The key to Florida beaches' hurricane recovery: The humble sea oat

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Sea Oats. Credit: Wikimedia Commons Creative Commons Attribution-Share Alike 4.0 International

From eye level, the wisps of green emerging from sand dunes up and down Pinellas County's barrier islands look sparse, stubby, almost tentative as they peek at the sun. Below the surface, though, they are spreading out, trapping sand in place and acting as a sort of skeleton for a whole ecosystem.

These are young sea oats, unassuming plants that allow our beaches as we know them to exist. They stabilize the dunes, which are both a critical habitat and a buffer protecting the human-made environment from storms. Without sea oats and other beach plants stabilizing it, a dune isn't much more than a big pile of sand, doomed to time and tide.

Over the past six months, 523,520 of these plants have been nestled into Pinellas sand, with 80,000 more to come, part of a massive restoration of a coastline brutalized by Hurricane Idalia last fall and again by a December storm.

The commercial market for sea oats is driven by beach restoration, and the Pinellas project, combined with others on storm-battered beaches around the state, has created an unprecedented demand for sea oats, one so great that Pinellas put planting on hold earlier this year: It had depleted its available supply.

EarthBalance, an environmental restoration company based in North Port, took its first dune-planting job at Myrtle Beach, South Carolina, in 1998. Today, it's the major supplier of such plants in the southeast. When Pinellas came calling, EarthBalance agreed to dedicate its entire available stock to the dune project. It had to grow more to meet demand.

"We've planted a lot of beaches in our day," said Sarah Laroque, its president and CEO, who has worked for EarthBalance for three decades. "We've never seen this much demand."

Sea oats can grow in the wild, sure, but beaches like those in Pinellas aren't natural. Barrier islands are shape-shifters, moving constantly based on storms and erosion. When humans built roads and condos and surf shops and WaveRunner rentals on them, they established a way of life that would be threatened if nature were allowed to take its course.

It's for that reason that most sea oats planted in Pinellas—and all over Florida's beaches, and the South Carolina shore, and Texas' gulf coast—come from one place. And to see where they begin, you have to get pretty far from the beach.

A sea of oats

Head south, across the Sunshine Skyway bridge and into Manatee County, until you hit State Road 70. Take it east, into Florida's interior. Cattle and citrus country. The beach is an hour and change behind but feels farther away. Before long you'll hit Arcadia, population 7,500 or so, the DeSoto County seat. Pass the feed and hardware store advertising custom-made ranch entryway signs, pass the western wear shop with the rodeo mural and turn right.

Ten minutes down the road, just off U.S. 17, there are a couple of low-slung buildings and, beyond them, a big enough greenhouse to cover 16 NBA regulation-size basketball courts. Inside, what you see first are the almost endless rows of seed trays growing wiry, grassy sprouts: 1.3 million sea oats.

EarthBalance was founded nearly 40 years ago and does other kinds of work—growing upland natives and freshwater aquatics, sending crews

on swamp buggies and airboats into nature preserves, where they hack out invasive plants. But something is happening with beach plants now that the company has never seen. Last week, all 1.3 million sea oats in that greenhouse were spoken for, with many heading to Pinellas.

Once sea oats are planted, their root systems can grow 40 feet deep and help keep sand and soil from washing or blowing away. Their stems bat down more sand floating on the sea breeze. As the sand accumulates, dunes grow.

In Pinellas, the plants are one piece of a project to which the county has dedicated more than $30 million since last fall. It is, by far, the largest beach-planting project the county has undertaken, said John Bishop, its coastal management coordinator.

EarthBalance can go a year or two with no beach planting jobs. But more erosion means more work, so storms keep the company busy. The one-two punch of Hurricane Ian in 2022 and Idalia last year have left coastlines all over the state in need of restoration. This year alone, Laroque said, EarthBalance expects to install about 7 million beach plants, with no sign of demand slowing down.

The need for beach plants presents both a business boom and a quandary for EarthBalance. It is by far the largest grower and distributor of such plants in the region, Laroque said, but even it has only so much capacity. The company is adding 25,000 square feet to its greenhouses, but space isn't its only limitation. Sea oats may look uncomplicated, but the process of cultivating them is complex. That's why other nurseries don't grow so many, and why EarthBalance values the seed at $500 to $1,000 per pound.

"It's not easy," Laroque said, "or everybody would do it."

'Many sleepless nights'

EarthBalance's nursery manager is Joe Hayden. He has tan forearms and inquisitive blue eyes. Hayden comes from a family of citrus growers. His grandfather ran the only grocery store in Fort Ogden, a small community south of Arcadia. He went to college for architectural design but, after getting his degree, found that he missed working with plants.

"The first week of sitting there drawing a house, I'm like, 'I can't do this. I can't sit inside,'" he said.

He spent the next 27 years growing orchids. He got good at it. Sea oats may not sell at retail, but if you bought an orchid at a Lowe's or Home Depot near the start of this century, there's a good chance Hayden had something to do with it. Six years ago, he started working with sea oats.

"You know, everyone says orchids are very difficult," he said. He gestured at the greenhouse full of sea oats. "This is … many sleepless nights."

The complicated nature of sea oats begins with their parentage. Sea oats are protected in Florida, so EarthBalance needs the permission of landowners—sometimes a state or local government, other times a condo association—to harvest. Harvest season is a narrow window, about a month in September or October. Field crews collect panicles, the golden-brown seed heads that give Uniola paniculata its common name. A large panicle with many spike-shaped seedpods may contain only a single seed.

EarthBalance dries the panicles and sends them to a company that "cleans" them, separating the seed by tumbling it in a piece of equipment. This is a delicate process, Hayden said, "The seed has a little tiny embryo. If it gets broken off, the seed is no good."

Even when done carefully, by the end of the cleaning process, 10% of the collected seed might be viable, Hayden said. It's then that his expertise takes over. He knows how long in cold storage will give the plant the best chance at germinating (three to four months). He's devised a precise schedule of hand-watering and nutrient use, and he can tell how healthy they are by running his hands through the sprouting stems or glancing at their roots.

He designed both the nursery's fertilization apparatus and its decidedly low-tech bird-protection system: aluminum pie-tin sentries with billowing streamers and googly eyes. And he is constantly watching for signs of the fungal and insect-borne diseases that, if left unattended, can wipe out a greenhouse full of young sea oats.

Harvesting a seed and growing it into the 10- or 12-inch-tall plant a buyer wants takes about six months. The urgency of the Pinellas dune restoration project meant growing plants in the winter, when the process is at its slowest.

"It's a living plant," Laroque said. "We can only make them grow so fast."

The line of defense

After decades of growing coveted flowers, Hayden said he considers cultivating sea oats and other native plants his contribution to a bulwark against environmental degradation.

"There's so many people moving to Florida, and they want to be part of Florida," he said. "But Florida's disappearing, the natural environment of Florida. And it's the beauty that's disappearing every time you put in a house and concrete."

EarthBalance's work, Laroque pointed out, is part of a decadeslong shift in large-scale environmental management philosophies, which have gone from trying to hem in beaches with jetties and sea walls to renourishing them with fresh sand and plants.

That story's next chapter is unfolding. Climate change caused by human carbon emissions will mean more frequent, more destructive hurricanes reshaping coasts. Pinellas County's ongoing standoff with the U.S. Army Corps of Engineers over its renourishment policies has underscored the precarity of life on the barrier islands, which, without the beaches' protection, are vulnerable even to routine winter storms.

After Hurricane Ian ripped through Florida, it boomeranged back into the South Carolina coast as a Category 1 storm. In Myrtle Beach, it carved open dunes EarthBalance first planted in 1998. For Laroque, it was an unusual chance to see a cross section of work from long ago. Where only the tips of plants had been visible, she now saw stalks as tall as a person.

"We could see all the root nodes," she said, "all the way down."

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