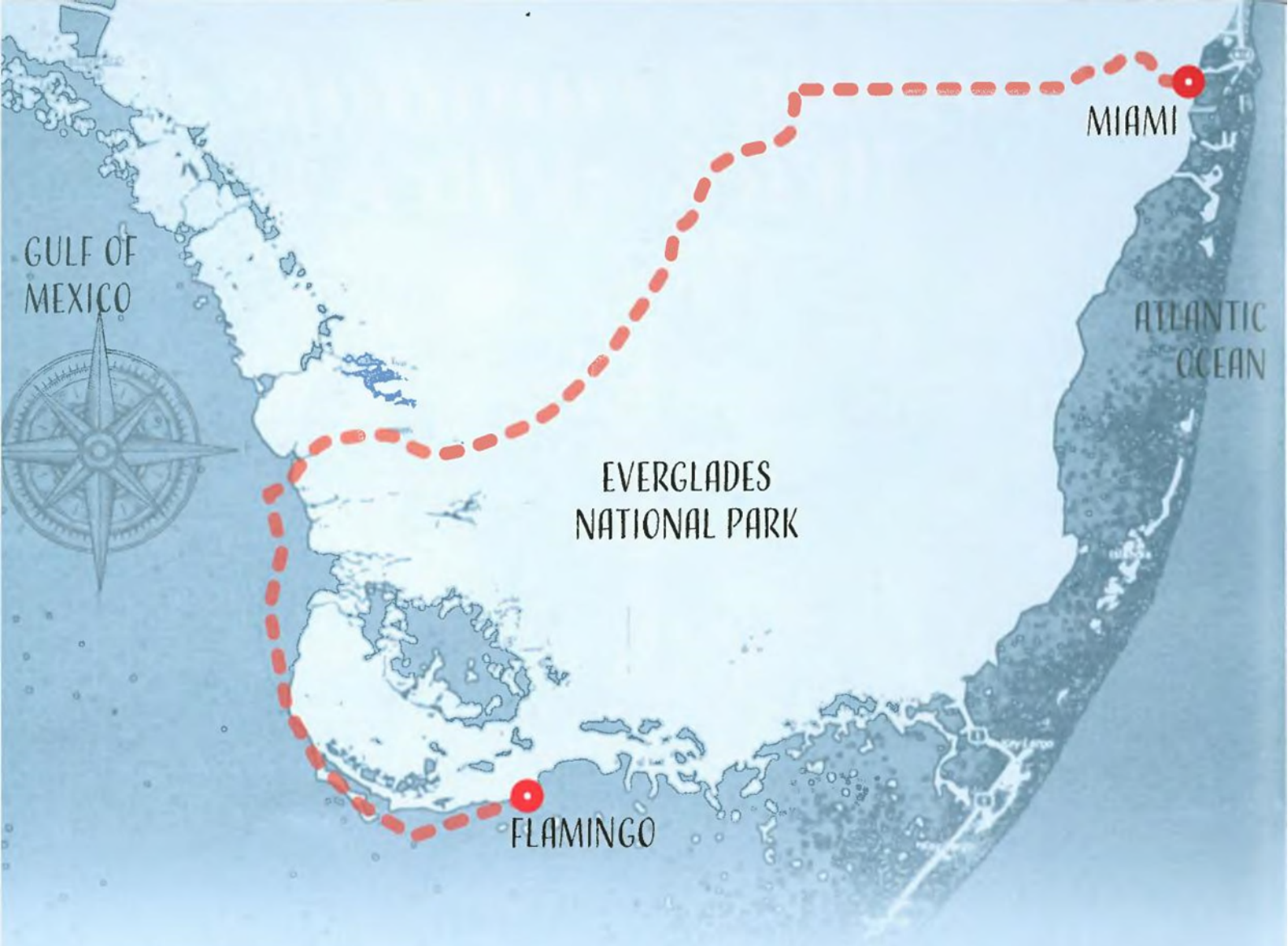
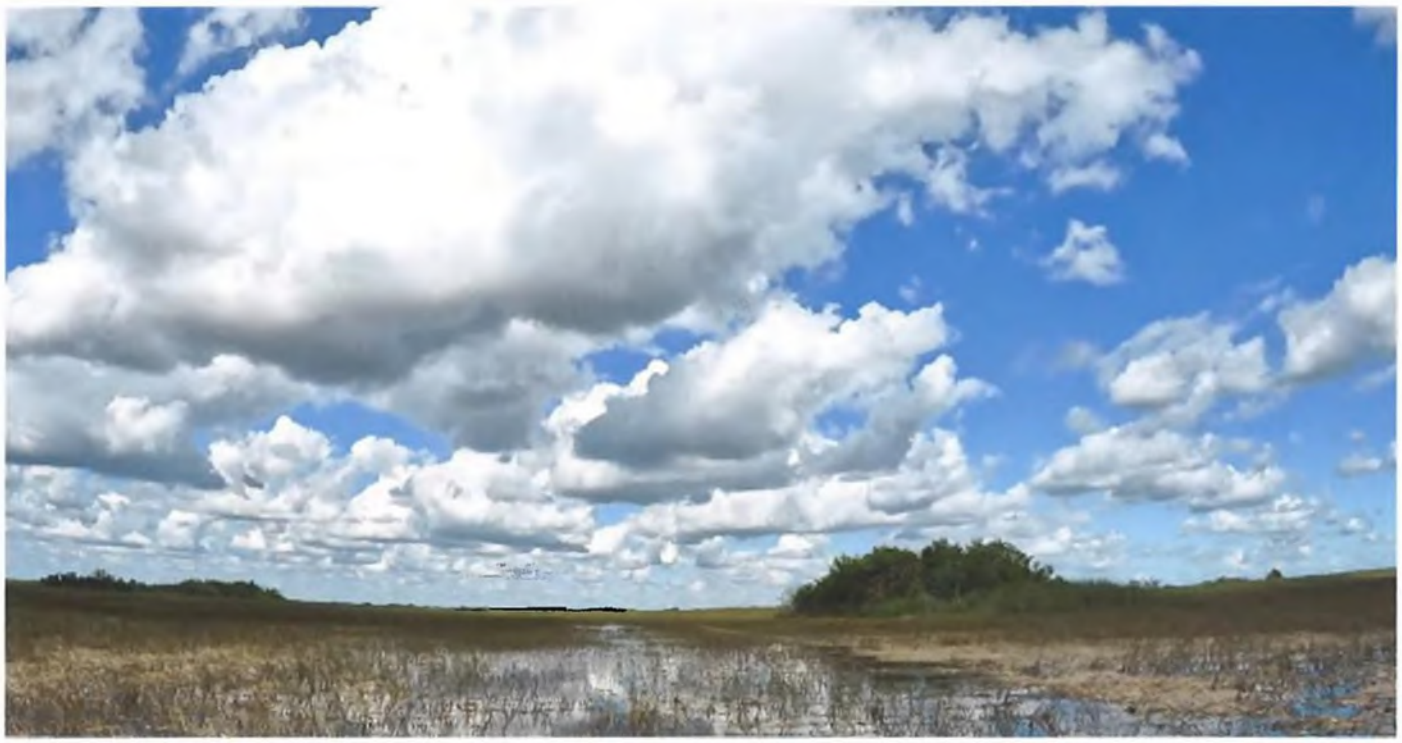


RETRACING HISTORY

Everglades trek a challenge for a modern Willoughby Expedition



PHOTOGRAPHS COURTESY OF THE WILLOUGHBY EXPEDITION

While the Everglades is much changed, the horizon-to-horizon sky is likely a scene shared by both expeditions.

BY **CINDY SPENCE** (BS '82, MA '17)

IN 1897, HUGH WILLOUGHBY PADDLED into the Everglades wilderness with science and adventure on his mind.

On his 30-day trek into a landscape he called terra incognita, he kept field notes, logging creatures and plants and keeping a glossary of Seminole vocabulary he picked up along the way. From his dugout canoe, he also collected the first samples of Everglades water and sent them to a university lab up north, establishing a baseline for water quality in the River of Grass.

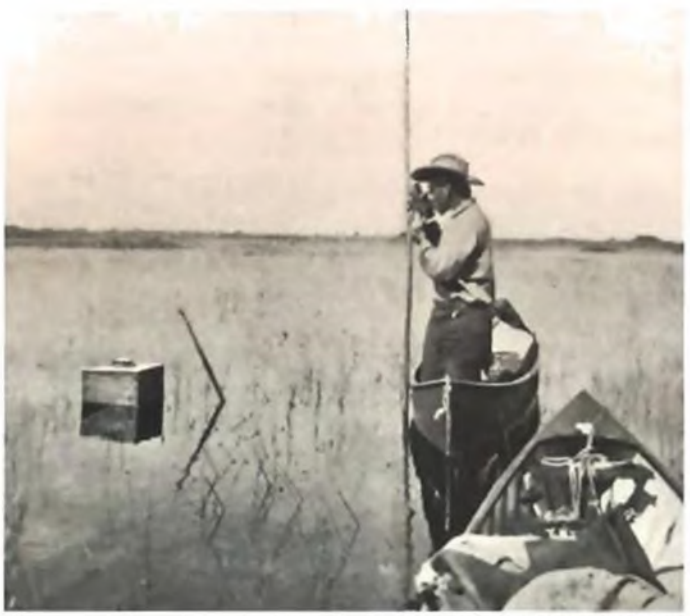
More than 100 years later, **Christophe Vandaele** was indulging his love of history and old books, rummaging through a used book bin at a shop in South Florida. One book caught his eye: "Across the Everglades: A Canoe Journey of Exploration."

Vandaele, a former Belgian Special Forces member with a taste for adventure, snapped up the book, kept it on his coffee table for a while, then one day picked it up again and decided to look up the author.

"I started researching Hugh Willoughby," Vandaele says, "and I realized this is not just some guy."

Willoughby was learned and accomplished in many ways, but Vandaele was most interested in one thing. Willoughby was the first non-native traveler to cross the Everglades from coast to coast, starting at the mouth of the Harney River near Flamingo and ending at the Miami River.

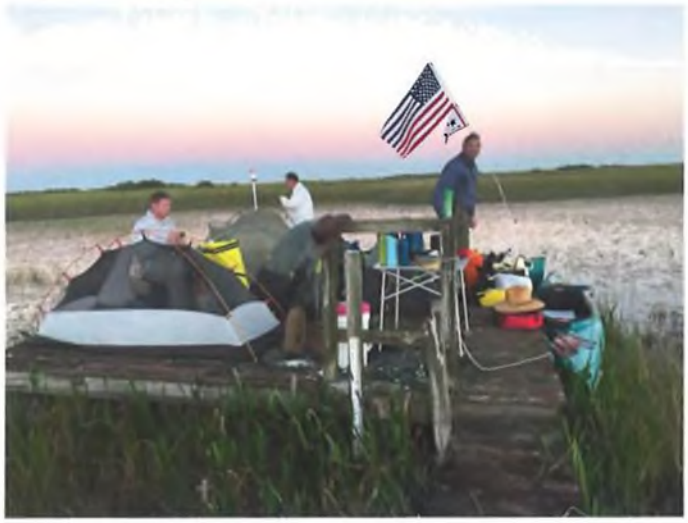
Inspired by Willoughby, an idea took shape. Vandaele began to query friends: Would they accompany him on a trek to retrace Willoughby's path? There were no takers, and he sat on the idea for a while, until a chance meeting at his child's Palm Beach County school. There, he met **Harvey Oyer III** (BA '90, JD '98), who immediately signed on.



HISTORICAL SOCIETY OF MARTIN COUNTY

Explorer Hugh Willoughby in the Florida Everglades, 1897.

Between Vandaele and Oyer – two modern-day gentleman explorers – there are multiple expeditions across the globe, to the North Pole and deep into jungles and across mountain ranges.



On the second night, the team slept on an old wooden platform that used to be an experimental station.

Their next expedition, they decided, would be the one right in their back yard.

The Willoughby Expedition 2022 was born.

Florida Roots

Oyer's great-great-grandparents were the first non-native American settlers of southeast Florida in 1872, so his interest was almost genetic. The timing was good. The team would embark on the journey on the 125th anniversary of the original expedition and on the 75th anniversary of Everglades National Park. Oyer hoped the journey would draw attention to the value of preserving the Everglades, a World Heritage site.

Vandaele and Oyer pulled in **Carlos "Charlie" Arazoza** (JD '86), an experienced Everglades guide, to help with orienteering.

"We had all done some of the segments before, so we each knew some of the terrain," Oyer says.

Oyer is the author of a children's book series, "The Adventures of Charlie Pierce," that takes place in and around the Everglades, and he says part of the value of the expedition was exposing youngsters to the natural world at the tip of Florida.

Every morning the team Zoomed with schools in Miami-Dade and in Palm Beach County in a partnership with the Cox Science Center, which did a Junior Willoughby Explorer program.

"This was a great opportunity to share with the world what the Everglades are, what they used to be, what they are today, possibly where they're headed tomorrow," Oyer says.

Oyer was intrigued, too, by the idea of repeating Willoughby's water testing.

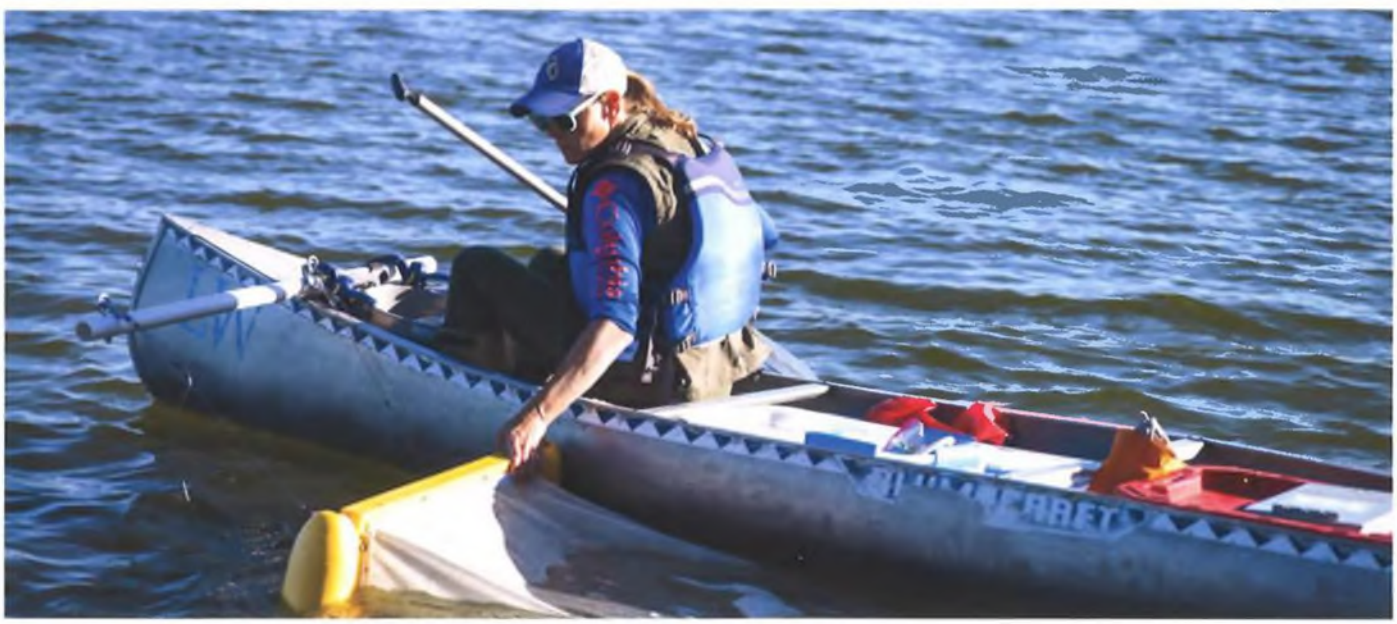
"Even the idea of taking a water sample is pretty advanced for 1897, let alone marking the coordinates."

Floating Science Lab

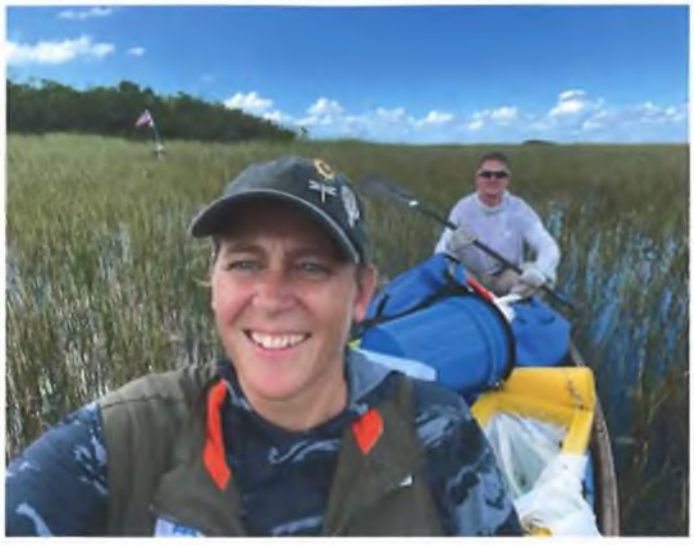
Oyer and Vandaele decided to expand on Willoughby's science by adding sampling for emerging contaminants. As an alumnus, Oyer thought UF might be willing to help, so he called the Water Institute looking for an expert to give them a crash course in water chemistry. He ended up chatting with **Tracie Baker**, an associate professor in the Department of Environmental and Global Health in the College of Public Health and Health Professions.

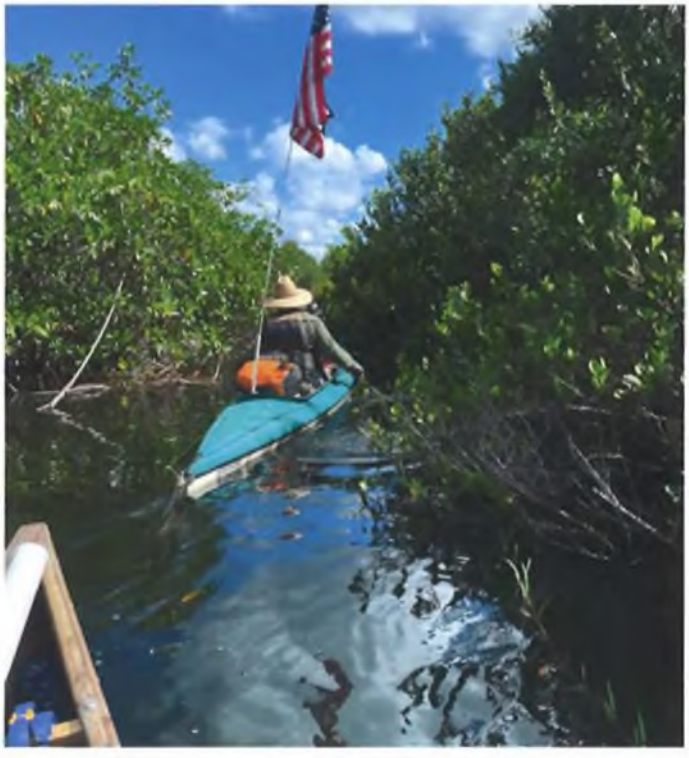
"We had a conversation about microplastics and what you would need in order to collect them, and how you would do that in a canoe," Baker says.

Baker, recognizing a unique scientific opportunity, suggested the explorers also test the water for antibiotic resistance genes,



As the scientist for the expedition, Tracie Baker's job was collecting the water samples. She tested her lab gear in a trial run on Lake Wauburg. Here, she is trying out a collection net for microplastics, after modifying the design to keep the contraption from sinking.





ABOVE: Tracie Baker and Harvey Oyer III shared a canoe that functioned as a floating laboratory.

AT RIGHT: Christophe Vandaele squeezes through the mangroves in his vessel, the Willoughby II.

eDNA, pesticides and PFAS, manmade chemicals widely used since the 1940s in industrial and consumer products. After all, it's not everyday scientists travel to the most remote regions of the Everglades.

It soon was clear that taking the samples and storing them in a way to keep them useful for science was a challenge. Water chemistry could not be boiled down to just a few conversations.

"Harvey said later he could tell I was concerned about how much they were absorbing," Baker says.

When she offered to be the "science officer" on the trip, they jumped at the offer and she could sense their relief, but now the pressure was on her.

"All of a sudden, the conversation went from me helping them figure out how to sample, to me going on this expedition and doing all this other stuff, too."

Baker's lab swung into action, figuring out how to turn a canoe into a floating lab. They descended on Lake Wauburg armed with sampling equipment and figured out how to fit nets and pipettes and beakers into the canoe Baker would share with Oyer, her new lab partner.

"We went out to Lake Wauburg, and we arranged the gear in canoes to figure out how I would get to everything," Baker says. "I couldn't get out of the canoe, so if I was sitting in front, how would I reach everything?"

She express-ordered a floating collection net from Australia, which arrived in time, but sank when she tried it out on the lake. Baker, a forming engineering school adjunct, rigged buoys to keep it afloat.

"Being able to do the Lake Wauburg test run was pivotal," Baker says. "We tested the gear on a Friday and left the next Tuesday."

Oyer says the original team could have handled the simple tests Willoughby did.

"I thought, 'how hard can it be?' We just put some water in jars and mail them to Gainesville," Oyer says. "But the other substances had different handling requirements. Some could be in plastic jars, some needed to be in glass jars. With some, you can wear sunscreen, others you can't."

The Need for Testing

Additional tests were important, Baker says, because traces of some chemicals are popping up everywhere.

"They come off anything that's waterproof, but also they're in makeup and personal care products and microwave popcorn bags and fast food wrappers. Some of these things have health effects and we're ingesting them."

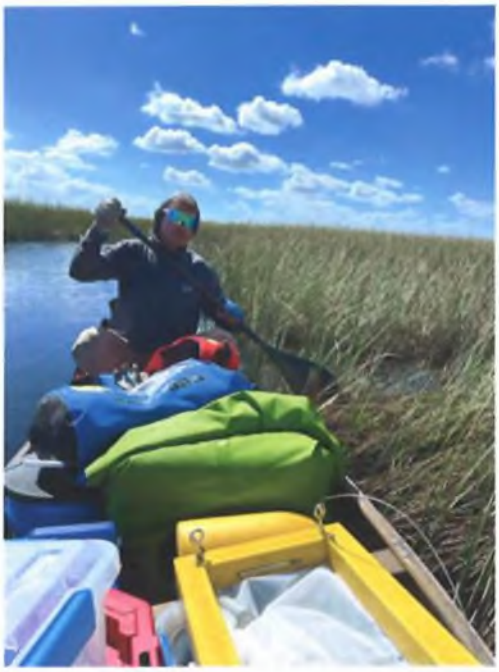
And eDNA testing helps with forming an accurate census of wildlife. Getting deep into the Everglades to survey wildlife is difficult, and even then, some creatures might never be seen. But animals shed their DNA in their urine and feces, and that ends up in the water. So testing the water provides a genetic ID that helps in determining which creatures call the Everglades home.

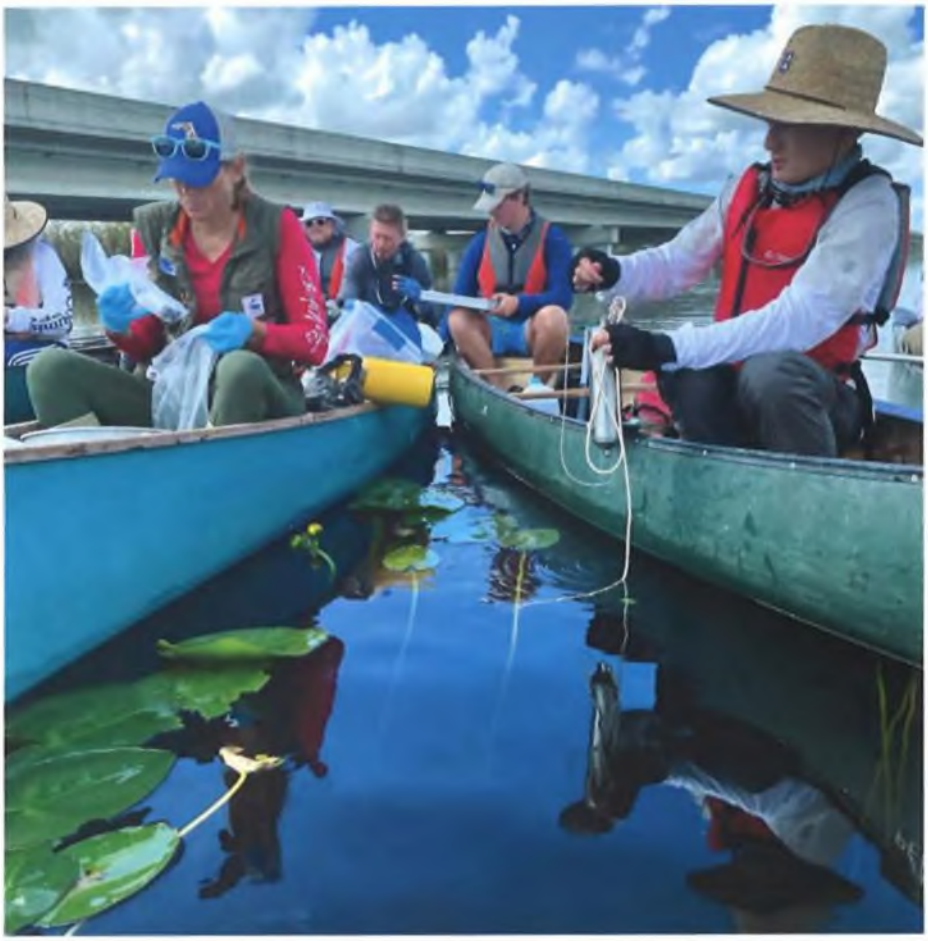
Baker says the tests are a starting point, almost a survey, and are being funded by Florida Power & Light Company. Preliminary results showed microplastics in every sample, some more than others. Each testing site also turned up pesticides and PFAS and most turned up pharmaceuticals.

When the final test results are available, scientists hope to determine how contaminants are moving across the Everglades and whether mangroves and seagrass are able to filter them.

"Hopefully, we can get more people looking at the Everglades and helping with taking these chemicals out," Baker says.

Baker's science expertise was unquestioned, and when it came to trekking, Baker had chops of her own. Her childhood vacations with her Marine dad revolved around camping and hiking. And





ABOVE: The packed lab canoe left just enough room for Oyer to paddle.

AT RIGHT: Along the Tamiami Canal, the team picked up volunteers from Belen Jesuit Prep School, which gave them a classroom to sleep in overnight.

Baker, an All-American swimmer in college, had completed five Ironmans, 20 marathons and hiked the north country in Alaska. In retrospect, the team said, Baker is likely the first non-native woman to cross the Everglades coast to coast in one journey.

"She was spectacular," Oyer says. "On an expedition, physical fitness is only half the battle. You have to be mentally strong. It's just hours and hours and days and days of exertion, and mental endurance is harder than physical endurance."

Oyer says Baker's job was the hardest.

"She physically had to do everything we did, but then she also had to do her science experiments and stay up after everyone else went to bed, or get up early. And keep track of 30, 40, 50 jars."

From Coast to Coast

On Oct. 27, Arazoza strapped a GoPro to his noggin and began chronicling the modern-day Willoughby Expedition.

"Day 1, the mouth of the Harney River, ready to head inland. We've been paddling for 20 minutes, and the mouth of the Harney doesn't seem to be getting any closer."

As he narrated and paddled, Arazoza noted the ways the Everglades can trick a traveler. In open water on the Harney, the distance is deceptive. But perhaps the most challenging aspect was navigating sawgrass.

Seated and paddling, they could only see a foot or so ahead. With the sawgrass towering above their heads by about six feet, even standing up did not yield a better view. So Arazoza looked down. As an experienced Everglades paddler, Arazoza used the water flow along the bottom to tell where to go.

"There are a thousand ways to go wrong, and one way to get there right," he narrated. "The trick isn't to get to the grass; the trick is to get to the grass where the airboat trail is."

In Willoughby's day, the indigenous inhabitants of the Everglades left well-traveled paths, and Willoughby followed them. In the modern Everglades, airboat trails make navigation possible.

"If it wasn't for the airboat trails, going through the sawgrass would be impossible," Arazoza says. "That might sound like cheating, and it might not sound like what Willoughby went through, but the reality is that in Willoughby's day, the Seminoles and Miccosukees were transiting this area regularly, and the water levels were much higher. So he was basically following their trails, like we're following the airboat trails.

"He had advantages, we have advantages," Arazoza says.

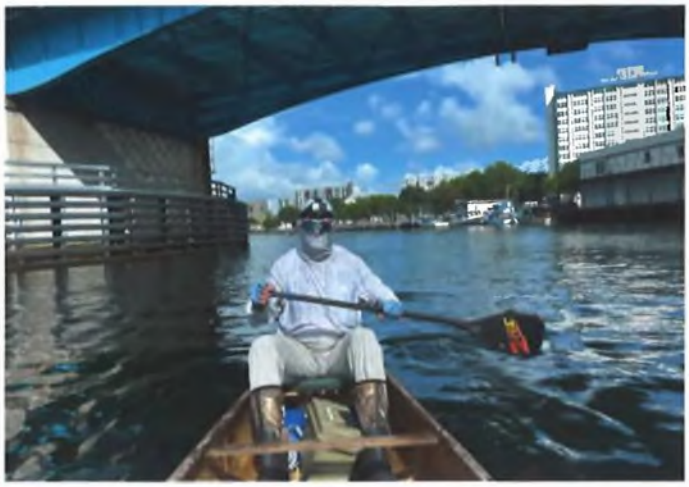
On Day 4, they encounter three airboats and paddle aside to let them pass.

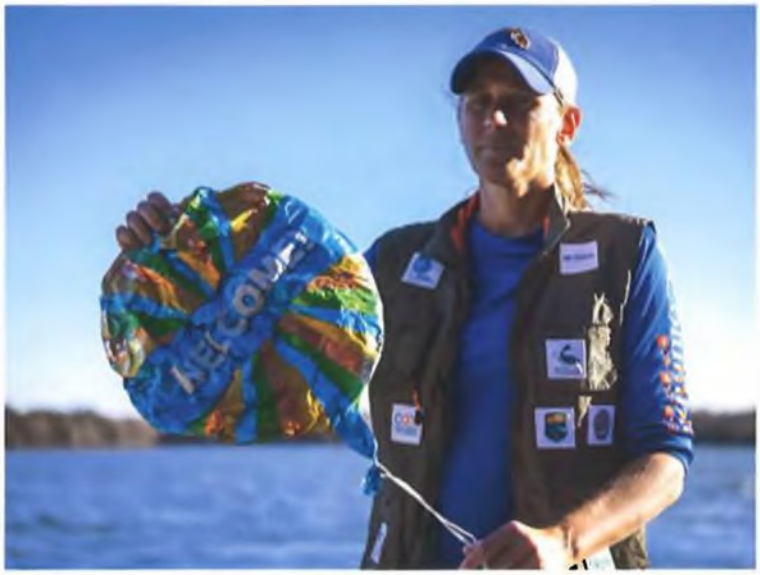
"Now the traffic jam's over," Arazoza says.

The sawgrass proves to be the most taxing segment. On Arazoza's GoPro, you can hear the sawgrass scraping the canoe and Arazoza grunting from the exertion of padding through it.

One night, they knew from the GPS that the levee they wanted to camp on was on the other side of some mangroves, maybe 60 meters away.

"We would go forward and get caught, then go backward," she said. "The levee was right there on the other side of these





AT TOP: Once the team hit the Miami River, all signs of the old Everglades disappeared.

AT LEFT: Baker and Oyer collected six Mylar balloons within reach of their canoe, a sign, Baker says, that the urban world can intrude on even the most impenetrable regions of the River of Grass.

The popular impression has always been that the Everglades is a huge swamp, full of malaria and disease germs. There was certainly nothing in our surroundings that would remind one of a swamp. Around the shores of the little islands the mud may be a trifle soft, but pure water is running over it, and no stagnant pools can be found. In the daytime the cool breeze has an undisturbed sweep, and the water is protected from overheating by the shade the grass affords. ... As will be seen by the analysis, this water is quite wholesome to drink . . . I had no hesitation in drinking it whenever the canoe stopped, taking two or three glasses at a time, when thirsty from the exertion of poling."

From **"Across the Everglades: A Canoe Journey of Exploration"** *Hugh Willoughby*

mangroves, but it took us three hours."

The Everglades

In Willoughby's day, the Everglades was on the verge of becoming a commodity, a swamp to be drained and tamed, not a World Heritage Site.

The lush landscape of abundance that came to be known as the River of Grass was filled to the brim with life: fish, rookeries with all kinds of birds, small mammals and, of course, the not-yet-endangered alligators and panthers.

In the most remote areas, Baker says she imagined she could see what Willoughby saw.

"Once you get past the places where you are basically pulling on sawgrass or macheteing through mangroves, you come to an area where really no one goes that seems very pristine, untouched."

Except for one reminder of the modern world in even the most impenetrable spots: Mylar balloons.

"We could only see five feet in either direction, so the fact that we found six balloons . . ." Baker says. "There have to be so many out there."

Among the creatures they kept an eye out for were alligators, crocodiles, water moccasins, pythons, spiders and mosquitoes. But they didn't see a single mammal, casualties of the pythons that have taken over as the apex predator of the Everglades.

The Everglades sky, blue from horizon to horizon by day and filled with stars on the clear nights, might be the one thing they shared with Willoughby.

Paddling into one evening, Arazoza talked into his GoPro: "Welcome to the River of Grass. We have about three and a half hours to go. The moonlight from behind makes it look like you're paddling on milk. Very peaceful."

Oyer and Vandaele say the expedition might not compare to a trek into the Arctic or the jungle, but it is special in its own right.

"We tend to think of adventures as happening in these romantic faraway places," Vandaele says. "But we can have great adventures right in our back yard."