

INTRODUCTION FROM THE St. Johns Riverkeeper



Submerged aquatic vegetation (SAV) is the foundation of our river's health – providing biofiltration, fish habitat, flood protection and more. Sadly, the St. Johns River is suffering mounting threats resulting in the near demise of our river's SAV.

In August 2023, St. Johns **RIVERKEEPER** (SJRK) returned to the river for its second *SAVe Our River's Grasses Expedition*, seeking answers and solutions to the disappearing SAV of the St. Johns. Over four days, our team surveyed an 80-mile stretch of the river between Doctors Lake and Lake George searching for remaining grass beds, taking measurements, conducting water quality testing, and seeking solutions to restore this vital habitat. Unfortunately, seven of the 12 sites were inaccessible due to the presence of potentially toxic blue-green algae.

On August 1, the SJRK SAV Team met with Florida Fish & Wildlife Commission's (FWC) Corey Anderson and Dan Kolterman to learn more about FWC's fencing effort to protect SAV from grazers and to explore opportunities for partnership. SJRK is developing a program to expand FWC's effort working with homeowners to install smaller enclosures along our Expedition route in early 2024.

On August 2, we launched the *Brewing Up Solutions - Putnam* series at downtown Palatka's Azalea City Brewing. We met with SAV experts and more than 50 area residents and discussed how we can work together to *SAVe our River's Grasses*.



SJRK is also exploring new multimedia options to further engage the public and create a real feeling of presence for those who are unable to join us on our Expedition. In August, drone footage showed green algae on the river's surface as well as provided an aerial view of the presence and distribution of SAV. We will expand this effort to include underwater footage, as well as training on how the SAV Team conducts its sampling methods.

This Field Log captures a summary of our work at each site including conversations and observations with riverfront homeowners and highlights of our SAV Team's data collection in search of solutions to *SAVe our River's Grasses*.

SUMMARY OF SJRK AUGUST 2023 Expedition Findings

SJRK's August 2023 Expedition results were mixed with both encouraging and discouraging findings. Historically, the St. Johns River hosted a diverse array of up to 11 different grass species, but that diversity has dwindled to a mere echo of what it once was. Below is a summary of the August 2023 Expedition findings that start at the northernmost sites and transition to the southward sites.

- SJRK's SAV Team **found fledgling grasses at the Doctors Lake site where none existed during the May 2023 Expedition.** It was an excellent kickoff that we celebrated with area residents who joined us to observe our early morning monitoring.
- **SAV was also found at the Fruit Cove site.** The river's grasses were widespread at this location but cropped short by hungry grazers, most likely turtles and/or manatees.
- One of the most exciting highlights was the presence of long, healthy grasses within Dancy Point's large-scale enclosure and San Mateo's smaller enclosure. The Dancy Point enclosure is part of a FWC's pilot project. FWC installs fencing to protect grasses from grazers, giving our river's SAV a fighting chance.
- Outside the Dancy Point enclosure, SAV was cropped short like all the other unprotected areas, **demonstrating the significant grazing pressure due to limited SAV food sources throughout the Lower St. Johns.**
- Seven of the twelve sites had evidence of cyanobacteria on the surface, within the water column or in the river sediments. Cyanobacteria, a/k/a harmful algal blooms, can be highly toxic and dangerous to our health. Algae presence also blocks out sunlight that SAV needs to grow. **Toxin analyses showed potentially toxigenic algae species at all 7 sites.** Out of an abundance of caution, the SJRK SAV Team only took water quality samples, algae samples, and shoreline observations at these sites.
- Chara, an SAV that is a type of macroalgae, was observed at the Welaka, Beecher Point, and Drayton Island sites. **The Chara was much thicker and longer than documented in the May 2023 Expedition.** SJRWMD scientists consider Chara to be a precursor species to eelgrass, so the SJRK SAV Team and area residents hope to see eelgrass presence soon.

The below Field Log enumerates these findings in more detail, along with in-depth site descriptions.

THE EXPEDITION CONTINUES

The next SJRK *SAVE our River's Grasses Expedition* will be October 17-20, 2023. We will collect more data and continue our conversation with homeowners, anglers, river enthusiasts, business owners and scientists to better understand our river and its significance to our communities, our economy and our lives.

The SJRK SAV team will continue to meet with agencies and review data currently being tracked by SJRWMD, USACE, and FWC to contribute to our understanding of the St. Johns River's SAV loss and the solution to its return.

SJRK also wants to express its gratitude to the homeowners, anglers, and scientists that have been instrumental in this effort and for our ongoing partnership to *SAVE our River's Grasses*.

AUGUST 2023

SAV FIELD LOG

PREPARED BY
ST. JOHNS RIVERKEEPER



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RIVERKEEPER®

AUG 2023 *SAVE OUR RIVER'S GRASSES* Background

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SITE 1 - DOCTORS LAKE

Betsy & Tony Sievert's family has owned their Clay County home located on the northbank of Doctors Lake since 1969. Located just west of the HWY 17 Bridge, their property is bulkheaded and historically had lush SAV and frequent manatee visits. Eelgrass (*Vallisneria americana*, a/k/a "tape grass") used to dominate this area, but none was present at the time of the May 2023 Expedition. SJRK is happy to report that SAV was present during the August field visit. The grass, though short and stunted, was well-dispersed throughout the site area. **The site had lower salinity and higher turbidity during the August visit than the May visit (0.51 ppt vs 6.3 ppt and 2.54 FNU vs 1.77 FNU for salinity and turbidity, respectively).** August's Dissolved Oxygen reading was also slightly lower than May's (73% vs 86.2%). Several neighbors joined us to express their support for and interest in SJRK's efforts to SAVE our river's grasses.

SITE 2 - FRUIT COVE

Ben & LouAnn Williams have lived on the eastbank of the St. Johns just south of Julington Creek for nearly 35 years. Their St. Johns County property has a natural shoreline with mature cypress trees. Once a commercial fisherman and the founder and 35-year owner of Fisherman's Dock, Ben knows and cherishes the St. Johns like an old friend. Ben has fenced off a small portion of river bottom beside his dock to protect fledgling grasses from grazers, a growing problem due to the lack of food for turtles, manatees and fish. Ben and LouAnn were in Tallahassee for an American Tree Farm System meeting during our August 2023 visit, but conveyed improving river conditions on a pre-Expedition phone visit. Ben reported that water levels were lower and clearer, and several manatees had recently returned to the area. Ben and LouAnn were wading in the river earlier that week and felt widespread, carpet-like, short sprouting grasses. The SJRK Team was pleased to confirm that conditions had improved. Due to SAV presence, the transects here were the longest of any site, at 47 meters. **Findings of note at Site 2 include lower salinity (0.4 ppt) during the August visit than the May visit (5.13 ppt).** While SAV was sparse in May, SAV in August was more abundantly dispersed, denser, and had a higher canopy height ([Attachments A & B](#)). August's Dissolved Oxygen reading was also slightly lower than May's (81.7% vs 98.9%). The site had lower salinity and turbidity during August's visit than May's (0.4 ppt vs 5.13 ppt and 1.62 FNU vs 4.26 FNU for salinity and turbidity, respectively).



SITE 3 - COLEE COVE

Victor Jackson has lived in Colee Cove for 28 years. His property on the eastside of the St. Johns has a low wooden bulkhead with several large cypress trees. Victor has witnessed the visible decline of eelgrass behind his home over the years. During the August 2023 visit, the SJRK team witnessed abundant coverage of grasses (~99% coverage) on both sides of the dock until visibility was reduced at 200 feet offshore. Unfortunately, both particulate and clumped blue green algae was observed in the water. Out of an abundance of caution, SJRK's SAV Team only took water quality samples, algae samples, and shoreline observations of the SAV due to the potentially toxigenic nature of this algae. Post-visit toxin analyses confirmed the presence of four potentially toxigenic cyanobacteria species from this site. **Findings of note for Site 3 include abundant SAV coverage and algae presence. August's Dissolved oxygen reading was also more normalized compared to May's supersaturated reading (96.6% vs. 139.0%). August's turbidity was also lower than May's (1.20 FNU vs 3.26 FNU).** Photosynthesis can contribute to supersaturation of a water body, potentially bringing the DO above 100% saturation, as Oxygen is produced as a waste product of photosynthesis.



SITE 4 - TOCOI

Ken and Joanne Schultheis live in St. Johns County on the eastbank of the St. Johns in Tocoli, a small community near Tocoli Creek. Ken, along with his neighbors Dan and Jenny Palmer (owners since 2000), have noticed a loss of eelgrass behind their homes. Unfortunately, both particulate and clumped green algae was observed in the water during our August 2023 visit. Out of an abundance of caution, SJRK's SAV Team only took water quality samples, algae samples, and shoreline observations of the SAV due to the potentially toxigenic nature of this algae. Post-visit toxin analyses confirmed the presence of four potentially toxigenic cyanobacteria species from this site ([Attachment C](#)). **Findings of note for Site 4 include no SAV coverage, algae presence, & high dissolved oxygen (141.5%).**



SITE 5 - DANCY POINT

Ray and Lana Bunton have lived on the eastbank of the St. Johns in East Palatka for 47 years. Additionally, Ray's family has lived at that location since 1970. Ray partnered with his friend David Girardin and FWC to fence off nearly three acres of riverbottom through a public partnership to monitor SAV growth while protected from grazers. The shoreline consists of a wooden bulkhead. The SAV team monitored SAV and water quality inside the fenced area as well as outside of the protected zone. Due to SAV presence, the transects here were relatively long at 40 meters inside the fence and 30 meters outside the fence during our August 2023 visit. **Inside the fence, SAV was more dense and its canopy height was taller. The longest canopy height was 25 cm inside the fence. Epiphytes were found growing on the SAV, which can block light and hinder photosynthesis. Epiphytes were present on all SAV, and averaged 33.3% coverage. Eutrophic (higher dissolved nutrient concentration) conditions increase epiphyte abundance (Sagan 2007; Stallings, 2015). SJRK documented SAV outside the fence as well, but the grasses were shorter and less dense ([Attachment A](#)). High dissolved oxygen (supersaturation) was also noted both inside and outside the fenced enclosure, but both areas showed lower DO readings in August than in May. Inside the fence, August DO levels were 112.4%, compared to May's 124.9% reading. Outside the fence, August DO levels were 100.4% compared to May's 115.0%. Inside the fence, May's Chlorophyll-a average readings were higher than August's (6.43mg/L vs 4.39 mg/L). Outside the fence, Chlorophyll-a readings were highly similar between August and May.**

SITE 6 - SAN MATEO A

Tim Houghtaling and Leslie Mullins have lived on the eastbank of the St. Johns River in Putnam County since 2013. Their property has a metal bulkhead. Tim is actively advocating for more protections of our river's grasses. In March of 2022, he installed his first fenced enclosure similar to Site 5 - Dancy Point, but on a smaller scale. Inside the fence the SJRK team identified primarily eelgrass ([Attachment A](#)). Since our May visit to his riverfront property, their enclosure was breached and grazers consumed the SAV, demonstrating the current threat of grazers due to lack of food sources. **This site had an average percent cover of 56.44% and a longer canopy height at 8.0cm within the protected area. Due to the fence breach, the canopy height during this visit was much shorter compared to May's average of 73.0cm. The water temperature here was 87.6F, compared to 84F in May.**



SITE 7 - SAN MATEO B

Sam and Lorraine Carr have lived on the eastbank of the St. Johns in Putnam County for 25 years. Their property is bulkheaded and features majestic live oaks that date back to William Bartram days. Sam has witnessed significant loss of eelgrass in his area. Sam and Lorraine Carr's dog Trixie used to play in the once-abundant grasses in the sandbar just upstream from Sam's home. An avid fisherman and conservationist, Sam spends ample time on "his river." At the time of the SJRK Team's site visit, the tide was too high to get an accurate SAV sample, but grass was felt by our team members and a sample was retrieved (photo, left). Sam's neighbor's home (San Mateo C) was previously used as "Site 8," but SJRK has since determined that combining San Mateo sites "B" and "C" under one site number is most effective. As such, the SAVe Our River's Grasses expedition will now have 12 sites rather than the initial 13.



SITE 8 - SATSUMA SPRING

Satsuma Spring is a third-magnitude spring (discharge of 1-10 cubic feet per second) with a run that flows a quarter of a mile northwest as it enters the St. Johns River near Acosta Creek (SJRWMD, 2023b). William Bartram documented his visit here during the 18th Century and it remains a designated Bartram Site on the Bartram Trail of Florida and Putnam County. Water depth, site inaccessibility, and green algae presence prevented the team from sampling SAV on this occasion, but the team was able to take water quality measurements. Dissolved oxygen was relatively low at 34.4% (2.85mg/L). Otherwise, water quality readings were average for the site location and similar to the May visit ([Attachment B](#)). Findings from Green Water Labs indicate that there was one species of potentially toxigenic cyanobacteria present in the water on the day of the site visit ([Attachment C](#)).





SITE 9 - WELAKA

The Welaka site is located at the home of Jessica and Kevin Finch, who have lived at the property since 2012. The shoreline was natural with cypress trees. The SJRK team once again only found one species of SAV, *Chara sp.*, which is a type of grass-like algae that is growing where healthy eelgrass once did and is commonly referred to as “musk grass” due to its unpleasant odor. This macroalgae is not new to the St. Johns River, but we have found no evidence of *Chara sp.* being the dominant species. *Chara sp.* has a low biomass and thus does not represent an ideal food source for grazers. It is typically found more frequently in Lake George and Crescent Lake. There is evidence to suggest that *Chara sp.* is an early colonizer that appears prior to other SAV species growth, which could be a positive indicator of more diverse and abundant SAV growth in the future. Additionally, green algae was present both on the surface of the water and in the substrate, so the team did not get in the water due to potential toxicity concerns. **Both water and sand samples were collected and analyzed - results indicate that there was one species of potentially toxigenic cyanobacteria present in the water, and no potentially toxigenic species in the sand ([Attachment C](#)).**

SITE 10 - BEECHER POINT

The SJRK team visited the River Bend Condominiums just south of Welaka in Beecher Point. The SAV Team found river grasses dominated by *Chara sp.*, like the Welaka Site. The site’s *Chara sp.* averaged 85-95 percent cover based on observational analysis. As SJRK exited the water, team members noticed streaks of a potential algal bloom in the vicinity as well as noticeably green sand on the shoreline. **Both water and sand samples were collected and analyzed - results indicate that there were two species of potentially toxigenic cyanobacteria present in the water, and one potentially toxigenic species in the sand ([Attachment C](#)).**





SITE 11 - DRAYTON ISLAND

Ken & Jamie Baxley have lived at this property since 2004. The site exhibited a natural shoreline with a gentle slope and cypress trees. The SJRK team took water quality samples and noticed only *Chara* sp. at this site like Sites 10 & 11. Team members also noticed a potential algal bloom in the vicinity as well as noticeably green sand on the shoreline, so transect and quadrat SAV sampling were not conducted to avoid potential toxins. Lab reports identified 2 strains of potentially toxigenic species in the water. ([Attachment C](#)).

SITE 12 - LAKE GEORGE

This site is located on the southeast bank near the southern tip of Drayton Island. The SJRK team discovered bright green sand, in addition to floating green algae. Both water and sand samples were collected and analyzed - results indicate that there were two species of potentially toxigenic cyanobacteria present in the water, and three potentially toxigenic species in the sand ([Attachment C](#)). It is unknown whether SAV was present at this site, as team members were unable to submerge in the water. Additionally, team members were unable to obtain water quality parameters due to a large emergent storm system that had made its way to the Lake George site.



For more information and updates as the Expedition continues,
visit StJohnsRiverkeeper.org.

LINKS TO DATA:

[Attachment A: Methodology & Data](#)

[Attachment B: Water Quality Data Graphs](#)

[Attachment C: Potentially Toxigenic Cyanobacteria Screen](#)

