ENVIRONMENT

Rising tides are killing saltmarsh sparrows. A RI group has floated an idea to save them

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Alex Kuffner *Providence Journal* September 17, 2025

- The saltmarsh sparrow population has declined by nearly 90% since 1998 due to rising sea levels flooding their ground nests.
- A research group in Rhode Island is using homemade floating nests, or "arks," to save sparrow chicks from drowning during high tides.
- Despite local efforts, the species faces extinction within decades without broader action, such as an endangered species designation.

WARREN – Cooper White parts a tuft of salt hay at Jacob's Point Marsh to reveal a teacup-size bird nest with three little chicks inside.

They're saltmarsh sparrows, featherless, blind and silent, only a day or two old and huddled together for warmth. White gently lifts out the perfectly woven nest, careful to untangle it from the blades of grass that the mother sparrow has deftly folded over to hide her brood from coyotes, raccoons and other predators.

He hands the nest to Jim O'Neill and then gets to work, trying something that no one anywhere else is doing in the fight to save a bird species that could be the first driven to extinction by rising seas.

White sinks a plastic pipe into the ground and then drops a wooden dowel inside with some hand-cut floats and a mesh coffee filter secured to the top. O'Neill places the nest into the basket-like filter and the two men do their best to conceal it again in the dense vegetation that covers this 38-acre marsh on the eastern edge of Narragansett Bay.

If all goes as planned, when the tides come in and flood the marsh over the next few days, this DIY life raft and its

precious cargo will go up with the water rushing in from the nearby Warren River instead of going under it.

O'Neill and White are part of the Saltmarsh Sparrow Research Initiative, a project started in 2018 to study the local population of a secretive songbird whose numbers all along the Atlantic Coast have gone into free fall as tidal flooding exacerbated by sea level rise drowns ground nests that would previously have stayed dry.

This is the eighth season of field work for the team of about half a dozen people. Somewhere along the way, they pivoted from passive observers of the 100 or so sparrows that nest each summer at Jacob's Point to active participants in their fates.

No longer are they simply recording data on which nests are able to withstand the incoming tides, how many chicks drown and how many successfully fledge and leave the nest. Now, they're moving as many nests as they can into their homemade flotation devices in a last-ditch bid to help save an animal that could disappear in as little as a decade.

They call the technique that they invented "arking." Deirdre Robinson, the co-founder of the initiative who's surveying nests in another part of the marsh on this late July morning, coined the term.

"Because that's what we're trying to do, to build an ark," she says. "This is Noah's Ark."

Ingenuity takes on rising sea levels

Scientists don't usually cross over from observation to intervention. But for the Jacob's Point team, the decision was easy.

It may have been in part because they're citizen scientists. Robinson was a professor at the University of Rhode Island, but her field was physical therapy. A lifelong birder, after retiring, she went on to get a master's degree in biological sciences at the school, writing her thesis on another imperiled shorebird, the piping plover.

Her fellow co-founder, Steven Reinert, is a retired health care analyst who is well-known in Rhode Island's tight-knit community of birders after spending decades studying and writing about the state's rich avian life. O'Neill, an amateur birder who joined up with them later and now helps direct the initiative, is retired from a career in administration at Boston College.

None of them is attached to any educational institution or government agency, so once they secured state and federal clearance, there wasn't much bureaucracy to get in the way of their decision to start interceding on the sparrow's behalf.

But the bigger reason for their willingness to take action can be found in the data. Around about the fifth year of recording nesting activity, they'd seen enough. Even on a marsh considered among the healthiest in Rhode Island, saltmarsh sparrows are fighting a losing battle.

Marshes naturally gain elevation through accretion as waterborne sediment is trapped by salt hay, smooth cordgrass and other plants that grow on their surface. As vegetation naturally decomposes, it adds to the underlying layers of carbon-rich peat that form the foundation of marshes.

Until the modern era, the rate of accretion more or less kept up with the rate of sea level rise. But as glaciers melt, waters warm and expand, and ocean currents change, seas along parts of the Atlantic Coast are rising faster than at any time on record.

By some estimates, water levels are rising at nearly twice the speed that marshes are gaining elevation in Rhode Island. As a result, plants adapted only to sporadic tidal inundation are dying in pools of standing water, and marshes are rapidly eroding. The state has lost nearly a fifth of its marshland since the 1970s.

The saltmarsh sparrow, the rare species that spends its entire life on coastal marshes, is on the front lines of these changes. Found exclusively along a narrow ribbon of shoreline along the East Coast, the bird spends its summers nesting in marshland from southern Maine to Virginia and winters in a region from the mid-Atlantic states to Florida and around the Gulf Coast to Texas.

The enigmatic bird has carved out a niche over thousands of years, building grassy nests on or near the ground in the upper reaches of salt marshes, above the high-tide line. To live in this regularly flooded habitat, it must synchronize its breeding between the extreme tides pulled in by the new moon.

But now, not only is the sparrow losing nesting space to increasingly higher tides, its breeding window is being squeezed ever tighter as waters reach further inland. The impact has been devastating. Nearly nine out of 10 saltmarsh sparrows have disappeared since 1998.

Without help, O'Neill, Robinson and scientists elsewhere reason, the species will go extinct.

The Jacob's Point team first tried building mounds on the marsh to elevate nesting sites, utilizing a technique that's been tried in Connecticut and other states. But to do it right, they had to bring

in large amounts of sand that could be layered with peat and vegetation. It proved to be too much work for not much payoff.

“We couldn’t create enough height,” O’Neill says. “The tides are so high now.”

They went back to the drawing board and came up with the idea of something that could rise in place with the incoming water.

With permission from the U.S. Fish and Wildlife Service, the Rhode Island Department of Environmental Management and the Warren Land Conservation Trust, which owns Jacob’s Point, they moved forward with the idea.

They sourced the parts from local hardware stores on the cheap. The cost of each setup is less than $10. Everything fell into place quickly, from the PVC pipe that would act as an anchor to the floats O’Neill cut from foam floor pads. But when it came to deciding on the most important part at the top, they were stumped.

Robinson’s partner suggested a wire-mesh coffee filter. It would prove to be the perfect size to hold a saltmarsh sparrow nest.

Preserving something unique

White and O’Neill set out across the marsh at 6:30 on a Friday morning. It’s a few days before the new moon, when the highest tides of this lunar cycle are expected.

Saltmarsh sparrows have learned through trial and error to time their nesting to perfection. The female has up to four chances to raise a brood during the mating season between May and August. She doesn’t instinctively know the schedule of the lunar calendar, so her first nest usually floods. But she’s driven to build again immediately after the waters recede, in this way lining up the breeding cycle with the tides.

Once she mates, the clock starts ticking. She lays her first egg five days after copulating and will lay two or three more. She will incubate the eggs for 12 days. After hatching, the chicks grow quickly, but they're typically not strong enough to climb the vegetation above any floodwaters until they're eight days old. Only around the ninth day are they ready to leave the nest.

That's a period of 26 days, more or less, from beginning to end that needs to be squeezed into the

29 days that elapse between new moons.

The first set of rising tides are expected the next day, so O'Neill and White, a biology major at the University of New Hampshire who's interning with the initiative, want to get all 10 nests on their list into the safety of their arks by the end of the morning.

As they squelch across the spongy ground, other birds nesting on the marsh raise the alarm. Willets fly by and shriek at the human interlopers while ospreys squeal from their nesting platform.

The Jacob's Point sparrows seem to be shifting inland, moving away from the outer edges of the marsh that are most prone to flooding. But there are still holdouts. White points out one nest that sits just above a creek that opens onto the river.

The mother bird has otherwise done everything right, locating her nest on the highest part of this patch of marsh and concealing it within a clump of cordgrass. She's also built a tight structure with a deep cup that holds her eggs securely in place.

"This one is just beautifully woven," White says. "It's an amazing piece of engineering, to think that they can make this from things they find in the marsh."

But without intervention, it would almost surely be swamped. The same is true of another nest, not nearly as structurally sound, that also needs to be arked. It's located on the other side of the channel and set upon what appears to be nothing more than a thick mat of vegetation surrounded by water on three sides.

As Robinson meets up with O'Neill and White for an update on their progress, she lovingly describes what sets the sparrow, a species found nowhere else in the world but the Eastern Seaboard of North America, apart from other birds.

They're notoriously promiscuous. Pairs don't mate for life. Females are solely responsible for nesting and raising chicks. Males aren't territorial. Neither of the sexes really sings. They tend to scurry on the ground like rodents and often remain just above the vegetation when they do choose to fly.

“When they’re gone, it will be something unique that we’ve lost,” Robinson says.

As she strides away to look for more nests that may require assistance, White and O'Neill head out to an area near the East Bay Bike Path to install the day’s final ark. Just as at the other nests, the mother stays close, eying the intruders warily and chipping away noisily to signal her annoyance. Tup, tup, tup, tup.

She flies around them once, staying low to the ground before alighting in a bush, then circles a second time, never straying far from her chicks. The men finish and move off. The mother sparrow immediately darts back into her nest.

An endangered declaration and a team effort

The team's efforts appear to be paying off.

They started experimenting with their homemade contraption during the 2024 breeding season. About a quarter of the nests they arked that summer had at least one chick successfully fledge, modestly higher than the rate for the nests that they left alone.

As they've perfected their methods this year, the difference has been wider, a 41% success rate for the arked nests, much better than the rate for the untouched nests.

Robinson hopes that by the end of the summer they’ll have enough data to demonstrate that their method works.

“But is it enough to really make a difference?” she wonders.

The researchers know that even if their efforts are scaled up and duplicated by others, this kind of work will offer no more than a Band-Aid solution. There are only so many nests that can be moved and only so much time before waters rise high enough that marshes permanently flood.

“If the predictions are right, this whole place will be gone,” O’Neill says of Jacob’s Point.

Some salt marshes have been saved through a process of spraying them with sediment and then replanting grasses on the newly elevated surface. The technique, known as thin layer deposition, has been successfully employed at Sachuest Point in Middletown, Quonochontaug Pond in Charlestown and elsewhere. But it’s labor-intensive and very expensive, making it hard to replicate on a wider scale.

Other marshes, like ones on Prudence Island or at Sapowet Point in Tiverton, should migrate inland when bordering meadows shift composition as waters push higher. But in many places, roads, railways and homes stand in the way. Jacob's Point Marsh is a case in point. With the bike path running along its eastern edge, the marsh has nowhere to go.

The long-term hope is that reductions in planet-warming greenhouse gas emissions could eventually slow the pace of sea level rise, though it would take decades for the effects to be felt.

Until then, environmental authorities are working on strategies to prop up the sparrow population. Among the recommendations of the Atlantic Coast Joint Venture, a consortium that includes state agencies, branches of the U.S. Fish and Wildlife Service and advocacy groups like the Audubon Society of Rhode Island, is to "develop techniques that can be used to protect individual nests."

"Deirdre's work aims to do just that, by combating nest flooding on an individual level," says Sam Miller, a bird biologist with the Rhode Island DEM, which belongs to the joint venture. "While Deirdre and I agree that this is not the be-all and end-all solution to save these birds, it addresses an immediate need and, if successful, will be another important tool in our toolkit."

Meanwhile, conservationists continue to urge the federal government to declare the sparrow endangered, a designation that would guarantee more funding for efforts to protect the species. Fish and Wildlife began a review of the bird's status in 2019, but, after repeated delays, the agency has yet to make a decision.

Advocates question why it's taking so long for the government to act when the bird's precipitous decline has been known since at least 2015, when a regional group called the Saltmarsh Habitat & Avian Research Program (SHARP) reported that the sparrow's population was dropping by 9% annually.

In 2017, the International Union for the Conservation of Nature, the global authority on threatened species, upgraded the sparrow to endangered on its Red List.

In 2020, working from the SHARP data, Fish and Wildlife itself estimated the sparrow's population at just 28,215, down from 212,000 in 1998. One population model based on those

numbers projects the sparrow's extinction by 2050. Another puts it as soon as 2035.

Fish and Wildlife had previously said it would decide by September 2023, then pushed back that date by a year. But now, after another year has passed, there has still been no ruling.

In the meantime, a new administration has taken charge in Washington that's shown more interest in stripping protections from vulnerable species.

“While we do set targets for when we think listing determinations will be made, we also re-evaluate and adjust the targets,” a spokesperson for Fish and Wildlife says. “We are currently revising our national workplan to determine updated timelines.”

Staving off extinction a little longer

In the days after Cooper and O’Neill moved the nests to the arks, the tides come in, rising higher each day.

By the following Monday, three days after relocation, high tide reaches the top of the banks of the creek that cuts through Jacob’s Point, and while the waters spill into the lower marsh, they don’t reach the upper elevations.

Robinson watches from an embankment above the marsh and says it’s not as bad as the moon tides from a month earlier, which were just a couple of inches higher but left nearly all of Jacob's Point underwater. In a way, the two tide cycles show what sea level rise can do and how only a small difference in water heights can have devastating effects.

Robinson says she’s also seeing more frequent flooding.

“It used to be once a month,” she says. “Now, we’ll get flooding every two weeks.”

She continues to make her daily rounds of the arked nests. On Wednesday night, the tides are higher, and the water in the marsh is ankle-deep.

“High enough to flood a nest,” Robinson remarks.

By Friday, the moon has continued on its orbit and its gravitational pull has weakened. The high tides have passed and the nests built during this cycle are safe from now on. Robinson is on the marsh by 5 a.m. to make the key assessment of the arked nests.

Her final tally: one nest has flooded, one nest has failed for unknown reasons, five nests have been destroyed by predators, and three nests have survived.

The only nest that flooded was the one that looked like it was built on an island. White and O'Neill didn't expect it to make it. The low number of flooded nests would otherwise be good news, but it's overshadowed by the nests that have been raided.

The researchers haven't figured out a way to keep other animals away, a challenge that all nests face. They've looked into wire cages similar to the predator exclosures conservationists use to protect nesting piping plovers, but haven't gotten permission from the DEM to test them.

But even with the failures factored in, the rate at which arked nests flooded is still less than half the rate for unarked nests.

Robinson checks on one of the nests that the team decided not to ark. The mother built it on higher ground in the branches of a high tide bush, and it made it through the tidal cycle intact, an all too rare occurrence these days.

Robinson lifts out one of the nest's three tiny occupants. The chick is just three days old. Pin feathers have emerged from its wings but, apart from a shock of down protruding from its head that would make a punk rocker proud, the chick is naked.

Adult saltmarsh sparrows are elegant creatures with delicately speckled breasts and splashes of butterscotch across their cheeks. Early-stage chicks, however, look more like Muppets with their bulbous eyes, oversized mouths and long, spindly legs that the rest of their bodies need to catch up with.

"Isn't it beautiful?" Robinson coos while cupping the chick's impossibly warm body.

The chick opens its mouth, but no sound comes out. Hatchlings have evolved to stay quiet so they don't attract predators.

"They've adapted to so many things, but they can't adapt to rising seas," Robinson bemoans.

She says this will be the team's last summer on the marsh. She's made similar promises in past years, only to come back again. This time, she says, is different. The research requires an enormous time commitment – several hours in the early morning nearly every day over four months – and a sizeable amount of money.

This year, the work is being paid for with a total of $9,000 in grants from the Warren Land Conservation Trust, the Barrington Land Conservation Trust and the Narragansett Bay Estuary Program. Most of the money is going to pay White and Joel Eckerson, another student intern with the project.

The team still has work to do before this summer ends and they decide on the project's future. With the third nesting cycle winding down, the sparrows are starting up their fourth and final round of breeding for the season. It’s the smallest, with only the females who have yet to have a successful nest in the preceding months taking part.

The marsh is a hive of activity. Males flit about in bunches, singling out available females for mating.

This is their last chance this year to bring new young into the world and do their part to stave off extinction a little longer. They don’t know that the odds are no longer with them. They only know to keep trying.

Robinson has observed this ritual countless times, yet her fascination with the Jacob’s Point saltmarsh sparrows persists. She wanders out to a far corner of the marsh to watch these intriguing birds she's come to know so well.

Instantly recognizable with her nimbus of white hair, Robinson looks on, binoculars to her eyes, a lone figure on the marsh, bearing witness to what may soon be gone forever.