

Team finds direct evidence of 'itinerant breeding' in East Coast shorebird species

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URI doctoral student Colby Slezak places a leg band and GPS transmitter on a female American woodcock at the Francis Carter Preserve in Charlestown, Rhode Island. Credit: Colby Slezak

Migration and reproduction are two of the most demanding events in a bird's annual cycle, so much so that the vast majority of migratory birds

separate the two tasks into different times of the year.

But a study by University of Rhode Island researchers has found direct evidence of a species—the American woodcock, a migratory shorebird from eastern and central North America—that overlaps periods of migration and reproduction, a rare breeding strategy known as "itinerant breeding." Their work, backed by collaborators across the East Coast, was published in the journal [*Proceedings of the Royal Society B*](#).

"I think this is a very exciting moment for bird researchers," said Colby Slezak, a URI Ph.D. student in biological and environmental sciences who led the study. "It's interesting to see that these distinct periods in a bird's annual cycle are not so cut and dried. We often think of migration, breeding, fall migration and wintering as separate events. But woodcock are combining two of these into one period, which is interesting because both are so energetically expensive."

"Each year the period of migration is distinct from the period of breeding in the vast majority of migratory birds, presumably because doing so at the same time is simply too costly," said Scott McWilliams, URI professor in natural resources science and principal investigator on the study. "This paper provides the best documented case of a migratory bird that is an itinerant breeder. Such itinerant breeding is exceptionally rare, and documenting exceptions often proves the rules of nature."

The American woodcock—also called a timberdoodle, bogsucker, night partridge, and Labrador twister, among many more—is a migratory shorebird that occurs throughout eastern and central North America but its populations have been declining over the past half century. The species is known for its long, needlelike bill that can extract earthworms from deep in the ground and the males' elaborate mating dance and "peent" call to attract females, Slezak said.

While there are about a dozen [bird species](#) in the world believed to be itinerant breeders, the study is the first to show direct evidence of the rare strategy. "They've suspected other species of being itinerant breeders, but this is the first time we've had detailed GPS-tracking data and on-the-ground verification of nests to confirm that this was happening." said Slezak, of Broadalbin, New York.

To do that, the study benefitted from the work of scores of biologists from federal, state and non-governmental agencies along the American woodcock's flyway, from the southern U.S. into Canada, who tagged more than 350 females with GPS transmitters between 2019 and 2022. That initiative was part of the University of Maine's Eastern Woodcock Migration Research Cooperative.

Slezak, whose work on the study was part of his dissertation research, organized and analyzed the tracking data and alerted collaborators along the bird's range to verify possible nesting locations. URI graduate students Liam Corcoran, Megan Gray and Shannon Wesson also worked on other aspects of the woodcock project, all part of a collaborative research program with biologists from the Rhode Island Department of Environmental Management Division of Fish & Wildlife.

"I was looking for really short movement patterns during the breeding season to find suspected nests," Slezak said. "Relying on all of these collaborators from across the East Coast, I would reach out to them to tell them there was a suspected nest. They would travel out to the sites, sometimes quite far. It was amazing that we got the buy-in that we did."

Based on GPS tracking of more than 200 females, the URI study found that more than 80% of the tagged females nested more than once during migration—some up to six times. During northward migration, females traveled an average of 800 kilometers between first and second nests, and shorter distances between subsequent nests, the study said.

During 2021–22, URI researchers oversaw onsite verification of 26 nests from 22 females. Four females nested more than once, three of which migrated a substantial distance northward after their first nest attempt, the study said.

"There are many records of woodcock males singing along their migration routes, which has always been a mystery because it's energetically expensive," said Slezak. "With this new data on females, we're seeing that females are also nesting in the south early, moving north and nesting as they go. So, these males are probably getting breeding opportunities along the way."

While migration and reproduction take a lot of energy, American woodcock reduce the cost in other ways, Slezak said. They have shorter [migration](#) distances than other species and have the flexibility of using various young-forest habitats. Also, females are larger than males and their eggs are small relative to the size of the females.

"A lot of birds probably can't do it because they don't have these lower reproductive costs that woodcock have evolved to do," he said.

Another evolutionary driver of itinerant breeding in woodcock could be predation. While they use a variety of habitats—wetlands, young forests with different tree types—they often nest near edges of open fields, leaving them prone to numerous predators.

"We think most of these post-nesting migratory movements are in response to predation events," he said. "They're sitting on the nest and something comes and eats the eggs. The female takes off and keeps migrating north before trying to nest again. What we don't know is: if the female has a successful [nest](#), does she stop nesting the rest of the year?"

Despite steady declines in woodcock populations and their preferred

young forest habitat over the last half century, the study offers a glimmer of hope for woodcock, and other itinerant breeders facing the challenges of ongoing human development and climate change.

"Itinerant breeders may be more flexible in their response to environmental change because they are willing to breed in a wide variety of places," said Slezak. "So as long as some suitable habitat remains, the consequences may be less."

More information: Colby R. Slezak et al, Unconventional life history in a migratory shorebird: desegregating reproduction and migration, *Proceedings of the Royal Society B: Biological Sciences* (2024). [DOI: 10.1098/rspb.2024.0021](https://doi.org/10.1098/rspb.2024.0021)

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