

SPINNING FISH
PHENOMENON

THOMAS
MCGUANE

BOCA GRANDE
TARPON

BONEFISH & TARPON JOURNAL

A publication of
Bonefish
& Tarpon
TRUST



CONSERVATION THROUGH SCIENCE • FALL 2024



Mowed

Trading chemicals for cuts

BY KRIS MILLGATE

Large mats of bottom (benthic) algae fueled by too many nutrients from wastewater and stormwater overgrow and kill seagrass beds. Photo: Dr. Aaron Adams

Virginia Barker goes to work every day knowing the community she lives in supports her reason for clocking in. She's the Director of Brevard County's Natural Resources Management and what she's doing for Florida's Indian River Lagoon is backed by a half-cent sales tax started in 2016.

"From 2011 to 2016, we saw the lagoon in a death spiral. Every year was worse than the year before," Barker says. "When the public voted for the sales tax in 2016, we finally had a dedicated source of funding and a very strong directive. The community was resoundingly in favor of reducing pollution and restoring health to the ecosystem. It's important to quality of life

and community identity. People feel strongly about the lagoon."

The Save Our Indian River Lagoon sales tax is good for 10 years, collecting half a billion dollars for septic improvements and nutrient reduction. Both override the lagoon's natural functions.

"Pollution sources are out of sight, out of mind but we have 62,000 septic systems that are draining sewage and that migrates into the lagoon. Lawn fertilizer runs into it too," Barker says. "This ecosystem is fragile. We can't live the same way that other people do. We have to be way more careful about our impacts."



This Brevard County employee is being trained on the newest aquatic vegetation harvesting workboat (shown here removing unwanted aquatic vegetation from a stormwater pond), propelled by its powerful single engine, twin independent outboards. Photo: Brevard County Natural Resources Management Department



Brevard County staff uses an aquatic vegetation rake, a specialized excavator attachment designed to quickly drain water while harvesting plants. Shown here, water hyacinth—a highly invasive aquatic plant introduced into Florida in the 1880s—is being removed from a stormwater pond. Left unchecked, this aquatic plant rapidly blankets freshwater lakes and ponds, resulting in nutrient load and flooding issues. Photo: Brevard County Natural Resources Management Department

By fragile she means slow. Indian River Lagoon is a coastal channel with slow flow. Tidal influence is minor, so whatever enters from runoff takes a long time to flush out, if it ever does at all. The result is an overwhelming problem from too many plants on the surface of freshwater areas that drain into the IRL, and too much muck on the bottom of the IRL.

"That black mayo goo smothers life," Barker says. "It's been collecting on the bottom for the last five or six decades. We're getting that out to get back to clean sand."

Muck removal from the bottom of the IRL costs millions. So does mowing plants that are clogging the freshwater lakes, ponds, and drainage canals in the IRL watershed. The fast-growing plants are accumulating quickly because of us. In addition to septic tank leaching, our neatly trimmed front lawns and back nines are green because we fertilize. The elements in sewage and fertilizer, mainly nitrogen and phosphorus, drain into the freshwater bodies that then flow into the IRL, resulting in nutrient overload which leads to too many aquatic plants. The go-to treatment for too many plants is chemical herbicides like glyphosate, but Barker doesn't use the go-to. Mechanical harvesters are mowing aquatic plants in Brevard County instead.

"We will not be using herbicides, many of which contain phosphorus that just contributes to the problem," she says. "We've been building our own internal harvesting team over the last few years. Last year we doubled our staff. We now have eight employees in our harvesting program and we're adding more equipment."

The equipment includes a mower made for working on water. It cuts plants instead of grass. Sounds novel, but it's not new. It's

been tried before.

"I remember the mechanical harvest days when they had the barges," says Flip Pallot, legendary Florida sportsman. "They'd pile up the duckweed, hydrilla, hyacinth, spatterdock and all the other invasive species. They would actually pile it up and it would rot, which was offensive to a lot of people."

That's one reason why mechanical harvesting lost favor, but not the main reason. The main reason was cost. Chemicals kill plants for less money and it's long been thought that glyphosate in particular has a short lifespan which also made it popular, but new research by Bonefish & Tarpon Trust's partner, Ocean Research & Conservation Association (ORCA), disputes that. Ninety-nine percent of sampled fish in IRL had glyphosate in their tissues. That's why BTT is advocating for significant and meaningful reductions in the use of glyphosate and the return of mechanical harvesting with its *Win Back Our Water* campaign.

The other drawback with chemicals is disposal. Sprayed plants stay on site. Treated foliage dies then decays, adding more nutrients to an already overwhelmed watershed. Brevard's harvesters not only remove plants from the water, but also from the site. The heaps of cuttings go to the landfill for now, but Barker hopes to launch a mulching program that turns the harvest into a spreadable slurry.



A small, battery-operated, remote-controlled mini harvester patrols this stormwater pond in Brevard County for any unwanted vegetation and debris. Its compact design and ease of use is the perfect addition in a pond management toolkit for tighter, hard to reach areas and small waterbodies. Photo: Brevard County Natural Resources Management Department



This highly effective vegetation harvesting workboat is equipped with a side cutter bar, deployed here, continuously slicing through emergent vegetation under the water's surface as it hugs the perimeter of the stormwater pond. The vegetation then floats on the surface and, driven by the breeze, gathers to be subsequently collected with the front rake attachment. Photo: Brevard County Natural Resources Management Department

"Isaak Walton League of America turned cuttings into slurry and used that as fertilizer on fields," says Dr. Aaron Adams, BTT's Director of Science and Conservation. "One of the sources of fertilizer for some agricultural lands is biosolids, a byproduct of sewage treatment. If we're willing to use biosolids from human waste, then we should be willing to use plant material that's already in the system."

Dr. Duane De Freese agrees. He's the Executive Director of the Indian River Lagoon National Estuary Program. Indian River Lagoon is one of 28 estuaries nationwide designated by the U.S. Congress as significant, but non-regulatory. That means it's a federal program managed at the local level. In this case, that local level includes Brevard County with its revival of mechanical harvesting among many other measures to improve the lagoon that pools along 170 miles of the nation's non-tidal, coastal water.

"All waste has potential use. How we manage waste, that's the future," De Freese says. "No question in my mind, we need a paradigm shift in how we think about chemical use and how we manage our resources. Less is more. None is better."

Brevard County wants none and it has a community-supported sales tax backing what it wants. Its glyphosate use is down to a few gallons a year and none of it can be sprayed within a half mile of the lagoon. It has also removed 11.7 million pounds of aquatic plants with mechanical harvesting since 2019. That's enough to cover seven football fields with a foot of vegetation. Every harvested truckload entering the landfill is weighed. Every city, subdivision, and water district letting the county cut instead of spray receives a monetary kickback on that weight. The mass includes 16,000 pounds of nitrogen plus 2,700 pounds of phosphorus that is no longer festering in Indian River Lagoon.

"It takes a while to get these projects designed, permitted and funded, but we are coming up on 100 completed projects and the

water clarity is better. The seagrass is beginning to rebound," Barker says. "We really feel like we've seen the bottom and now we're heading in the right direction. We have to stay the course." 🐟

Outdoor journalist Kris Millgate is based in Idaho where she runs trail, hunts birds and chases trout. When she's on the coast, she likes casting to bones and jacks. She followed salmon migration solo during the pandemic for the Emmy-nominated film *Ocean to Idaho*. Her new Emmy-winning film, *On Grizzly Ground*, is available now along with her third book, *My Place Among Beasts*. See her work at www.tightlinemedia.com.



Filamentous algae from too many nutrients not only smothers seagrass, but can impact mangroves as well. Photo: Dr. Aaron Adams