

# Fishing for Data

A LADIES OF THE LAGOON STUDY  
IS TRACKING THE VITAL MOVEMENT  
OF FISH FROM WETLANDS TO OPEN  
WATER, ONE TAIL AT A TIME

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Ann Alleva Taylor, Indian River Land Trust director of marketing and philanthropy, walks along the berm at Bee Gum Point in Indian River Shores with the Ladies of the Lagoon originators, Kathleen Shulke and Stephanie Smith.



Sitting over lunch one day, Vero Beach residents Kathleen Shulke and Stephanie Smith were mulling over a mutual concern: How could they raise awareness and funding in order to save and protect the Indian River Lagoon? Friends and longtime board members of the Indian River Land Trust, both were deeply troubled by the health of this bio-diverse stretch of water, home to more than 3,500 species of plants, animals and fish. Land development and human intervention had not only altered the lagoon's ecosystem but also endangered its wildlife. The fish population was dying and no one knew why.

Striving to support the Land Trust's Lagoon Waterfront Initiative launched in 2010, Shulke says they wanted "to have a program that teaches the importance of the life of the lagoon and how we can all impact it." With the goal of motivating women to become advocates for the interconnectivity of land and water in Indian River County, the idea for Ladies of the Lagoon was born.

Since its inception in 1990, the mission of the Land Trust has been to preserve, conserve and improve environmentally sensitive property in Indian River County. The nonprofit's concerted efforts over the last 10 years, aided by the donations of



A pilot program for studying fish migration tags and tracks fish from the impoundment at Bee Gum Point. "Bee Gum Point is a nursery to literally thousands of fish," says David Heuberger, Indian River Land Trust director of land protection.





A tagged snook is measured and the data is entered into a daily log.

its members, have resulted in the purchase and protection of some 1,000 acres of undeveloped land, including 10 miles of shoreline along the Indian River Lagoon.

In 2011, they purchased Bee Gum Point, a 111-acre property and one of the last unprotected wetlands on the barrier island. Smith, who was chairing the board at the time, noted, "It was the largest undeveloped property extending into the lagoon on the island, so it was a real prize." Situated just north of the Lost Tree Islands, it was also an area where the breeding habitats of coastal fish had been significantly impacted by the impounding of wetlands, the transitional regions between the land and open water.

The practice of impounding wetlands began in the 1940s as a way of controlling the mosquito population. The building of dikes isolated the lagoon from the wetlands, and then the wetlands were mechanically flooded, interrupting the life cycle of the pesky insect. While it was an effective public-health measure, the practice not only destroyed the herbaceous and

black mangrove marsh systems but also decreased connectivity between the two bodies of water, disrupting the fish's journey from the wetlands — where they grew, fed and hid from predators — back out into the lagoon and ocean.

Ann Alleva Taylor, the Land Trust's director of marketing and philanthropy, concedes, "We've always known that what we do on the land affects the lagoon. But without the impoundments, we couldn't live on the land, so the question was, how do we respect each other?" It became clear that further scientific studies were needed to monitor the movement of fish and enable the nonprofit to work effectively with the Indian River Mosquito Control District in order to benefit both man and nature.

The genesis of the Ladies of the Lagoon was timely. Just as the Land Trust was looking into ways to reconnect the fish population at Bee Gum Point, fisheries scientists Aaron Adams of the Bonefish and Tarpon Trust and Jon Shenker of Florida Institute of Technology (FIT) approached them with findings from their studies in Charlotte Harbor on the West Coast of Florida. A





FIT graduate students Jake Rennert and Anthony Cianciotto log data after a day of tagging fish at Bee Gum Point.

similar study would tag and track juvenile fish and enable the Land Trust to learn how to best restore their natural life cycle.

With \$50,000 needed to get the study off the ground, the Ladies of the Lagoon rallied their forces and got to work hosting fundraising events, sending out mailings and conducting tours of the property. And when Land Trust benefactor Georgia Welles challenged them to match a \$25,000 gift, they launched the Adopt-a-Fish, Tag-A-Tail program where, for \$1,000, one could adopt and name a fish to be tagged and tracked in the scientific survey. Pretty soon, tagged fish bearing names like Fred, Icky, Fin, Sebastian, Lucy and Gus were swimming around the wetlands, ready to be tracked and monitored.

**O**n a crisp, cool Florida morning in March, the Land Trust invited me to take a tour of Bee Gum Point along with Smith, Shulke, Taylor and David Heuberger, the Land Trust's director of land protection. As we walked along a berm once slated to become a development for 137 homes, Heuberger revealed that when they purchased the property, there was only one culvert (tunnel) providing a hydrologic link between the wetland and the Indian River Lagoon, so they immediately began installing eight new culverts for better



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After the snook has been sedated, the researchers use a syringe to inject the tag into the fish's cavity. "It's essentially the same as microchipping your dog," graduate student Jake Rennert explains.

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connectivity, improved water quality and functionality. The practice of mosquito control had been to keep these culverts closed throughout the summer from April through September. The study would help them determine if this was the best practice for tidal connectivity.

"We've been doing the study for about two years now, and they have captured over 300 snook, 40 tarpon and only a couple of recaptures, which means that Bee Gum Point is a nursery for literally thousands of fish," Heuberger said. "It has been generally thought that with the culverts being opened in the winter months, it is sufficient for the fish to move in and out, but what our studies indicate is that doesn't happen with all fish species. For the first time ever this year, we let the water come down to the natural level and opened the culverts in the summer. Lo and behold, 10 percent of the tagged fish left. So it suggested that the impoundment wasn't historically open during a time when they would naturally leave. Right now, the culverts are open and are allowing what occurred historically with the tides coming in





David Heuberger stands by a solar-powered data logger connected to antennas. This equipment tracks the fish coming and going through the adjacent exchange culvert.

and out. That hasn't happened here since the 1950s."

Curious to see the study in action, I met up with Jake Rennert and Anthony Cianciotto, graduate students of marine biology at FIT. They have been visiting Bee Gum Point regularly over the last two years to catch, tag and collect data on the movement of fish.

Wading out into the brackish water, Rennert cast a fly and explained the process. "When I first started, I was just using spinning tackle and then nets, and neither worked very well. Then we started fly-fishing. I think the most we've ever caught in a day was 55. I was just tagging them as fast as I could."

Within a minute or two, they pulled in a snook and ran a scanner over its body to make sure it hadn't been tagged before. Not detecting the familiar beep, the fish went into a bucket of water containing stunning powder before being injected with the tag. "It's essentially the same as microchipping your dog," Rennert explained. "The tagged fish will swim under the antenna wire and data logger (by the culverts) and we'll get a better understanding of movement and migration patterns."

Cianciotto added, "If the Land Trust hadn't invited us to do the program here, we wouldn't have been able to do it because a lot of other impoundments have houses on the property. As



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The tranquil setting belies the impactful work underway. "We had the opportunity here to fund an important scientific study that could be implemented up and down the lagoon," says Ann Alleeva Taylor of Indian River Land Trust.



mosquito impoundments are unique to Florida, Bee Gum is a pilot program for this kind of study.

"The fact that we discovered the fish move in the summer and not in the winter could have some management implications. If we can replicate this data in a few different locations, the summer draw-down procedure could potentially become management policies all over the east coast of Florida."

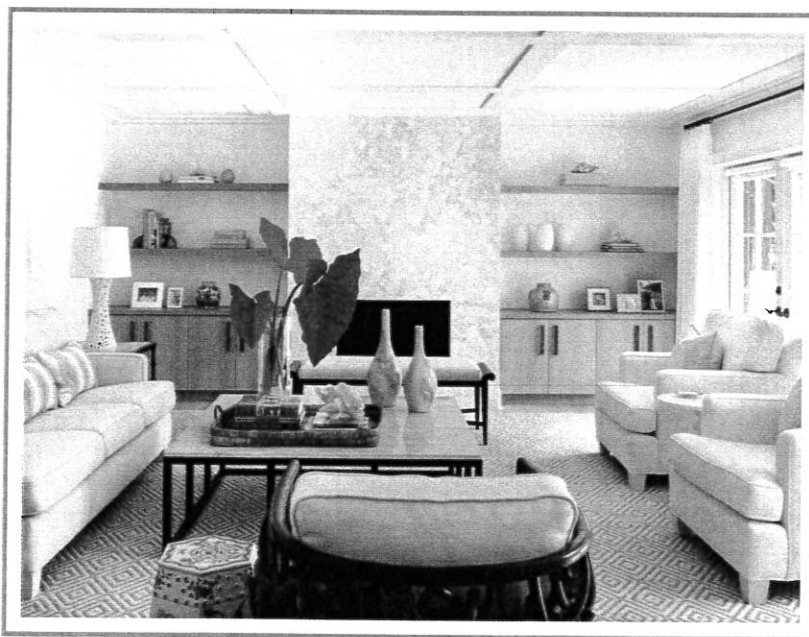
Taylor summed up the potential impact of the study and the importance of the Ladies of the Lagoon's contribution. "We had the opportunity here to fund an important scientific study that could be implemented up and down the lagoon. The Ladies have pledged that 100 percent of the money raised will go to programs like this."

In fact, the group has already embarked on another study, this time of terrapin turtles, recently spotted at Bee Gum Point. "It was assumed that maybe they left the impoundment and that mosquito control had affected their ability to nest," Heuberger said. "But it turns out to be the exact opposite. Turns out these impoundments have become an incredible sanctuary. Our goal is to determine where they are nesting."

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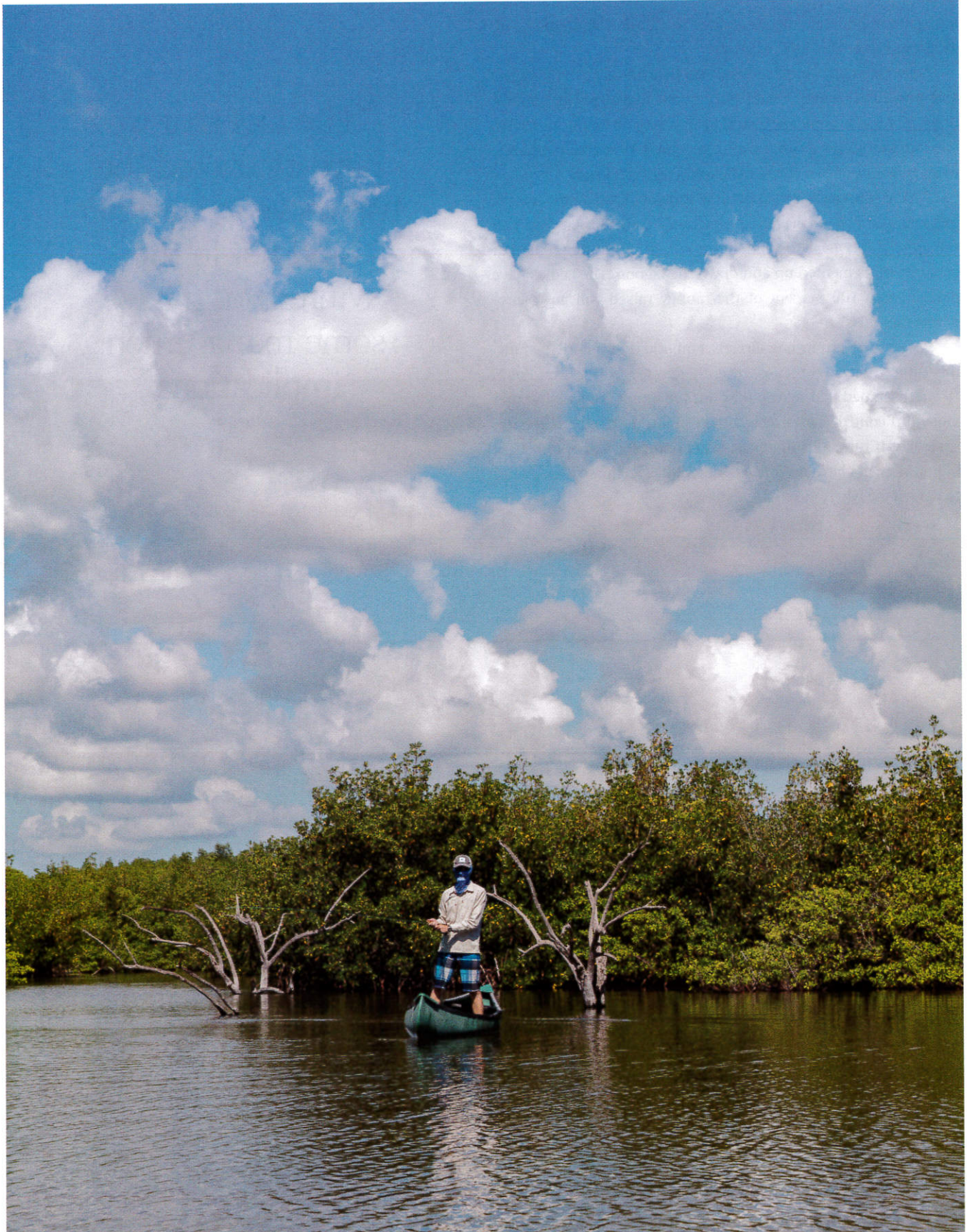


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A newly installed exchange culvert at the historic mouth of Cleve Hinton Creek in Indian River Shores

Shulke and Smith are deeply gratified by the strong, environmentally conscious women who have signed up to make Ladies of the Lagoon a success. To date, the group has raised more than \$100,000 to fund research and is actively working on raising more. They meet two to three times a year providing both the opportunity to socialize and formulate new ideas for projects and have garnered support from the local business community. J. McLaughlin at the Village Shops supports their efforts by hosting a "Sip 'n' Shop" day each year with a percentage of the proceeds going to the Ladies of the Lagoon's programs.

"The Ladies of the Lagoon was originally envisioned as a vehicle for increasing both awareness and action among Indian River residents who were not yet involved in conservation efforts," Smith says. "It offered the opportunity for 'hands on' participation in the protection and restoration of habitats. And, it has brought new voices and perspectives to the growing awareness of critical issues involved in lagoon sustainability."

"Vero Beach is a wonderful community that is always willing to help," Shulke asserts. "This group is the perfect way to be a part of the solution. It is just women working together, as we do, protecting and preserving and helping the Land Trust where we can. Because there's always a new project." ☼



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