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## ‘Drift Cards’ to track lagoon’s water flow

By Kimberly Miller

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Knowing the ebbs and flows, eddies and flushes of the Lake Worth Lagoon is key for restoration as nutrients circulate and silt settles depending on water moving in the brackish estuary.

With the best hydrology study of the double-inlet channel decades old, researchers are hoping a simple experiment using citizen scientists can update information for the 20-mile system stretching from North Palm Beach to Boynton Beach.



**NextEra Energy retirees toss drift cards from Manatee Lagoon for a scientific study on how ocean currents and marine pollution move on Thursday in Riviera Beach.** [GREG LOVETT/PALMBEACHPOST.COM]

On Thursday, the non-profit Angari Foundation dropped 240 biodegradable wooden cards about the size of postcards throughout the lagoon. The so-called “drift cards” float on the water’s surface and at the will of currents.

Anyone who finds one of the bright pink cards is asked to note the location and contact the West Palm Beach-based foundation.

The information on water flow will help with future lagoon projects — telling where vegetation will flourish and where pollutants stagnate.

“One hundred years ago the lagoon was a freshwater lake with lily pads and alligators. We made it what it is today,” said Reinaldo Diaz, spokesman for the Lake Worth Waterkeeper advocacy group. “That’s why these kinds of studies are super important because we are starting from scratch in a way, and have an opportunity to engineer something better.”

Thursday’s card drop was the fourth since 2017 for Angari. It is timed to precede Earth Day, which is typically book-ended by multiple community and volunteer clean-up events when the cards will have a better chance of being found. Earth Day 2019 is Monday, April 22.



**The West Palm Beach-based Angari Foundation has dropped dozens of biodegradable cards into the Lake Worth Lagoon for a hydrology study. It's asking anyone who finds a card to note its location and contact the foundation at [lagoondrift@angari.org](mailto:lagoondrift@angari.org) with the information.** [ANGARI FOUNDATION]

Past releases have resulted in about a 20 percent return rate, and while years of data may be needed before reliable water routes are mapped, there have already been some surprises.

“So many of the cards are making their way out into the open ocean,” said Amanda Waite, Angari’s director of science education and advancement. “The farthest one north was Juno and to the south, Hillsborough Inlet.”

Angari added release sites near canals this year because so much of Palm Beach County's watershed drains through them into the lagoon, which empties into the ocean at the Lake Worth Inlet and Boynton Beach Inlet. The cards are made with thin, un-treated plywood, and painted with non-toxic paint. They are designed to break down after a few weeks in the water.

"We know we have huge tidal fluxes, the currents are really strong and tidally driven, but there are so many more localized near shore currents and those are the things we don't have a good handle on," Waite said. "When you put in coastal infrastructure, such as marinas and natural areas, those will change the way water flows."

Until the mid-1800s, the flow of water into the Lake Worth Lagoon was primarily ground seepage.

The Lake Worth Inlet, also called the Palm Beach Inlet, was first cut in the mid-19th century to open the lagoon to the Atlantic Ocean. In 1918, the inlet was stabilized and the channel widened and deepened to benefit the Port of Palm Beach.

In 1925-1927 the Boynton Inlet, or South Lake Worth Inlet, was created.



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Since 1998, \$88 million has been dedicated to removing exotic plants from the lagoon, and restoring its oysters, sea grasses and mangroves. The county's Environmental Resources Management has pursued projects including the creation of the Snook Islands, north and south of the Lake Worth Bridge, and the construction of artificial reefs.

In 2008, the Lake Worth Lagoon Initiative was created to consolidate local restoration efforts.

“Understanding the nuances of how water is moving around the lagoon will give us a good idea of where we want to restore sea grass habitat,” Diaz said. “Also, by knowing where the water is moving, we can find out where most of the plastic is coming from.”

Angari's drift card study is modeled after a 2016 project that began in Biscayne Bay when the Vizcaya Museum and Gardens wanted to know where growing piles of marine trash was coming from.

Researchers at the Consortium for Advanced Research on Transport of Hydrocarbon in the Environment, or CARTHE, now release 440 cards from 11 sites in the bay four times a year.

“There is a lot of good that can come from a simple study,” Diaz said.

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