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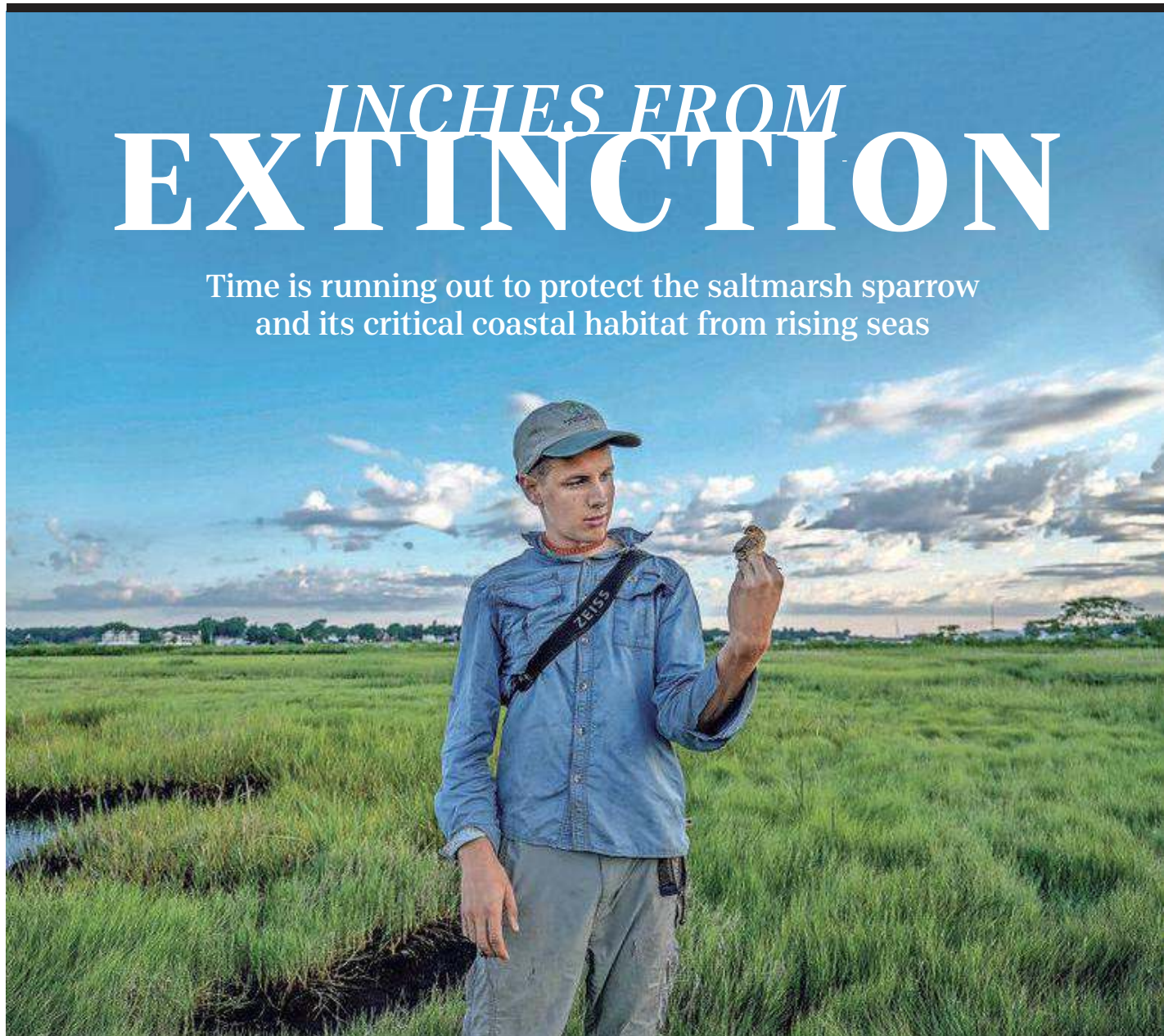


# Providence Sunday Journal

NEW ENGLAND NEWSPAPER OF THE YEAR

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## INCHES FROM EXTINCTION

Time is running out to protect the saltmarsh sparrow and its critical coastal habitat from rising seas

Alex Kuffner Providence Journal | USA TODAY NETWORK

**W**ARREN — Joel Eckerson cries out to his companions across the marsh at Jacob's Point. • "I knew it," he yells. "I've got a nest here." • A saltmarsh sparrow nest. • There's good reason why Deirdre Robinson, who is co-directing a study of the enigmatic bird, calls Eckerson the nest whisperer. • "He uses all five senses," Robinson says of the 19-year-old college student. "This guy finds nests no one else can ever find." **See , Page 10A**



Joel Eckerson, an intern with the Saltmarsh Sparrow Research Initiative, holds one of the tiny birds during a study of the species' nesting habits at Jacob's Point in Warren.

DAVID DELPOIO/THE PROVIDENCE JOURNAL

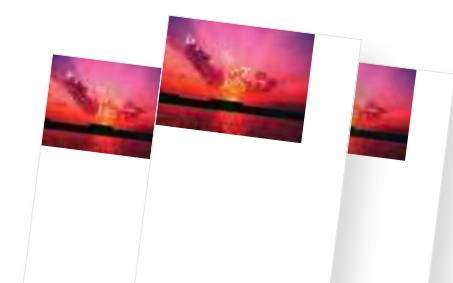
Saltmarsh sparrow chicks drown as the high tide swamps their nest. Rising seas pose an existential threat to the species.

COURTESY OF DEIRDRE ROBINSON

### SUNDAY+

You've asked for more and we're delivering more in the expanded Sunday Providence Journal print edition. Here's what you'll find today:

- + **Amy's Rhode:** Amy Russo finds out what it takes to stoke the flames as a WaterFire volunteer. **14A**
- + **Time Lapse:** Remembering a hall of fame in the former Howard Building in downtown Providence. **18A**
- + **Outdoors:** Anglers are invited to weigh in as the National Oceanographic and Atmospheric Administration Fisheries prepares for a policy update. **7B**
- + **Novel partnership:** How did a trio of bestselling authors pool their talents in the new book "The Lost Summers of Newport"? **8B**
- + **Walking RI:** Beaver River Preserve in Richmond showcases a federally protected "wild and scenic" river. **8B**
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Deirdre Robinson, co-director of the Saltmarsh Sparrow Research Initiative, tries to flush out the mother sparrow that laid its eggs in a nearby nest and drive it into a net so that researchers can gather data. PHOTOS BY DAVID DELPOIO/THE PROVIDENCE JOURNAL



"They're like no other bird in the world, says researcher Dierdre Robinson, recording data at Jacob's Point in July. "When they're gone, we'll have lost something really unique."

## Jump hed

Continued from Page 1A

Nests built by the sparrow are notoriously difficult to detect. Adult females hide their 3-inch-high creations on the ground deep within clumps of salt hay or high tide bush, often capping them with a living canopy of grass blades.

This one is no different. It's impossible to see from a distance. Even for those standing right above it, the location of the nest is imperceptible to the untrained eye.

Eckerson parts a mass of vegetation that looks no different from the sea of green around it. The bobbing heads of three chicks peek out above the lip of a grassy cup crafted by their mother. Eyes clamped shut and pink-skinned bodies nearly featherless, the nestlings are only a day or two old.

Eckerson is here on the eastern shore of Narragansett Bay with Robinson and two other colleagues this July morning to learn more about an animal that some experts believe will go extinct within a generation.

Because the bird builds its nests at such low elevations on the coast, it may be more vulnerable to sea-level rise than any other species of animal.

As high tides reach farther inland, the sparrow's nesting habitat is no longer safe from flooding. Chicks are drowning in their nests. Nearly nine out of 10 saltmarsh sparrows have disappeared in the last 25 years.

This is the sixth summer that the Saltmarsh Sparrow Research Initiative has tracked the 100 or so birds that come to Jacob's Point each summer to mate. Many of the sparrows are returnees, making the trip back from as far away as the Gulf Coast of Florida every May or June.

Over the first five years of the project, the researchers documented 243 nests and more than 750 chicks. The rate at which the marsh's colony of sparrows is reproducing is stable so far, but it's not good.

"Certainly not high enough to save the population," says Steve Reinert, one of two other co-directors of the research initiative.

### Saltmarsh sparrow under consideration for Endangered Species Act listing

The salt marsh sparrow may as well be in-

visible to most people. Unlike the American robin, the cardinal or other birds common to backyards, it spends its entire life in marshes that border oceans, bays and inlets, never leaving for drier land frequented by you or me.

It's a bird that's difficult to spot, barely 5 inches long, and one that doesn't especially stand out if you do see it, no more than a brown blur zipping past your knees. Its song, too, is difficult to discern, barely a whispered buzz. "Not impressive," the touchstone book series "Life Histories of North American Birds" opines of the male's vocal talents.

"It has been described as the plunging of a hot iron in water," the entry on the sparrow says.

Only up close do you appreciate the sparrow's delicate beauty. Hold one in your hand and you see the amber dappling around eyes alert to everything, the lightly speckled breast, the spiky tail that gave the bird its original name.

"Life Histories" describes what was once called the "sharp-tailed sparrow" as "retiring and wary."

"Even when one is accidentally flushed, it quickly drops back into cover and patient field work is needed to provide a satisfactory study of this handsome but mouse-like bird," it says.

The work at Jacob's Point comes at a pivotal moment for this little-known species.

The U.S. Fish and Wildlife Service is reviewing the sparrow's conservation status with an eye toward enhancing protections for the species. The agency expects to make a decision during the fiscal year that ends Sept. 30, 2024, on whether the bird warrants listing under the Endangered Species Act.

If the sparrow is listed as threatened or endangered, it could enhance protection for the salt marshes deemed critical to its survival. It may also open up new funding streams to conserve habitat or adopt other measures to stave off extinction.

Although it's not a silver bullet, listing can make a difference. Four out of every five bird species protected under the act have populations that are stable, increasing or have recovered, according to the American Bird Conservancy.

Some experts on the saltmarsh sparrow say the federal government should have listed the species years ago. The bird breeds nowhere in the world except the coastal ribbon of salt marshes between Virginia and Maine. Seas are

rising faster along that stretch of shoreline than nearly all other places on the planet.

"Five or six years ago, all the evidence suggested that this bird was on the path to extinction," says Chris Elphick, a conservation biologist at the University of Connecticut. "The only thing that has changed is we're five or six years down that path."

The trajectory of the sparrow's population has been clear since at least 2015 when a consortium that Elphick helps lead — the Saltmarsh Habitat & Avian Research Program (SHARP) — reported that the sparrow's population was declining by 9% annually. In 2020, working from the SHARP data, Fish and Wildlife estimated the sparrow's population at 28,215, down from 212,000 in 1998.

One population model projects the sparrow's extinction as soon as 2035. Another puts the date at 2050.

The International Union for the Conservation of Nature elevated the status of the sparrow on its Red List of Threatened Species from vulnerable to endangered in 2020, but, unlike an Endangered Species Act listing, the designation comes with no legal authority.

Fish and Wildlife, too, initially targeted 2020 for its decision, but the agency postponed the process so it could redirect resources to more immediate and concrete actions, says Suzanne Paton, a supervising biologist with the agency who is leading the species status assessment of the saltmarsh sparrow.

"The leadership in our agency really felt like they had the opportunity to get more conservation done on the ground," says Paton, who is based in Rhode Island. "The most important thing is that we try to help the species — to stop the decline. That hasn't changed, whether or not the listing happens."

As to whether listing the species would accelerate that work, she's not sure.

"I've thought that through a lot myself," Paton says. "Would it have made a difference? I just don't know."

Critics have speculated that Fish and Wildlife didn't want to make a decision under a Trump administration that was seen as more open to delisting species to benefit business interests than doing the opposite.

Elphick brings up politics, but draws no conclusions. He agrees with Paton that the answer about the immediate impact of listing isn't clear-cut, but he does think that at the very least it would raise the alarm.

"You hear over and over again: if these birds are in so much trouble, why aren't they listed under the Endangered Species Act?" he says.

### How does a 'sparrow round-up' work?

Whoever came up with the saying about herding cats never tried herding saltmarsh sparrows. Driving the birds into mist nets, so they can be safely captured for study is a maddening endeavor.

The nylon-mesh nets are strung between 8-foot-long garden stakes that Robinson has planted in the marsh near a pair of nests found on previous days. She and Eckerson, an intern with the research initiative, are joined by Paul Miller, a conservation biologist working with them this summer, and Wenley Ferguson, director of habitat restoration with the environmental group Save The Bay.

They're working in a part of the marsh they call the West Coast. The goal is to catch the female associated with Nest 22-44 (the 44th nest found in 2022) and band her if she hasn't been already. Hers is the only one of 19 active nests for which the team hasn't identified a mother.

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Dawn has just broken and the sunlight reflecting off the dew-covered marsh grass creates halos around the shadows of the researchers' heads. Somehow, it feels auspicious.

Members of the team take up positions around the nests and look for movement near the ground. Sparrows typically fly low to evade the notice of predators. They prefer the drainage creeks that meander through the marsh, using them like highways to move around.

Females stay close to their nests to watch over their eggs or chicks. They leave to forage for food for their young or to carry away the nestlings' fecal sacs, depositing them far away so the smell doesn't attract attackers. Often, they'll keep watch from a high tide bush or grass stalk near their nests.

Male sparrows don't show the same fealty to a single location. Because they don't take part in rearing the young, they flit around the full expanse of the marsh or rove elsewhere in search of mates.

Miller moved to Rhode Island from Florida, where he worked on studies of a cousin of the saltmarsh sparrow, the grasshopper sparrow. The Florida subspecies, native to the prairies in the south-central part of the state, is among the most endangered birds in the country and he was part of a recovery effort. He and others there came up with a name for netting the elusive birds.

"We call them sparrow roundups," he laughs.

This roundup goes as well as you'd expect. When someone spots a saltmarsh sparrow, everyone loosely encircles it and walks forward, arms outstretched, trying to flush it into a net without causing unnecessary stress to the bird. The sparrows don't cooperate, darting to the sides and underneath, wheeling around or taking refuge on a muddy bank where no one can get close for fear of sinking calf-deep in the muck. One intrepid individual flies into the net and then somehow flies out again.

Over 2½ hours of sweaty work, the team snares three birds, including a male that is unbanded and new to the study. None are the female associated with Nest 22-44.

But as Robinson finishes applying bands to the new bird, Ferguson notices movement in a net near the nest. It's the female they've been searching for. Eckerson frees her. She has purple bands on each leg and the ID number 2811-932-17 stamped on an aluminum band on her right.

Robinson checks her ledger. The bird was banded last summer as a nestling. This is her first year back at Jacob's Point tending to her own chicks.

#### Saltmarsh sparrow's exclusive habitat is being flooded as seas rise

The saltmarsh sparrow is the rare "marsh obligate," an animal species that from birth to death lives in salt marshes. It's considered the most specialized of tidal-marsh birds, which means the vitality of the species is inextricably tied to the health of its very narrow habitat needs.

It's why Ferguson accompanies the researchers this morning. She specializes in restoring salt marshes and has been working for more than a decade with the Warren Land Conservation Trust, which owns Jacob's Point.

She has led projects to replace crumbling culverts and to cut shallow channels through



Speckled eggs rest in a well-concealed saltmarsh sparrow nest. Timing is key in the breeding cycle, which must fit within a tight window between the two highest tides of the month so the chicks won't drown. PHOTOS BY DAVID DELPOIO/THE PROVIDENCE JOURNAL

the spongy ground, all to help tidal waters drain off the marsh more readily rather than pool on its surface. She also saved some of the slabs of peat she removed, piling them in places to create patches of higher ground — "micro-habitats," Reinert calls them — where nests are that much safer.

Ferguson's first round of work at Jacob's Point was in 2009. She came back again in 2015, doing much of the digging herself by hand. She's planning another visit sometime next year, depending on funding. The culverts, which reside under an old road that leads to Narragansett Bay, need to be cleared.

Ferguson does conservation work like this with Save The Bay all over Rhode Island and southeastern Massachusetts. These days, marshes are protected for their habitat value and biodiversity, not to mention their ability to shield inland areas from storm surges, soak up rainwater, filter pollutants and sequester carbon.

But it wasn't always so. Wetlands were ditched, drained, dumped with garbage and filled in to be built upon. Roads and railways sliced through the marshes, impairing the natural movement of water. Rhode Island has lost half of its marshland in the last 200 years.

Marshes grow higher as they trap waterborne sediment in their plants and as dead vegetation adds to their peat foundation. But the rate of natural accretion has been overtaken by the rate of sea-level rise. If waters go up another 5 feet, which could occur by the end of this century, nearly all the state's remaining marshland would vanish.

Scientists and coastal planners have tried radical plans to raise the elevation of marshes by spreading sediment over them and replanting on top. Ferguson has been part of such projects at Ninigret Pond in Charlestown and elsewhere. But the work is expensive and can only be used to add a foot or so of height.

The favored alternative is to allow marshes to shift inland, following the rising waters. But

there are few places along Rhode Island's heavily developed coastline where that's possible.

Jacob's Point exemplifies the dilemma. Used in Colonial times for the harvesting and storage of salt hay, the marsh was later cut across by a raised road leading to a mooring in the Warren River for a private seaplane. The roadway cut off the flow of salt water into the southern section, allowing invasive phragmites to take over.

"This marsh is getting hit from all sides," Ferguson says. "The edges are eroding. It's got increased freshwater running off because of human development in the watershed. And then you have these old features that are interfering."

Today, the inland edge of the 37-acre marsh terminates at the East Bay Bike Path, which was built on a former rail bed. On the other side of the path are houses.

Seas are creeping in and the marsh has nowhere to go.

#### No margin for error in sparrow's precisely timed breeding cycle

The saltmarsh sparrow made its home here some 11,000 years ago as ice sheets retreated and wetlands formed at the meeting place between land and sea.

There's good reason why the sparrow nests in such a precarious place. Marshes thrive with life, rivaled only by rainforests in the abundance of plants and animals they support. For sparrows, it means food is always within reach. They scurry after spiders and beetles in the grass and probe creek banks for crabs and worms.

Ease of foraging is important, particularly for females of the species, who may be the hardest-working birds around. They build the nests, incubate the eggs, forage for food and protect their broods from predators, doing it all alone with absolutely no help from their male counterparts.

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Joel Eckerson prepares to tag a nest of baby saltmarsh sparrows that he found at Jacob's Point. Eckerson's fellow researchers have dubbed him the "nest whisperer" for his success in locating the species' well-camouflaged nests.



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The efficacy of the sparrow's nesting strategy is borne out by history. The continued existence of the species is sign enough that it works.

The key to it all is in the timing. The birds must complete their breeding cycle within a tight window between the two highest tides of the month, when the Earth, sun and moon line up and their gravitational pull is strongest.

The birds aren't inherently attuned to the 28-day lunar cycle. They don't pick up some sign from the phase of the moon to guide their nesting. It's a trial-and-error process.

Each female nests three times over the summer. She chooses a spot in the high marsh, an area that, if all goes as expected, should go untouched by the daily high tides and only flood in the new moon tides. Her first attempt in June usually goes poorly, because she could be nesting at any point in the lunar cycle. This past June was typical. In the 29 nests Robinson and the others found, no hatchlings survived.

But the sparrow knows by instinct to start again immediately after the floodwaters recede. That way she falls into synchronicity with the moon phases, giving her the maximum time possible to do her work before the highest tides recur. Nesting success, as a result, is generally better in July and August.

Here's how the schedule breaks down: the female lays her first egg five days after copulating and will lay two or three more; she will incubate the eggs for 12 days; once they hatch, the chicks grow quickly, but they're typically not strong enough to climb the vegetation above any floodwaters until they're eight days old; by their ninth day, they're ready to leave the nest.

That's about 26 days from beginning to end. Throw off the timing in any way, and the results can be disastrous.

"Over time immemorial, this strategy has worked for them," Robinson says. "But we've amped up the speed of change, and they can't possibly adapt."

### Why is the saltmarsh sparrow unique among songbirds?

Robinson steps carefully, paying close attention to the ground for signs of nests that may lie in her path. Unprompted, she muses about the ways that saltmarsh sparrows are different from other songbirds.

They are polygamous and promiscuous, adaptations that may help dial up breeding success. For every nesting female, multiple males take part in mating. Males aren't territorial and will often be seen together. Males and females are identical in appearance. The birds rarely sing. They would rather run on the ground from danger, more akin to rodents, than fly away.

"They're like no other bird in the world," Robinson says. "When they're gone, we'll have lost something really unique."

Her affection is borne of endless hours spent among the Jacob's Point birds since the research initiative began in 2017. Before 5 a.m. on most summer mornings, Robinson cycles the three-quarters of a mile up the bike path from her home in Bristol to the marsh. Her bike is the one with a photo of a saltmarsh sparrow on the rear basket.

She stays until 8 or 9 a.m., checking on nests and recording what she sees. She'll often come back again later in the day if the tide is coming in. Her observations have yielded a first-of-its-kind photographic guide to aging sparrow chicks — essential information to determine whether nestlings are old enough to be banded.

Robinson can do all this because she is retired and volunteers her time. She was a professor of physical therapy at the University of Rhode Island and went on to get a master's degree in biological sciences, writing her master's thesis on the piping plover, an endangered shore bird.

"None of this happens without her dedication," Reinert says of his founding partner in the research project.

The initiative runs on a shoestring budget. This summer's work is being funded with a \$1,000 grant from the Rhode Island Natural History Survey and a \$10,000 donation from one of Robinson's neighbors. The money was used on nets, cameras and other equipment, and to pay Eckerson and Miller.

The study was supposed to wrap up in 2021, but Robinson, Reinert and the others still feel the tug of Jacob's Point and its sparrows.

### Buying time for the saltmarsh sparrow, and other marsh dwellers

Why put so much time and effort into a species that may not be around much longer?

The big-picture argument is that all the work around the saltmarsh sparrow, not only in Rhode Island, but also in New York, Maine and other states, could galvanize efforts to save more marshland for the benefit of the many other forms of life it supports, from ospreys, herons and willets to striped bass and horseshoe crabs.

"Yes, it's essential sparrow breeding habitat, but it also helps the marsh as a whole," says John Herbert, a biologist with the Rhode Island Department of Environmental Management who is leading a study of marsh birds in the state.

The stakes are high. The thinking goes that if the sparrow disappears, it could be the start of a larger wave of extinction. The seaside sparrow could be wiped out in some places and the clapper rail.

Reinert offers a narrower reason, too. There may be clues in what he, his colleagues and other researchers are finding that may still help the sparrow.



Rising seas are not the only threat to the saltmarsh sparrow, as seen in this first-of-its-kind trail-cam photo showing a deer raiding a sparrow nest. Researchers had not been aware that deer eat the eggs and chicks. COURTESY OF DEIRDRE ROBINSON

At Jacob's Point, the team has measured elevations of all the nests they've found, recorded the types of plants growing around them, and cross-referenced the data with nesting success rates. They've found that small islands of higher ground, places like those Ferguson built up with ditch spoils, can offer refuge for the sparrow. Elphick is experimenting with similar human-made hummocks in Connecticut.

"A difference of one or two centimeters is the difference between life or death," Reinert says.

He isn't doing field work this summer, so he can concentrate on a paper analyzing the first five years of data. He plans to have it published in a national peer-reviewed journal next year in time for when he'd last heard Fish and Wildlife would make its decision on a listing.

Told that the agency was pushing off a ruling until the 2024 fiscal year, he says he's "baffled" by the move. Reinert strongly believes the saltmarsh sparrow warrants listing and that a decision should have already been made.

If Robinson is the heart of the Jacob's Point project, Reinert, a retired health care analyst who has spent decades studying and writing about birds, is the head. He doesn't want to be pessimistic, but he's unwilling to gloss over the facts.



An adult female saltmarsh sparrow, banded by researchers to help track its movements. The species breeds exclusively in coastal salt marshes between Virginia and Maine, where seas are rising faster than nearly anywhere else on Earth. DAVID DELPOIO/THE PROVIDENCE JOURNAL

Saltmarsh sparrows lay about four eggs per clutch. Some never hatch and most of the chicks that do emerge don't make it out of the nest. They drown in the tidal floods or are killed by predators like mink, egrets, even deer. Jim O'Neill, the third co-director of the Jacob's Point project, got a photo this summer of a doe raiding a nest on one of the trail cameras he set up around the marsh.

Some years are better than others, but since 2017 each female at Jacob's Point has averaged only 1.4 fledglings across the entire summer. Historically, the overall rate for the species was two to three times higher.

It doesn't get any easier for the young birds that do survive the nest. Most don't last the first summer. Even fewer make it back from their first migration.

Compared with other marshes in Rhode Island, Jacob's Point is still holding on, thanks in part to the narrow runnels dug by Ferguson and the other work to improve the area's hydrology. In a survey that measured the health of 31 salt marshes around the state, Jacob's Point came in second.

Its relatively good condition may help explain why the number of saltmarsh sparrows there, which represents about a 10th of the estimated total population in Rhode Island, has remained steady.

But then Reinert points to projections by federal scientists for another 6 inches of sea level rise by 2030 and a foot by 2050. Saving the sparrow in those scenarios seems impossible to him.

"I don't care how many runnels we dig," he says.

### Young researchers dedicated to saving 'a magical place'

Eckerson makes his discovery as the team is wrapping up for the day. It's the second nest he's found this morning. He's living up to his nickname.

One of 10 home-schooled siblings from Dighton, Massachusetts, he started a birding club with an older brother when he was a child. They counted 214 species in their yard alone. That brother and two others worked for the Ja-

cob's Point project, and Eckerson followed when he was 17.

He's studying biology at Bristol Community College in Fall River and is thinking of following the same path as his brothers to the University of Massachusetts at Amherst and a job as a field scientist. He spends most mornings on one marsh or another, working at Jacob's Point or observing the common tern colony at Hundred Acre Cove in Barrington. He describes with wonder the speed and power of a peregrine falcon swooping in for a meal one recent day.

"The marsh is a magical place," he says.

Eckerson's reputation for locating nests has only grown over time. In his first year at Jacob's Point, he found 30. Last year, the number grew to 55. So far this year, he's tallied more than 40.

His new find gets the identification number Nest 22-55. He'd been watching the spot all morning, keeping an eye on one sparrow flying in and out and displaying — at least to Eckerson — telltale nesting behavior.

"I made a note to come back here and flushed her right off the nest," he says.

Those working to save the sparrow know that the odds of a recovery are slim. They talk of buying time, of propping up the population until something more can be done sometime in the future. They don't know what that could be.

Elevating marshes will help, but it's expensive and time-consuming, and it can't be duplicated on a wide scale. Creating smaller-scale hillocks of raised ground may play a role, as will the nuts-and-bolts work of restoring the natural flow of water through marshes. Miller mentions captive breeding, something done successfully with the grasshopper sparrow in Florida, but nothing concrete has been proposed for the saltmarsh sparrow.

"It's all hands on deck," says Paton. "We're just trying to do everything we can."

Elphick, too, says it's too soon to give up. "If these methods work, they might give us the tools to maintain refugia where small populations can persist in the long term," he says.

Two days after finding Nest 22-55, Eckerson captures the female to which it belongs, Robinson says in an email. The bird was banded at Jacob's Point in 2018 and has returned every summer since. One of Eckerson's brothers discovered her nest in 2019, and Eckerson has found her nests in each subsequent year.

Despite the bird's experience, her timing this cycle was off. Four days after Eckerson finds the nest, a moon tide swamps it. Too weak to climb, the three chicks perish in the floodwaters.

### Shooting for the moon, despite the odds

Robinson can't help but form attachments to individual sparrows, none more so than one she found three years ago. She wrote about the experience in an essay.

Robinson found the bird before it hatched, one of five eggs in a nest at Jacob's Point. A tidal flood washed three eggs away. A chick emerged from one of the remaining eggs, and for the next two days the small female clung to the other egg, which never hatched. Robinson's field notes described the chick as "alive but weak."

She banded the little bird, even though she didn't think it would make it. The sparrow's mother hadn't been seen for days and the chick was soon found outside the nest shivering on a cool morning well before she was due to leave her home.

Against all odds, the bird made it to her ninth day and fledged. It was July 16, the 50th anniversary of the Apollo 11 moon launch. Robinson rarely names birds. They are subjects of scientific study, after all. But in this case, she thought the sparrow deserved it. She christened her Apollo for her feat of survival.

In February 2021 Robinson heard from a doctoral student who was studying saltmarsh sparrows on their wintering grounds in North Carolina. The woman had captured Apollo, who had flown 700 miles from her summer home in Warren.

Banded birds are rarely recaptured. The chances are even slimmer for birds banded as chicks because they suffer such high mortality rates. Of the 20,211 saltmarsh sparrows banded since 1960, only three banded as nestlings were found where they winter, according to Robinson.

She finds hope in Apollo's story. It helps keep her going through all the early mornings at Jacob's Point documenting the plight of the saltmarsh sparrow.

"Scholars may debate whether hope is a virtue or a crutch," Robinson wrote. "I view it not as a luxury, but as a necessity."