVENT, and MAINTAIN is the motto Save Crystal River has adopted. Prevention and maintenance are key factors to ensuring long term success. So how do we make sure damage prevention and maintenance will continue long past us? We foster future generations that are not only aware of the importance of our ecosystem, but also understand how it works and learn to love the environment from an early age.

During Eco Week, Duke Energy's Mariculture Center donates eelgrass for every student at Crystal River Primary to plant in their classroom tank. This grass is incorporated into lessons about science, ecosystems, biology, and even art classes! Then, at the end of the year, the 5th-grade students collect all of the eelgrass grown that year and bring it down to our local waterfront park where they get to plant it! This gives the students an important "hands-on" experience and and feeling of ownership in their local community. Free downloadable lesson plans are available at KingsBayRestorationProject.com

According to the National Wildlife Federation, a 2004 study supports the positive effect of environment-based education on learning, specifically its ability to boost critical thinking. Test scores of 400 students, grades 9-12 in 11 Florida high schools were studied to measure response to Environment as an Integrating Context for Learning (EIC Model) programs. Researchers evaluated performance on three normreference tests including Achievement Motivation Inventory, Cornell Critical Thinking Test and the California Measure of Mental Motivation. EIC programs were found to significantly raise performance on all three tests.



IT TAKES A VILLAGE

With the uncertainty that 2020 brought to us all, we looked to our community for the support needed to move our project forward. We were overwhelmed with the outpouring of donations that we received and the encouragement to continue to make a difference in King's Bay. We would like to thank everyone who has helped support our mission to restore our waterways to the natural, crystal clear, bay it once was. Together we have raised nearly \$30,000 through community fundraising.

If you would like to help us Save Crystal River, please visit

www.SaveCrystalRiver.com/Donate

2020 FEATURED RAFFLE WINNERS



2020 RAFFLE DONORS

- Mallard's Guns
- Miller Marine
- Marie Bienkowski
- Liz Thompson
- West Marine
- Homosassa Marine
- Crystal River Room Escape
- Captain Colton
- Explorida
- Hunter Springs Kayaks
- Gary Kuhl
- Chuck Tripp
- Heritage House
- Plantation Realty
- Sodium Fishing Gear
- Kane's Ace Hardware

COMMUNITY PARTNERS

Save Crystal River Rockstars



Habitat Creators



Laura Lou Fitzpatrick
&
Hugh Tolle

Spring Supporters

Crystal Community ENT • Lowman Law Firm • St. Johns Tavern
Coldwell Banker Next Generation Realty • Howard Sheppard Inc.
Marvin Poer & Company • Wallace's Greenhouse Bistro



Photos Provided By

Explorica Adventure Center • River Ventures • Crystal River
WaterSports • Doug Sonerholm • Bree Lajoie • Birds Underwater
Dani Pope • Fun2Dive • Sea & Shoreline

WWW.KINGSBAYRESTORATIONPROJECT.COM
WWW.SAVECRYSTALRIVER.COM

KINGS BAY RESTORATION PROJECT



Lisa Moore, President
Steve Lamb, Vice President
Dr Michelle Sivilich, Executive Director

Info@SaveCrystalRiver.com

P.O. Box 2258
Crystal River, FL
34423